MAPPING THE DEVELOPMENT OF CONDOMINIUMS IN HALIFAX, NS
1972 - 2016

by Colin K. Werle

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Department of Geography and Environmental Studies

Saint Mary's University

Halifax, Nova Scotia, Canada

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Members of the Examining Committee:

Dr. Mathew Novak (Supervisor)
Assistant Professor, Department of Geography and Environmental Studies,
Saint Mary's University

Dr. Ryan Gibson
School of Environmental Design and Rural Development
University of Guelph

ABSTRACT

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This thesis offers foundational insight into the spatial and temporal patterns of condominium development in Halifax, Nova Scotia. Characteristics that are analysed include: age, assessed values, building types, heights, number of units, and amenities. Results show that condominium development in Halifax first appeared in the suburbs in the 1970s, with recent activity occurring in more central areas. The greatest rate of development was experienced during a condominium boom in the late 1980s, however, development has been picking up over the last decade. Apartment style buildings are the major type of developments, with an average building size of 46.52 units. Similar to other markets in Canada, Halifax's condominium growth does appear to be corresponding with patterns of re-centralization after decades of peripheral growth in the second half of the twentieth-century.

April, 2017

RÉSUMÉ

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Cette dissertation donnera un aperçu des tendances spatiales et temporelles de base sur le développement des condominiums à Halifax (Nouvelle-Écosse). Les traits étudiés incluent: le type, la hauteur et l'âge des bâtiments, les évaluations foncières, le nombre d'unités et les installations incluses. Les résultats montrent que le développement des condominiums à Halifax a commencé en banlieue dans les années 1970, en se propageant dans des zones plus centrales récemment. Le plus grand taux de développement a été connu lors d'une explosion d'immeubles résidentiels à la fin des années 1980, mais le développement a progressé au cours de la dernière décennie. Les immeubles de style appartement sont les principaux types de développements, avec une taille de construction moyenne de 46,52 unités. Portant une ressemblance aux autres marchés immobiliers au Canada, la croissance des condominiums semble maintenant correspondre à des tendances de centralisations, ceci comparées à ceux du développement du périphérique à la fin du 20e siècle.

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ACKNOWLEDGEMENTS

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CHAPTER 1

Introduction, Research Question, and Study Area

Introduction

Condominiums are getting a lot of attention in Halifax, and throughout Canada. A condominium

or "condo" for short is a form of legal ownership of property as opposed to a style of building

construction (CMHC, 2013). Condominiums play a large role in the contemporary city, including the

revitalization of the urban core and associated issues of gentrification. Condominium development in

Halifax has a relatively short history, first appearing in 1972, but their development is critical in

documenting contemporary urban residential conditions. This research focuses on the spatial and

temporal patterns of condominium developments in Halifax, Nova Scotia.

The housing market is highly significant in social and economic terms. People rely on housing as

shelter, which is an essential part of life, and many rely on housing for employment and growth in the

economy. Housing is part of real estate industry, which is defined by Statistics Canada as managing,

selling, renting, and/or buying, and appraising real estate. The real estate industry contributes 1.8% of

the total Canadian workforce (Statistics Canada, 2017; Statistics Canada. 2016). In Canada, the real

estate industry also accounts for 12.3% of total gross domestic product.

The 2011 National Housing Survey (NHS) revealed that more than two-thirds of Canadian

households own their dwelling (Statistics Canada, 2016). Condominiums are important to the housing

market as the NHS also revealed that one in every eight Canadians households lived in a condominium

(Statistics Canada, 2015). Their popularity is growing, with one in five Canadian households that

purchased a home between 2006 and 2011 choosing a condominium (Statistics Canada, 2016).

However, much of the condominium development is highly centralised in the largest census

metropolitan areas (CMA) of Canada; over 50 per cent were distributed between Toronto, Vancouver, and Montreal (Statistics Canada, 2015).

Local and national news media are reporting on physical and economic changes in the city that are influenced by condominium developments. They commonly report on issues surrounding the construction, as well as the economic factors associated with condominiums such as implications for tax bases and resale values. Local media is labelling the large scale construction occurring throughout the Halifax region as a 'building boom' (Corbett and Boon, 2016; Ward, 2016). Condominiums are identified as one of the main contributors to this building boom, with a new condominium market appearing in Halifax (Flower, 2015). The developments that the media covers are mainly located in the central areas of the Halifax region, giving the impression that condominiums in Halifax are more of a recent urban phenomenon.

Many Canadians spend a significant portion of their income on housing, making housing affordability a topic of public interest. The 2011 NHS found that within the top ten Canadian CMAs (excluding Halifax), the average estimated value of owner occupied condominium dwellings was $327,054, and other owner-occupied dwellings was valued at $472,241, substantially higher than condos. In the Halifax region, as of 2016, the aggregate price of a single detached home was reported at $320,656, and the price of a condominium was reported at $350,701, 11 per cent higher than in 2015 (Woodford, 2017). Having more expensive condominiums as opposed to a single detached dwelling in Halifax is interesting as it does not follow the earlier relationship of the top ten CMA condominium markets.

Research Question

The principal research question of this thesis is; what are the spatial and temporal patterns of condominium developments in Halifax? To answer this question in detail, I analyze condominium characteristics, including location, age, unit size, and amenities, along with their assessment values, and identify their distribution across the city. Through this research project I provide basic insight into the condominium market in Halifax. The housing market in Canada has been covered extensively in the media, and increasingly in the academic literature. The coverage and studies typically focus on the larger cities such as Toronto, Montreal, and Vancouver. My research focuses on a smaller city but aims to address similar issues that the large cities face.

Research Area

The Halifax Regional Municipality (HRM) is the economic hub of Atlantic Canada, with a population of 425,871 in 2016 (Statistics Canada, 2017). The HRM is an amalgamation of many communities, which has a large geographic extend that include rural, suburban and urban areas. It extends from Hubbards in the west to Ecum Secum at its eastern boundary, a distance of approximately 5500 square kilometres (Taplin, 2016). Since condominium developments are largely centered around the urban core, this research focuses on the urban part of the municipality. The study areas for this research are the peninsula of Halifax, as well as the surrounding urban/suburban mainland. Sub-regions within the larger area include Halifax Downtown, the North, and South End regions on the Halifax peninsula; Halifax Mainland North and South; Bedford, and the Inner and Outer Dartmouth regions (Figure 1.0).

Thesis Outline

The chapters that follow include: a review of literature focusing on condominium developments in Canada; the research methods and data sources; the results that show the spatial and temporal patterns of condominiums in Halifax and their characteristics and a discussion about what Halifax has been experiencing in condominium development over the last 40 years; and a conclusion. The literature

review explores the condominium developments in Canada, suburbanization and inner city

revitalization, and economic and social factors with respect to the housing market and cityscape. The

sources and methods chapter covers the data acquired for this project and how the datasets were

integrated in a Geographic Information Systems for analysis. The results chapter contains a series of

maps that present the outcomes of the spatial analysis and data tables documenting the development

of condominiums in Halifax. The final chapter concludes the thesis by summarizing the key findings

about the patterns of condominiums in Halifax, and compares the findings with other places, as

identified in the literature, and also suggests areas for future research.

Halifax Condominium Research Area

Hwy 102

Bedford

Larry Uteck Blvd

Bedford Hwy

Bedford Basin

Halifax
Mainland North

Lacewood Dr

Clayton Park

Howe Dr

Joeseph

Connaught Ave

Regatta Point

Northwest Arm

Cowie Hill

Halifax
North End

Novalea Dr

North St

Gottingen St

MacDonald Bridge

McKay Bridge

Universities

Halifax
South End

Halifax
Mainland South

Hwy 118

Victoria Rd

Circumferential Hwy 111

Inner
Dartmouth Area

MicMac Village

Downtown Dartmouth

Downtown Halifax

Outer
Dartmouth Area

Main St

Portland St

Portalnd Estates

Chebucto Rd

Quinpool Rd

Jubilee Rd

Coburg Rd

University Ave

South St

Robie St

Cogswell St

Spring Garden Rd

S. Park St

Morris St

Barrington St

Downtown Halifax

0   500 m

N
W   E
S

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);

Figure 1.1 Map of the Research Area in Detail for Reference Points

CHAPTER 2

Literature Review

Overview

This literature review covers the main drivers and characteristics of urban recentralization and intensification, and the role of condominiums in this process. It begins with suburbanisation because modern urban redevelopment is a response to suburban sprawl. It then reviews key aspects of urban recentralization illustrated with Canadian, and local examples. Residential densification is key to urban redevelopment, which involves attracting people back to living in the urban core, which in turn changes the socio-demographic make up the inner-city by mixing economic classes. This review includes an overview of that process, including gentrification and providing housing choices for the growing urban population. Densification requires medium and high density multi-unit residential development that fits into the small urban areas and commercial services for the urban population. Housing economics, and economic research specific to condominiums are also included.

From Suburbanisation to Inner-City Development

Suburbanisation is typically associated with the post-World War II period of urban sprawl led by a boom in single detached family homes. In his book *Crabgrass Frontier*, K.T. Jackson (1985) describes the history of suburbanisation and what it has become, specifically the highly populated outlying residential areas of North American cities. Suburbanisation grew with emerging cities and towns from wartime production areas, and government assistance to veterans that led to more affordable single detached housing options. In the postwar era people were able live affordably in planned towns that were accessible to the city by highway and railways. Land uses in these towns were typically segregated with residential areas that were separated from commercial and industrial areas, a common attribute

for the suburban areas (Jackson, 1985). During the post war housing boom, the mortgage loan system in the United States was providing affordable mortgages for 11 million new homes directed at single-family home construction in suburban areas, which made buying a home more attractive than renting (Duany et al., 2010).

Duany et al. (2010) characterise the five components of sprawl as the North American standard pattern of growth that include: 1. housing subdivisions; 2. shopping centres and big box retail 3. office parks; 4. civil institutions (i.e. large capacity high schools); and 5. road ways (i.e. large scale automotive infrastructure). It is the final component that has been the key to sprawl, as road networks connect all the other components that are so heavily reliant on the automobile. The traditional neighbourhood, in contrast, is the dominant pattern of habitation outside of North America. The traditional neighbourhood is represented by mixed land use, pedestrian friendly communities of varied populations and multiple scales (i.e. villages, towns, cities) (Duany et al., 2010). The traditional neighbourhood has six components: 1. A centre or core geographical area; 2. a short (five-minute) walk to ordinary necessities; 3. a street network of 'continuous webs' (i.e. grids); 4. narrow and versatile streets, safer for pedestrians; 5. mixed land use (not single zoning); and 6. special sites for special buildings (e.g. city hall at city centre). Duany et al. (2010) use these components to reveal how traditional neighbourhood form is more sustainable than its counterpart. Sprawl, segregated land uses consumers land at alarming rates, produces traffic and congestion, can be financially costly as people depend of expensive transportation and development requires new infrastructure; and historically speaking, suburbs create social inequality and isolation as they were middle and upper class residential areas.

In Canada, similar to the United States, the Central (now Canada) Mortgage and Housing Corporation (CMHC) opened access to mortgage funds in order to increase the available housing for men returning from the war and their families (Prouse et al., 2014). A new insurance program was

implemented which made housing ownership more affordable, and stimulated suburban growth (Prouse et al., 2014) at the edge of urban areas across Canada.

For context in Halifax, the opening of the MacDonald Bridge in 1954 between Halifax and Dartmouth facilitated a large amount suburbanisation while areas of Halifax and Dartmouth expanded as suburbs of the urban core (Prouse et al., 2014). Later in the 1970s, regulations on building height restrictions to protect views from Citadel Hill were suggested as a contributor for stifling commercial growth in the downtown core (Prouse et al., 2014). Height restrictions are not uncommon among other North American cities to protect esthetic view planes. There were also factors of land costs, and limited parking that influenced developers' decisions to build on the periphery of the urban core. Retail investment, people, and jobs, were suburbanized, as development in the downtown core was diminishing (Prouse et al., 2014).

Suburban and urban areas of cities are now seeing a social-economic shift. In contrast to the suburban social inequality and isolation described by Duany et al., (2010), that was part of the early post-war suburbs, recent research suggests that suburbs are becoming more socio-economically diverse. Moos and Mendez (2014) compare common suburban attributes in a study of the geography of income distribution to determine the extent of urban segregation in various Canadian metropolitan areas. They found that homeownership is not as strongly associated with higher income, because lower-income dwellers are also now residing in suburban areas. Previously, low-income residents concentrated in multi-family dwellings. Moos and Mendez (2014) suggest that in the large Canadian cities (e.g. Toronto and Vancouver), suburbs correlate less with high income because higher income earners are now moving to the urban core, drawn by the development of downtown condominium. (Moos and Mendez, 2014).

Current research investigating urbanization patterns in American and Canadian cities with populations larger than one million shows how planning models and policies have been attempting to recentralize cities after years of dissatisfaction with dispersed urbanisation and reliance on the automobile (Filion et. al., 2016). Recentralization as an alternative to urban dispersion demonstrates urban planners' commitment to encouraging sustainable development through a variety of means such as downtown revitalization, new town centres, regional centres, urban villages, and transit oriented development (Filion et. al., 2016). The planning strategy also focuses on growth in regional centres where supporting services and infrastructure are already available.

Urban recentralization involves re-development of older urban areas and can include revitalizing commercial activity and/or redevelopment of housing either for the same social-economic groups, or bringing a greater mix of socio-economic groups into an area. It can involve moving residents into new locations within the same general area either permanently to new housing or temporarily while existing housing is upgraded. In practice urban recentralization has mixed results. A study in a recently redeveloped mixed-income community of Toronto in Rivertowne (formerly Don Mount Court) investigating the effectiveness neighbourhood revitalisation, found that the introduction of new housing to the area had some less than satisfactory results (August, 2015). The relocated social housing residents said that the cramped living spaces, and dismantled social relationships from the redevelopment lead to more personal stress among tenants (August, 2015). The perceived failures of the new Don Mount Court seem to be blamed on bad design and poor planning (August, 2015), highlighting the importance for planners and community designers to plan carefully for neighbourhood revitalization. Don Mount Court is an example of neighbourhood redevelopment that keeps people in same area. It is a modern approach that contrasts with earlier redevelopment involving the breaking up of neighbourhoods and relocating people to other areas.

In Halifax, some of the earliest significant urban renewal occurred in the second half of the 20th

century (1958 -1963) on the North End peninsula following the Stephenson Report, which called for new

development in slum areas (Prouse et al., 2014). Gordon Stephenson was an international urban

planning expert hired by the city in 1957 to provide planning and development advice for Halifax urban

renewal. The result of his study was the conversion of 16 acres (against the recommended 8.8 acres) of

low-income housing in the Halifax urban core to predominantly commercial and business development,

centred on Scotia Square (Prouse et al., 2015). The redevelopment displaced 1600 residents, and

relocated them to social housing developments outside the core area in other parts of the north end of

Halifax and elsewhere in the city. A second peripheral low-income residential clearance and

redevelopment in the 1960s was the dismantling of Africville. The results led to a many social issues

centering on the alleged racism and discrimination towards African Nova Scotians (Prouse et al., 2015).

The negative outcomes of large-scale mixed social class re-development in the urban core have

been challenged in the Regent Park neighbourhood of Toronto (Rowe and Dunn, 2015). Regent Park is

the largest government mixed use housing (re)development project in Canada, incorporating subsidized

and condominium housing (Rowe and Dunn, 2015). The mix of low income and high income residents in

Regent Park has been a topic of high interest in the area of urban studies. Rowe and Dunn (2015)

interviewed some residents of the area for perspectives from both subsidized renters and private

owners. The results suggested that people were satisfied with the physical renewal of the

neighbourhood (it was the leading element affecting positive feelings about the redevelopment).

However, the persons being interviewed were reported to have 'communitarian' personalities with

greater positive attitudes towards the urban revitalisation project (Rowe and Dunn, 2015). The research

also had a small, non-random sample of interviewees, and was missing groups of tenants who had been

affected by the redevelopment (Rowe and Dunn, 2015).

In Halifax, like other Canadian cities, there is a shift away from the suburban driven paradigm of

growth with renewed interest in the urban core. Urban renewal policies and demographic patterns are

amongst the contributors to this shift, led by middle to high-income earners. Grant and Gregory's (2015) historical research of central Halifax census tract demographic and socioeconomic indicators demonstrate the inner-city transformations that Halifax has experienced over 60 years from just before the Stephenson report redevelopment to modern times. They elaborate on how the slum clearance of the mid 20th century had permitted commercial expansion in the downtown prior to a population rebound in the 1980s. They also found that Halifax is emerging as a twenty-first-century downtown city with a growing well-educated, affluent and childless demographic. Public policy and public investment were factors driving this shift, though growth of universities and changing cultural ideals about urban living are respected as contributors for transformation as well. Among the most important drivers of re-urbanization are recent changes in planning policies that encourage multi-unit residential developments in the city, including both rental apartments and condominiums (Grant and Gregory, 2015). Halifax has implemented a planning strategy that targets at least 75 per cent of new housing to be located in the regional centre and urban communities (Halifax Regional Municipality, 2014). The progression of the planning strategies is to be seen in the future, but with the reporting on the building boom in the city, successes of the strategy are to be expected.

Condominium Development

Skaburskis (1988) presents a foundational study comparing suburban and inner-city condominium markets with physical and socioeconomic characteristics such as building types, household and family income, previous family conditions, mobility patterns, and personal decision making characteristics as factors to his analysis. He shows that condominiums attract small families, and young couples without children, and to a lesser extent, higher-income families. Characteristics identified in Skaburskis (1988) research that are being updated throughout this thesis fall under locational factors (inner vs. outer city percentage) and physical characteristics such as condominium type. While the study provides a solid grounding for this thesis, it requires updating since the data is now largely out-dated.

Rosen and Walks (2015) investigate the Greater Toronto Area (GTA) condominium market, one of the largest condominium markets in North America. They label the rapid growth and intense migration to the condominiums in Toronto's surrounding suburbs as "condo-ism". The phenomenon of condo-ism has brought to light the changing responsibilities of high-rise residents. A point in their study is how condominium ownership can remove responsibility of some maintenance tasks from landlords and municipalities (as opposed to rental unit buildings). Private sector property development has been well-favoured by the provincial and municipal governments as the higher density condominium developments created infrastructure paid for by the developers, taking weight off of the government's shoulders, and in turn holds the developers accountable for some public responsibilities (Rosen and Walks, 2015). They also point out that developers retain ownership of some units, which they rent as opposed to selling them. Primary ownership may come from private investors, as well as the developers themselves seeking opportunity for long-term investment.

Condominiums have been included as a progressive housing option in changing the dynamics of city centres around North America (Rosen and Walks, 2013). Condominium ownership appeals to the desire to own property while also providing urban growth to metropolitan areas with higher density housing developments. Condominiums bring higher income earners into the city which changes the social-demographic make-up of the inner-city. For example, condominiums have been criticized for creating a form of gated communities given their tendencies of private urban governance (each building is run by condo-owners' associations) (Rosen and Walks, 2013)

House Conversion

Another aspect of urban redevelopment, with respect to condominiums is housing conversion. Housing conversion is where single unit residences are converted to multi-unit dwellings. A study by Lombardo (2014) elaborates on a long history of house conversions and neighbourhood change with the

particular case on Jarvis Street in Toronto. Jarvis Street is located in close proximity to the central

business district of Toronto, making it a prime real estate area in the 19th century with single family

mansion. By 1920 many of the single detached units were converted to boarding and rooming houses

and/or replaced as apartment buildings, which became living spaces to many unattached white collar

males taking advantage of the urban landscape and nearby amenities. The city of Halifax appears to

follow similar trends in the case of converting old homes in to multi-unit condominium dwellings.

In Halifax, there are many university students in the urban centre, which creates a big market

for room rentals. Inner city housing conversions into multi unit dwellings for rental accommodations are

especially common in areas with numerous universities and colleges, such as the South End peninsula.

Lee (2016) investigated the emergence of "quasi rooming houses" in Halifax and Dartmouth, which aim

to operate the rental of relatively affordable single rooms in a house, attracting the desires of university

students. Quasi rooming houses have been replacing "rooming houses", which have been undergoing a

phasing out process by dwelling owners to convert their old student rooming houses into single-family

homes, apartments or condominiums that are more valuable on the housing market (Lee, 2016). Lee's

study is well directed for a contemporary analysis in Halifax.

Social Dimensions of Inner City Redevelopment
Gentrification

The social geography of cities is essential when discussing the housing market and

neighbourhood changes; there are a variety of social factors that arise when researching this particular

topic. Socioeconomic classes contribute an important role to the formation of city neighbourhoods and

suburbs. Further research on neighbourhood change within Halifax from Prouse et al. (2014) focuses on

the socioeconomic factors throughout the Halifax Regional Municipality between 1970 and 2010. Using

the Gini Coefficient, which is a statistical measurement of variation or inequality, income in Halifax was

found to have the smallest increase in income inequality compared to the larger Canadian census

metropolitan areas (i.e. Toronto) that were found to have extreme polarization. Prouse et al. (2014) found that although there were no significant indications that average income levels had moved towards low or high-income extremes, there were distribution changes in some neighbourhoods. It was determined that formerly low-income neighbourhoods in Halifax became more mixed in income distribution, as opposed to a polarized situation (Prouse et al. 2014).

One of main social issues when discussing urban development that has a great relevance towards new urban core condominium construction is gentrification. Prouse et al. (2014) revealed that areas of the Halifax peninsula had been experiencing gentrification through income increase above the CMA average between 1980-2010. In Halifax, gentrification is considered a result of a growing knowledge based services, and decline in traditional economic sectors (Prouse et al., 2014). The North End peninsula is an area of great interest in terms of gentrification as it has experienced growth in condominium infill attracting new affluent residents, as well as significant increases in housing and rental prices (Prouse et al., 2014). In the North End, condo prices increased considerably in comparison to the South End peninsula, where gentrification was considered more as 'incumbent upgrading' rather than being influenced by substantial socioeconomic changes (Prouse et al., 2014).

Gentrification has been focused on Gottingen Street, which over many years has been transforming form a predominantly residential street to a commercial hub with close proximity to the downtown core (Roth and Grant, 2015). Roth and Grant's (2015) findings mainly hold the commercialization of Gottingen Street responsible to the gentrification of the area, but also contribute the development of condominium complexes as a notable factor. Condominiums provide relatively affordable housing option near the downtown core. Though in the later stages of commercialization in the area, new and more expensive developments were gentrifying factors by also attracting higher-end businesses, raising land value, and attracting more affluent people (Roth and Grant, 2015).

Across Canada, larger cities such as Toronto and Vancouver experience gentrification at a much larger scale, with the prevalence of high rise condominiums as a considerable indicator. In Toronto, Leher and Wieditz (2009) find that the condofication of Toronto is the reason for a growing segregated city. Using urban planning policies in Toronto as catalysts for intensifying development in the city has helped high density dwelling spaces such as condominiums thrive as relatively affordable inner-city home ownership options, especially for young well educated professionals (Leher and Wieditz, 2009). Davidson and Lee's (2010) condominium analysis used Vancouver, British Columbia as a prime comparison for gentrification among urban neighbourhoods against other large cities in Great Britain. The Vancouver neighbourhood of Fairview Slopes was used as a leading example for urban center gentrification analysis, and their study questions whether the neighbourhoods are legitimately experiencing gentrification or simply other phenomenon such as "reurbanization" or "residentialization". One of their significant arguments is whether some of these cases are experiencing population displacement, or should it be considered population replacement. Some of the arguments that they present on population migration is useful to consider when looking at condominium developments linked with neighbourhood characteristics and historic neighbourhood changes within Halifax.

Building on research of Rosen and Walks (2015), is Webb and Webber (2016) researching the 'anticommons' issue of condominium stakeholders in focusing on lock-in effects, such as long term impacts of condominium developments; lacunae effects, which looks at lack of efficiencies in condominium governance; and neighbourhood effects such as the persistency of urban revitalisation. Their findings indicate that increasing land values, quality of condominium construction, and demographic shifts are contributing to the stress on urban areas to address the implications of urban revitalisation through condominium growth. Halifax's condominium market is much smaller than other Canadian metropolitan areas such as Vancouver, and Toronto. Regardless of being a smaller city,

condominiums are still play a role in urban growth and recentralization, therefore it is important to understand their contributions on multiple scales.

Immigration

The impacts of immigration changing the social geography of Canadian cities began after the 1967 Immigration Act, which allowed more immigrants to arrive in Canada that were non-European citizens. Today, most immigrants arrive from Asia (Ley and Germain, 2000). Canadian immigration statistics show that the high levels of immigration over the past couple of decades have been narrowed down to a small number of major cities across Canada such as Vancouver, Toronto, Montreal and Ottawa (Ley and Germain, 2000). Between 2001 and 2011, Halifax admitted 11,855 immigrants, a small fraction of the total number of immigrants arriving in Canada, compared to other Canadian metropolitan areas. The majority of that number (70 per cent) arrived between 2006 and 2011 (Statistics Canada, 2013).

Canada admits roughly 225,000 immigrants annually, with adults naturally seeking social necessities such as employment and housing. At the time of the housing bubble leading up to 2008, housing prices rose abruptly in comparison to per capita incomes, which was argued by some that rapid immigration was to fuelling the increase in prices (Akbari and Aydede, 2012). Akbari and Aydede (2012) used an econometric model with a variety of demand side variables and supply side variables, to determine that on a national scale, immigration was not necessarily creating "inconveniences" (price increases) for new home buyers, though also do not create a capital gain for existing homeowners.

Ley and Tutchener (2001) had conducted an earlier study on housing prices coinciding with immigration and globalization in eight Canadian metropolitan areas (including Halifax) between 1971 and 1996. Their study found conformity at the beginning of the research timeframe and large disparities towards the end. Halifax's price trajectories did not reach the rapid increases that Toronto and

Vancouver saw, possibly due to the fact that at the time those larger cities were experiencing price inflation and population growth from immigration (Ley and Tutchener, 2001). As mentioned earlier, in comparison, Halifax does not have to accommodate the large influx of migration to the city as the larger Canadian cities do. However, Halifax still accommodates a considerable number of immigrants, yet would likely not consider that immigration impacts the market in such a substantial way. Further research would be necessary to quantify how many immigrants are residing in condominiums around the urban core, to have a greater impact on this research topic.

Housing Economics

Housing market economics is an important topic of discussion especially after the global economic recession, began in the Fall of 2008, caused by bad loans in the housing market and poor banking systems (The Economist, 2013). The result was massive government bailouts of the financial industry funded by tax payers (The Economist, 2013). The United States and the economies of countries around Europe were negatively impacted the most by the recession, and Canada was recognized internationally for not experiencing any major failures (Walks, 2014). However, Walks (2014) describes the renowned 'Canadian model' of appropriately regulated and prudent housing and financial systems were not what they seemed to be, especially as Canada began to experience large inflation in the housing market in 2011. Walks' (2014) research considered four main attributes: Canadian policy history during inflation; Canada's exceptionalism propagated by mainstream media; a critical analysis of Canadian policy following the global financial crisis; and implications of Canada's experience with mortgage markets and increasing household dept. It was determined that policy played a large role through subsidizing mortgage securitization for easier access to credit, dropping lending standards which stimulated demand, and also debt, though policies re-adjusted after the crisis (Walks, 2014). Condominiums are directly involved with the housing market crisis as they are a form of real estate ownership similar to single dethatched houses and vulnerable to market shifts.

Although housing market economic models have been in question over the last couple decades, though the expected utility model of housing market behaviour and the hedonic housing price model remain widely used (Clark, 2011). The expected utility model is related to expected value of property as an investment for the future, and the hedonic model in housing focuses on characteristics of property (i.e. size, condition, amenities). As economic behaviour changes over time, some economists are rethinking the current models to better understand the future behaviours and functions of the housing market (Clark, 2011). The housing market in the Halifax, including condominiums, follows the standard economic models discussed by Clark (2011). The hedonic analysis of land values for the Halifax area follows the conventional characteristics and variables that account for their overall value with respect to market demand (Asabere and Harvey, 1985). The characteristic such as zoning, lot size, services, centrality, neighbourhood, traffic, and other urban explanatory variables are all included into the land value for typical Canadian and United States city land markets (Asabere and Harvey, 1985).

The Property Valuation Services Corporation (PVSC), which provides all of the property assessments for Nova Scotia, aims at delivering accurate assessments through different approaches depending on the type of property. The PVSC uses the cost approach, income approach and direct comparison approaches when evaluating property assessments for different categories of property (i.e. residential, commercial, agricultural, etc.) (PVSC, 2016). The assessment data from PVSC is used to analyze condominium assessment values throughout this thesis. Access to land value data, as well as geographical analysis of land price data, is a relatively thin area of research. However, some interested geographers such as Spinney et al. (2010) document their experiences with lack of land price data especially in spatial terms, which in turn requires the need to create one's own database. Millward (1983), similarly to this thesis, in a much earlier study had collected data and performed spatial analysis on metropolitan Halifax single family home land value, and found the largest areas of high valued (>$120,000) land occurring in predominantly in the south-end of the Halifax peninsula.

<u>Condominium Values</u>

Diewert and Shimizu (2016) provide a framework for calculating the value of condominium sales (particularly apartment style) through a hedonic regression model. Though their research was based on Tokyo condominiums, the general concept could be transferred across regions as it uses condominium characteristics as substantial variables. They found that the most relevant characteristics in the price model were: floor space area and height of individual units; total land area of the building; the sum of units in the building; the number of storeys and height of the building; the age; and the amount of excess land corresponding with the complex (Diewert and Shimziu, 2016). This thesis with concentration on the metropolitan area of Halifax, incorporates a variety of the general building characteristics outlined in their research.

Condominiums have also been researched in the case of following housing economics with consideration to return rates on condominium conversions. In the United States, Crone (1988), investigated the probabilities of condominium conversions of multi-unit complexes of the 1970s and 1980s based on market fluctuations on rent and housing prices. The results of the research suggested that condominium conversions in the 1970s contributed to a more efficient allocation of housing supply between rental and ownership markets in the housing industry (Crone, 1988).

CHAPTER 3

Methods and Data Sources

Data Collection

Condominium Characteristics Data

Numerous data sets were complied for this project. The primary table, containing a listing of all condominium developments across the Halifax Regional Municipality up to October, 2010 was provided through a master's independent study (Watson, 2010). This dataset included condominium development information and characteristics such as: the condo corporation number, registration date, condominium building type, number of units, number of storeys, and civic addresses. The table was updated for additional condominium corporation registrations after October, 2010. Obtaining data on condominiums, such as number of units in the development, registration date, civic address, condominium corporation number, and the parcel identification number (PID), required visits to the local Nova Scotia Land Registry Office (LRO) in Dartmouth, Nova Scotia. Additional attributes such as old house conversion, commercial component, number of storeys, and low/high-rise (for apartments) were added to the dataset following the primary characteristic data collection.

Updating Watson's work required visits to the LRO where visitors were permitted to use the online database service from their computers at the cost of a small fee, which entitled the user to access land registration records for all property in Nova Scotia. The condominium property data from the LRO was transcribed into notes, and then manually transferred into a master MS Excel spreadsheet, which had already contained the previous data from the Watson (2010) master's thesis. The LRO data collection involved individual searches in a numerical sequence of condominium corporation numbers, which are assigned numbers in sequence with previous development registrations in their respective county (i.e. Halifax, Lunenburg, Cape Breton, etc.). The results page for each search included a set of

columns and rows for each unit in the condominium corporation. The result displayed columns of

information which included: the parcel identification (PID) of the unit; the owner's name (individual or

business) and their mailing address; the civic address of the unit; the geographic service area; an

Assessment Account Number (AAN) and the property assessment value; and the year and type of use

(i.e. residential or commercial). The search results also included the condominium common parcel

identification number for the entire development, which could be examined for further details on

another page, and gave a generalized list of the condominium units and their associated PID (i.e.

PID: 12345678 – 123 Smith Street, Level 3, Unit 303).

The attributes of old house conversions, commercial components, and storey sizes of

developments were determined by using Google Maps – Street View to identify these characteristics,

accompanied by personal local knowledge of the development features. I identified old house

conversions based on their physical building properties. Commercial components were indicated if

commercial units were visibly present, typically on the ground floor of apartment condominium

developments. I calculated storey sizes of condominium developments by counting the window levels

and/or balconies visible around the building. Visible basement units were considered as a half-storey. To

verify the quantity of units in a condominium development in some cases of uncertainty (i.e. a building

that may not look like it had the capacity of X amount of units), I used the online property search engine

offered by View Point Realty Services Inc. View Point offered a wide variety of attribute data such as

civic addresses, PID numbers, assessment and sale values, which was useful for verifying of other

attributes as well. Problematic cases of identifying features were also discussed with my supervisor for

verification.

The data used for the analysis of condominium assessment values in this thesis was acquired

from the provincial assessment agency in tabular form. The assessment data is recorded by the Property

Valuation Services Corporation, which assesses and records all of the properties in Nova Scotia. The

assessment data acquired for analysis in this thesis included the assessment values for all of the

properties in the Halifax Regional Municipality, which had to be filtered down to condominium units

through a matter of processing methods when building the GIS.

Data Cleaning
Characteristics Cleaning

Watson's (2010) table of condominium records proved to be a terrific source of information,

though it required modifications of the condominium characteristics and needed to be georeferenced.

For example, Watson's (2010) dataset had used a method of identifying dwelling types, which were

slightly different from the official condominium dwelling types that were described by the CMHC. It was

also important to verify at the LRO using a simple condo corporation search that the condominium

developments included with Watson's table were still active in order to report accurate up-to-date

condominium attribute data. The new database included the attributes: condominium corporation

number, parcel identification number, registration date, condominium type, old house conversion,

commercial component, number of units, number of storeys, high-rise or low rise (apartments), civic

address, and geographic service area.

Assessments Cleaning

A cumulative average of assessment values for individual units in each development, and an

aggregate assessment value of all units per development was calculated. There were minimal

modifications that needed to be done to the assessment data in order to retrieve proper results for

condominium unit assessments, since the data was already accurate as it is used for tax purposes.

Developers for condominiums can sell property ownership deeds for units for different purposes such as

living units, parking spaces, and storage units. The different types of property are assessed individually, as storage and parking spaces had much lower assessment values than living spaces. Therefore, in order to retrieve the assessment values for living units only, I filtered out the assessment values that were valued at anything lower than $50,000. For the years 2012 and 2016, I took the assessment data for all of the units within the research area and created a pivot table in MS Excel to group them by their condo corporation number in rows, and the assessments in the value field. I then used the average and sum tools to calculate the average and total value of the developments.

Building the GIS

Plotting Characteristics Data

The condominium characteristics dataset was incorporated into ESRIS's GIS 10.4. The condominium developments were geocoded using the composite address locater provided by the Maritime Provinces Spatial Analysis Research Centre. The composite locater retrieved the civic address, postal code, and geographic service area attributes from the characteristics table data in order to plot them into the GIS. All of the addresses in the dataset were matched.

Plotting Assessment Data

The provincial tax assessment database acquired from the government contained multiple sheets that were accessed to link the data. The datasets that were used for further manipulation to extract specific details included primary tables: HRM properties, master PID sheet, related PIDs (i.e. condominium units in an apartment related to the common parcel), and historical assessment values from 2012 to 2016. In order to extract specific data, multiple datasets had to be joined together based on a common attribute(s) between the datasets. The joining procedure was performed by:

I. Table join between the 'HRM Properties' dataset with the PID master dataset based on common PIDs. From the joined result, the 'Parcel Type' of Condominium Common (filtering the properties to exclusively condominiums) was extracted for further purposes of dataset joining procedures.

II. In the 'Historical Assessment' values table, the year 2012 and 2016 were extracted on individual

procedures in order to use for comparison of values over time.

III. Table join between the 'related PIDs' dataset with the extracted dataset from the year of

interest (2012/2016) based on the common attribute of related PID numbers for individual

units.

IV. X and Y coordinate fields were added to the dataset in order to create point locations for the

assessment values. The coordinates were referenced to the world UTM projection NAD83.

V. The dataset with year and relatable PIDs were then joined with the HRM condominium

properties table based on common PIDs, and exported the resulting dataset for further analysis.

Table 3.1 Main Attributes of Acquired Datasets

Watson Table
Condo Corp Numbers
Characteristics
Property Addresses

HRM Property Data	**Historical Assessment Values**	**PID Master Table**	**PID Relate Table**
Common PID	PID Relate	Common PID	PID Relate Key
	2012	Parcel Types	Condo Unit PIDs
	2016		

Master Data Table

After the condominium developments and assessment datasets were plotted and

georeferenced, I then exported their attribute tables in order to create one master dataset containing

both the condominium characteristics and assessment values. I put together these tables by using the

vlookup function in Excel to join characteristics and assessment values based on their common condo

corporation number. Some condo corporations had multiple addresses that were different from the

main registered address. For example, a condominium corporation that built two apartment buildings would be registered under one address, but hold two separate civic addresses (i.e. building A and building B on the same development lot), they would be plotted as two separate points, but only the characteristics of the registered address would be shown on the map. Some townhouse, duplex and apartment complexes would also be registered under one address, but would be significantly separated over the research area. Therefore, I would assign one address to individual streets within the condominium corporation. There were 43 supplementary addresses (non-registered addresses) that had to be added manually into the master dataset from the condominium characteristics data set to the master dataset.

Data Analysis

With all of the points uploaded into ArcMap, I could perform a series of categorization analyses. The data visualisation tools used for spatial and characteristic analysis among the variety of condominium attributes and assessment data included: graduated symbols; graduated colours; drawing polygons for defined territorial boundaries and choropleth maps; and 'fishnet' polygons for quadrat analysis. Quadrats were created because they place an objective area layer over the data for analysis, as opposed to only using predetermined boundaries.

Condominium Characteristics

Condominium units were categorized with graduated symbols through five classes using the quantile classification method to group the features into their respective class. The quantile method assigns equal quantity of data values into each class. The five classes of units ranged as: 2-6, 7-14, 15-36, 37-57, and 58-200 units. To analyse total units within each region, I spatially joined the region boundaries shapefile to the master data table, as it automatically calculated the sum of units in its data field for each region. I classified each region manually using four classes: 682 - 700, 701 - 1200, 1201 - 1700, and 1701 - 2326. These four classes were chosen because each was able to fit a relatively even

amount of data in each class. A supplementary choropleth density map was created as well; the GIS

calculated total units divided over the region area in square kilometres to determine density. I classified

this data again into four classes, this time using the Natural Breaks algorithm in ArcMap, which identifies

class breaks that best group similar values and maximize differences between classes. The four classes in

units/areas in Square kilometres are: 12.82 - 46.23, 46.24 - 88.97, 88.98 - 188.1, and 188.2 - 720.5.

Using the Create Fishnet data in ArcMap, a quadrat of cells that each represented 500 metres x

500 metres, was laid over the research areas reaching to the extent of condominium points in the GIS.

Each quadrat was then spatially joined to the condominium feature class in order to retrieve the

characteristics data. For each 500 metre x 500 metre quadrat the sum of units was automatically

calculated. The total units were classified using the quantile method into five classes: 2-23, 24-52, 53-98,

99-154, and 155-394 total units per 500 metre x 500 metre block.

I used a graduated symbol scheme to analyse apartment storey sizes. A manual classification

method was used to group the features into four classes: 2-3.5, 4-9, 10-15, and 16-21 storeys. The first

classification range of 2 - 3.5 storeys was used to reflect low-rise condominium (under four storeys

high), and the rest of the classes were equally divided up to a maximum of 21 storeys high. High an low

rise condominiums were identified and plotted accordingly.

Average Assessment Values

Assessment values throughout the data analysis process were divided into classes that were

rounded to more esthetic numbers for the map reader. The average assessment data for 2016 was

plotted and classified in ArcMap and were manually classified into seven different value ranges. The

average assessment values for condominiums in ranged between $63,911 and $776,783. The lowest

classes would represent values smaller than $100,000. The next classes included values within a

$150,000 range, and the following middle classes which had the most data were classified into

ascending $50,000 intervals. The highest values which had assessment averages greater than or equal to

$300,000 were organized into two classes, with the lower containing the most data. A similar method was used to identify the difference in assessment values between the timeframe of the years 2012 – 2016, which ranged from a depreciation of -$23,721 to an appreciation of +$111,600. Condominiums that carried an appreciation up to $40,000 were organized into three classes, and the remaining four classes were organized based on how dispersed the data was. However, within this method, data for condominiums registered following 2012 did not exist in the 2012 assessment recordings.

Total Assessment Values

For the aggregate assessment values, another quadrat of cells that each represented 500 metres x 500 metres, was laid over the research areas reaching to the extent of condominium points in the GIS. Each quadrat was then spatially joined to the condominium feature class in order to retrieve the 2016 assessment data in the master database attached with it. Within each 500m x 500m cell, the total assessment value of each development would be calculated into a sum value. The total assessment values were manually classified into five different value ranges, ranging from $796,400 to $122,303,900. The first two classes carried the most data and were organized up to $5 million, then an additional $10 million. The following three classes were organized by ascending values of $40 million to before reaching the highest total. A similar method was used to organize the 500m x 500m areas of appreciation and depreciation in total assessment values between the timeframe of the years 2012 to 2016, which ranged from -$1,746,500 to +$14,258,000. This range required seven classes to fit the greater dispersed data. Depreciated values were split into two classes with the break at -$10 million. The appreciating values were split into five classes where the most data had a shorter gap between values breaks than the larger appreciations.

CHAPTER 4

Results

Timing of Condominium Development

The first condominium corporation in Halifax was registered in 1972. Over the 44 years since, there have been periods of high activity followed by slower periods of condominium development (Figure 4.1 and 4.2). The general trend from 1972 to 2016 is slightly slowing in activity, as shown by the trend lines. The maximum number of condominium developments per year was 25 developments in 1987, the minimum was zero, in 1980. The average number of condominium developments per year is 6.44.
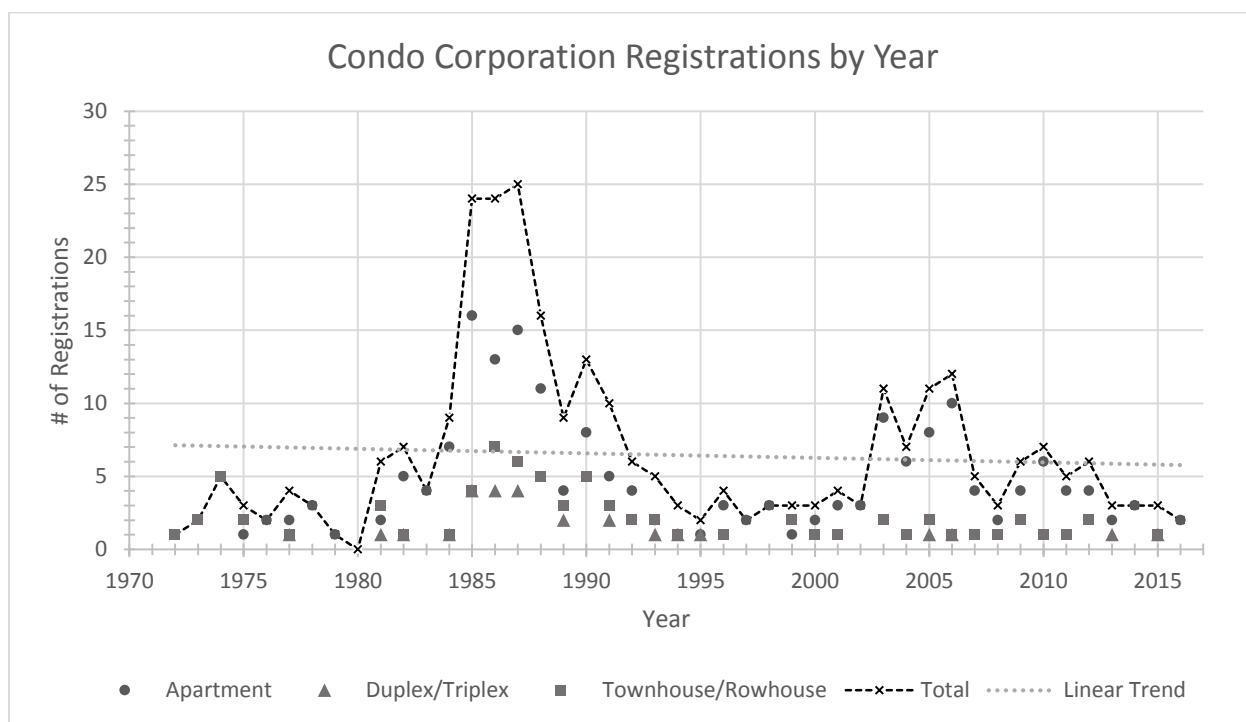

Figure 4.1 Number of Condo Corporation Registrations by Year
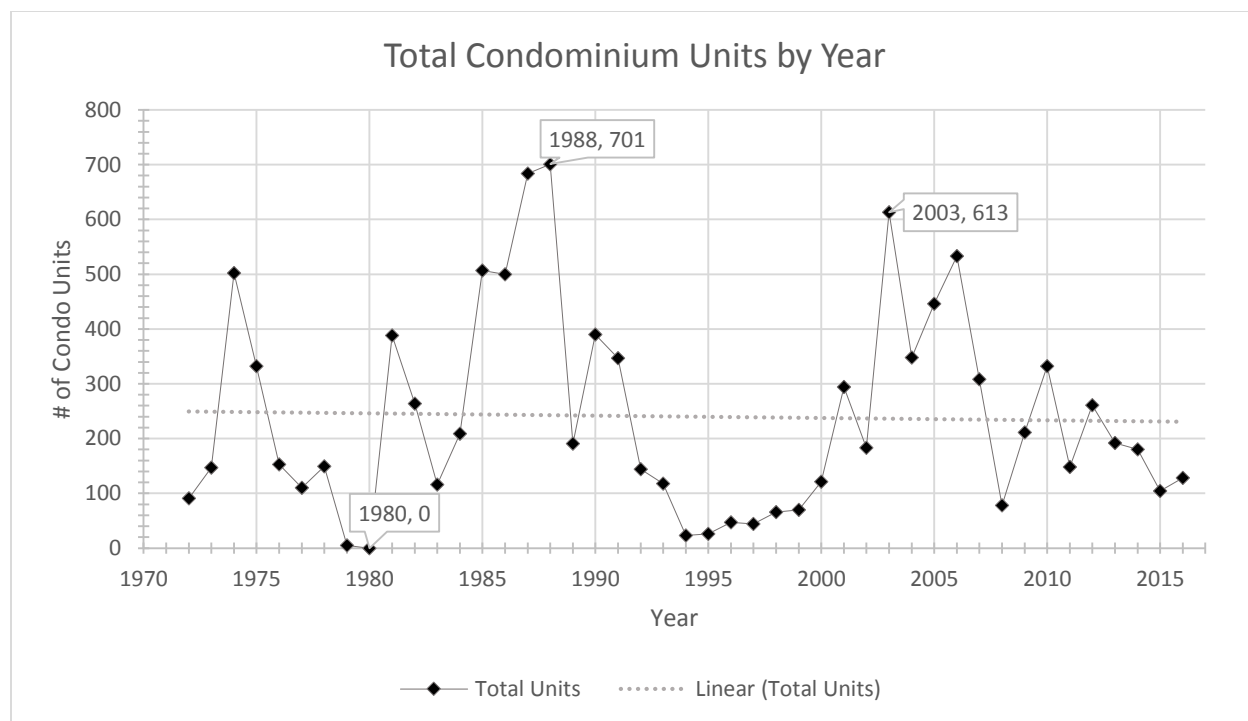
Figure 4.2 Total Condominium Units by Year

The first condominiums in Halifax were built in Clayton Park, on the Halifax North Mainland, and

consisted of townhouses and rowhouses. In 1975, the first apartment condominium complexes were

built on the Halifax peninsula in the North End near the McKay Bridge. Construction continued during

this decade in the same areas. Other developments concentrated on the Halifax North Mainland in the

Clayton Park area. Smaller numbers of new developments were also located on the Halifax Peninsula in

the South End, in Dartmouth at MicMac Village, and in Bedford (Figure 4.3).

Between 1985 and 1987 was the most prolific period for condominium development, with 49%

of total condominium developments registered during this time (Table 4.1). This boom is well

distributed across the research area with substantial clustering on the north side of Lacewood Drive in

the Halifax North Mainland, on the Halifax peninsula in the North End near the McDonald Bridge, and

the South End and Downtown areas along the Coburg Road and Spring Garden Road with concentration

around the downtown and university areas. Other developments occurred across Dartmouth with small

clusters occurring along Portland Street and in the Portland Estates area. There were also developments in Bedford in the North Basin area, and in a small cluster on the Halifax South Mainland at Regatta Point. The following decade (1992-2001) had relatively low activity across the research area, with developments mainly appearing in the Halifax South End peninsula and Downtown areas.

The first full decade of the 21st century was quite active for condominium development and the distribution of activity was fairly even across the entire research area. There are clusters of development on the Halifax peninsula North End near the MacDonald Bridge, in Downtown Dartmouth, at the end of Larry Uteck Boulevard, and in Portland Estates. Today condominium development is generally evenly distributed between Dartmouth, Bedford, and the Halifax peninsula (more directed towards the South End). Nine of the 17 developments in the latest decade are near or in the downtown cores of Dartmouth and Halifax.

Table 4.1 Percentage of Total Developments and Units by Decade

	1972-1981	1982-1991	1992-2001	2002-2011	2012+
Developments	9%	49%	12%	23%	6%
Units	17%	36%	8%	29%	8%
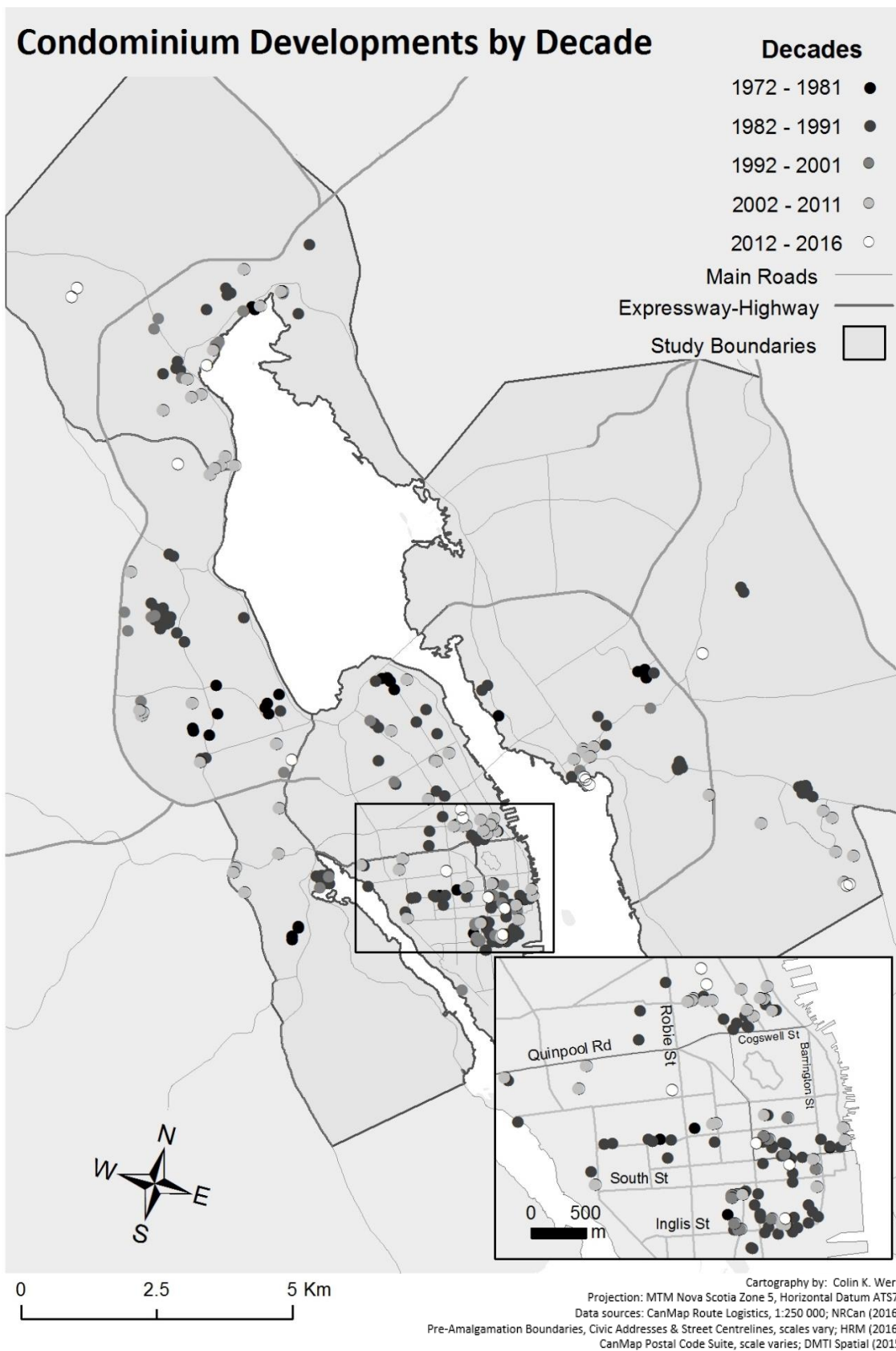
Figure 4.3 Condominium Developments by Decade

Types of Condominiums

There are three general types of residential condominiums within the research area:

townhouses and rowhouses, duplexes and triplexes, and apartment style condominiums. Of the 290

developments within the research area, the dominant type is apartment style condominiums with 189

condominiums, and 8793 units; then townhouses and rowhouses with a total of 74 buildings and 1927

units; and duplexes and triplexes with a total of 27 buildings and 114 units (Figure 4.4 and 4.5).

Figure 4.3 Pie Chart of Condominium Developments by Type

Figure 4.4 Pie Chart of Total Units by Type

Townhouse and Rowhouse

The majority of townhouses and rowhouses are located on the Halifax side of the harbour with

concentrations across the entire peninsula and in both mainland regions. Townhouses are not a very

popular style of condominium in Dartmouth or Bedford. However, there are a few developments in the

Portland Estates region where there is a small cluster of townhouses and rowhouses. On the Halifax

side, the main areas for townhouses and rowhouses appear to be north of Lacewood Drive and in

Clayton Park on the North Mainland, and in Cowie Hill and Regatta Point on the South Mainland region.

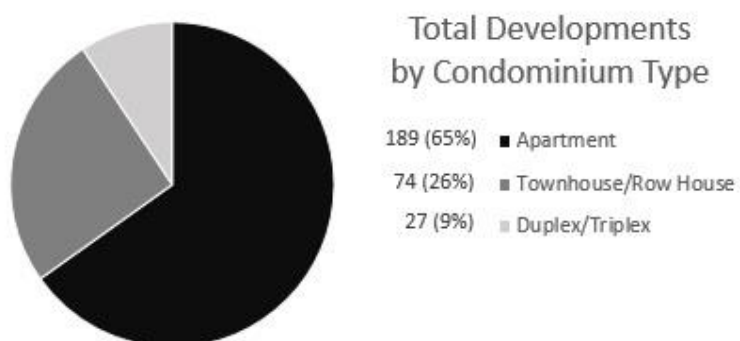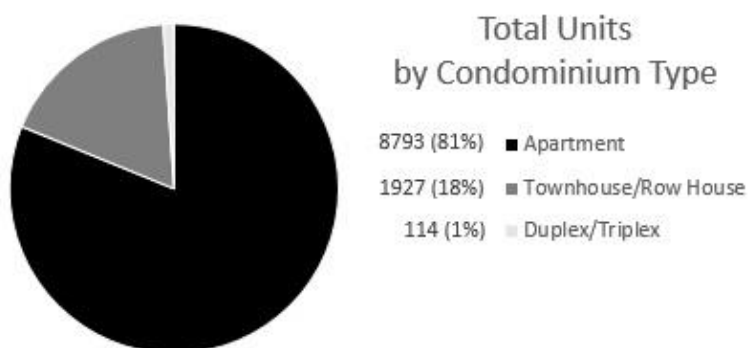On the Halifax peninsula, townhouses and rowhouses are highly concentrated into clusters near the

McKay Bridge, and in the area near the McDonald Bridge. (Figure 4.6)

Duplex and Triplex

Duplexes and triplexes are the least common condominium type of the three styles, and are

unevenly distributed across the entire region. They are largely concentrated on the Halifax peninsula,

however, there are a couple individual duplex and triplex condominiums that reach Bedford, Dartmouth,

and the Halifax North Mainland. On the peninsula, duplexes and triplexes are highly concentrated in the

South End around the university and downtown areas (Figure 4.7). Duplex and triplex condos have a

strong relationship with old house conversions as just over 65 per cent of duplex and triplex type condos

are old house conversions. Many are concentrated in the downtown and university areas could suggest

that they are being rented to students or are attracting people looking for ownership options near the

downtown amenities.

Apartments

Apartments, which are the most common condominium type of the three different residential

dwelling styles, are well-distributed across the entire research area. There appears to be considerable

concentration of apartments in each region. The largest clustered areas of apartments are found in

Sherwood Heights, and on the Halifax peninsula in the South End near the universities and the

downtown area. Smaller, tighter clusters are located around the Portland Street area of Dartmouth. The

entire Halifax peninsula contains the largest concentration of apartment style condominiums with 82 of

the 189 developments (Figure 4.8).
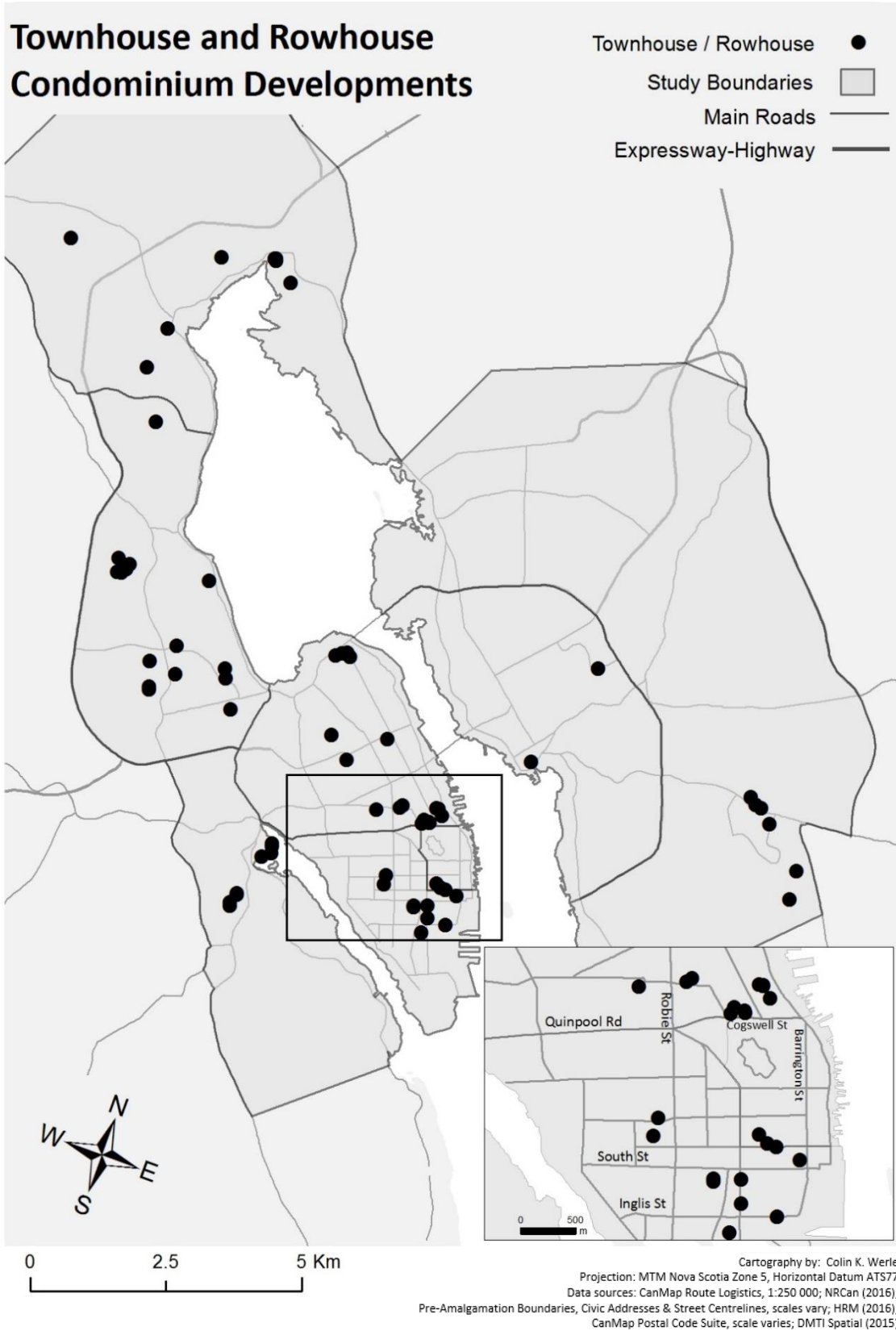
Figure 4.6 Townhouse and Rowhouse Developments
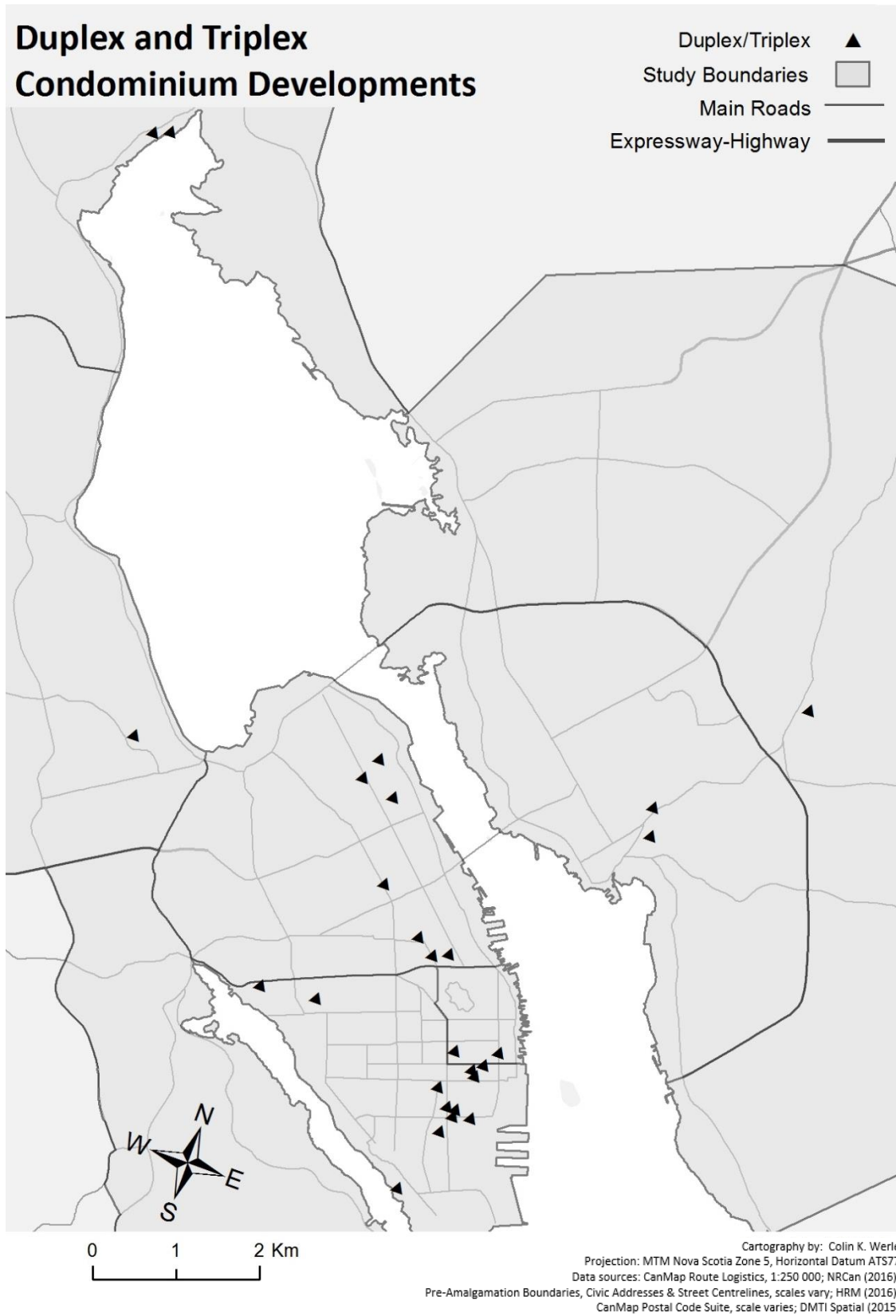
Figure 4.7 Map of Duplex and Triplex Developments

Apartment Condominium Developments

Apartment ■
Study Boundaries ▢
Main Roads ───
Expressway-Highway ━━━

Quinpool Rd
Robie St
Cogswell St
Barrington St
South St
Inglis St

0   500
m

N
W   E
S

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)

Figure 4.8 Map of Apartment Developments

Building Heights

Condominium apartment buildings in the two classes, under 4 storeys, and 4-9 storeys are well distributed across the entire research area. Low rise apartments (buildings under 4 storeys) are common on the Halifax peninsula in the South End, especially with major clustering in the university area. There is some further distribution among the other regions of the research area with relatively high concentration such as the large cluster north of Lacewood Drive on the Halifax North Mainland, and along the Bedford waterfront area. Another small clustering area occurs along Portland Street in Dartmouth. There are 96 low-rise apartment buildings across the research area, which make up 51 per cent of the total between the two classes (Figure 4.10).

High rise apartments appear to have a greater distribution across the research area than low-rise apartments. Concentration areas include the Bedford west basin region, Halifax North Mainland, Downtown Dartmouth, and on the Halifax peninsula in the South End. In 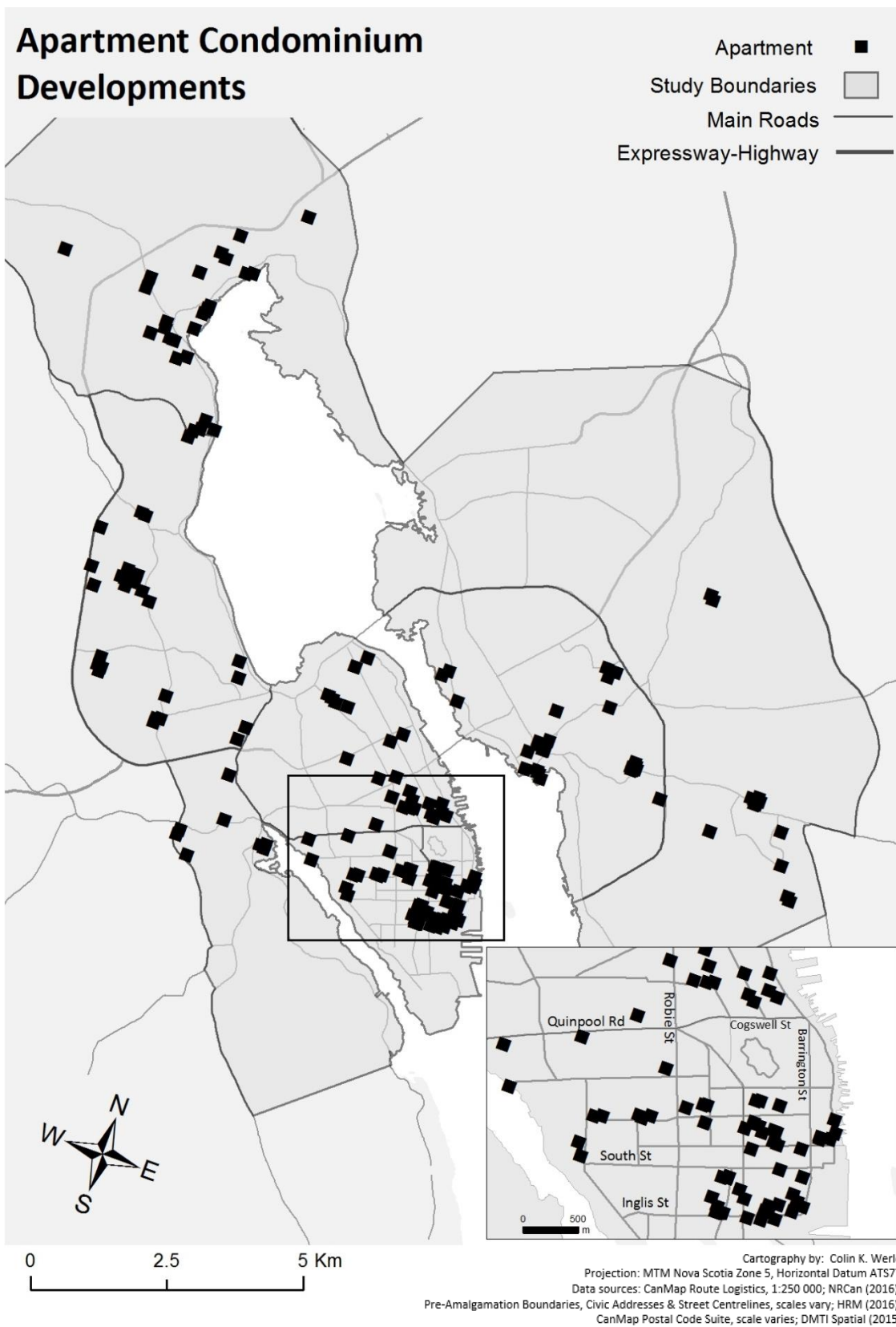the South End, high rise apartments are following a linear spatial pattern along Coburg Road and stretching to the end of Spring Garden Road into the downtown area. Also on the Halifax peninsula, the North End has a concentration of high rise condominiums in the area near the McDonald Bridge. There are tight clusters of high rise apartment complexes scattered around the research areas such as Clayton Park west, on the Bedford waterfront, at the Bedford Highway end of Larry Uteck Boulevard, and on the Downtown Dartmouth waterfront (Figure 4.10). There are 93 high-rise apartment buildings across the research area, making up the other 49 per cent between the two classes.

Condominium apartment buildings with heights between 10 and 15 storeys are concentrated in the urban core. Elsewhere, this class of high-rise is seen close to the peninsula boundaries, and in a few instances in the inner Dartmouth area. The highest class of 16 – 21 storey apartment buildings are only in the Halifax South End and around the Downtown area. (Figure 4.9)

Number of Stroreys for Apartment Condominium Developments

Storeys

2 - 3.5
4-9
10 - 15
16 - 21

Study Boundaries
Main Roads
Expressway-Highway

Quinpool Rd
Robie St
Cogswell St
Barrington St
South St
Inglis St

0   500
m

0   2.5   5 Km

N
W   E
S

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
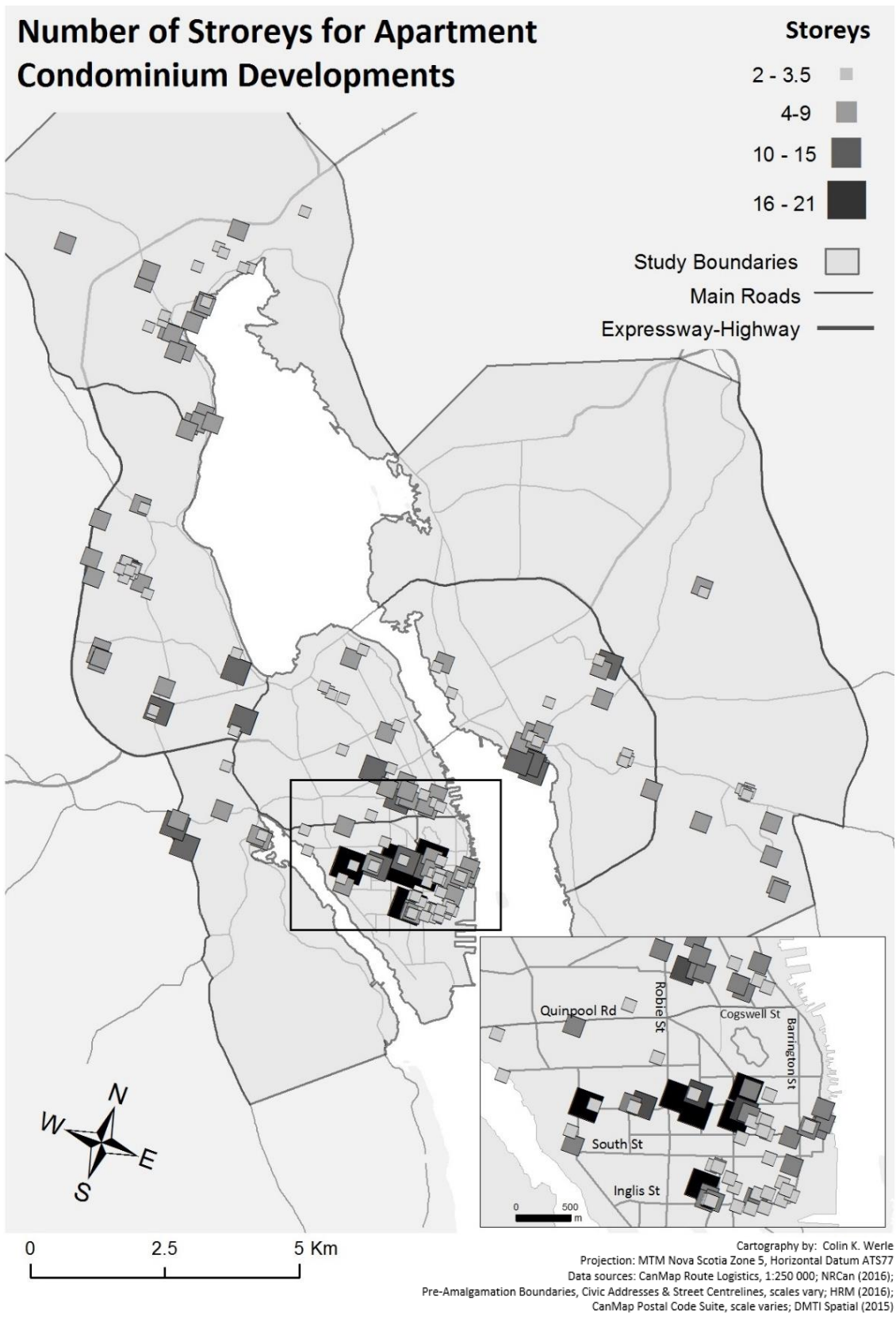CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)

Figure 4.9 Map of Number of Storeys in Apartment Condominiums
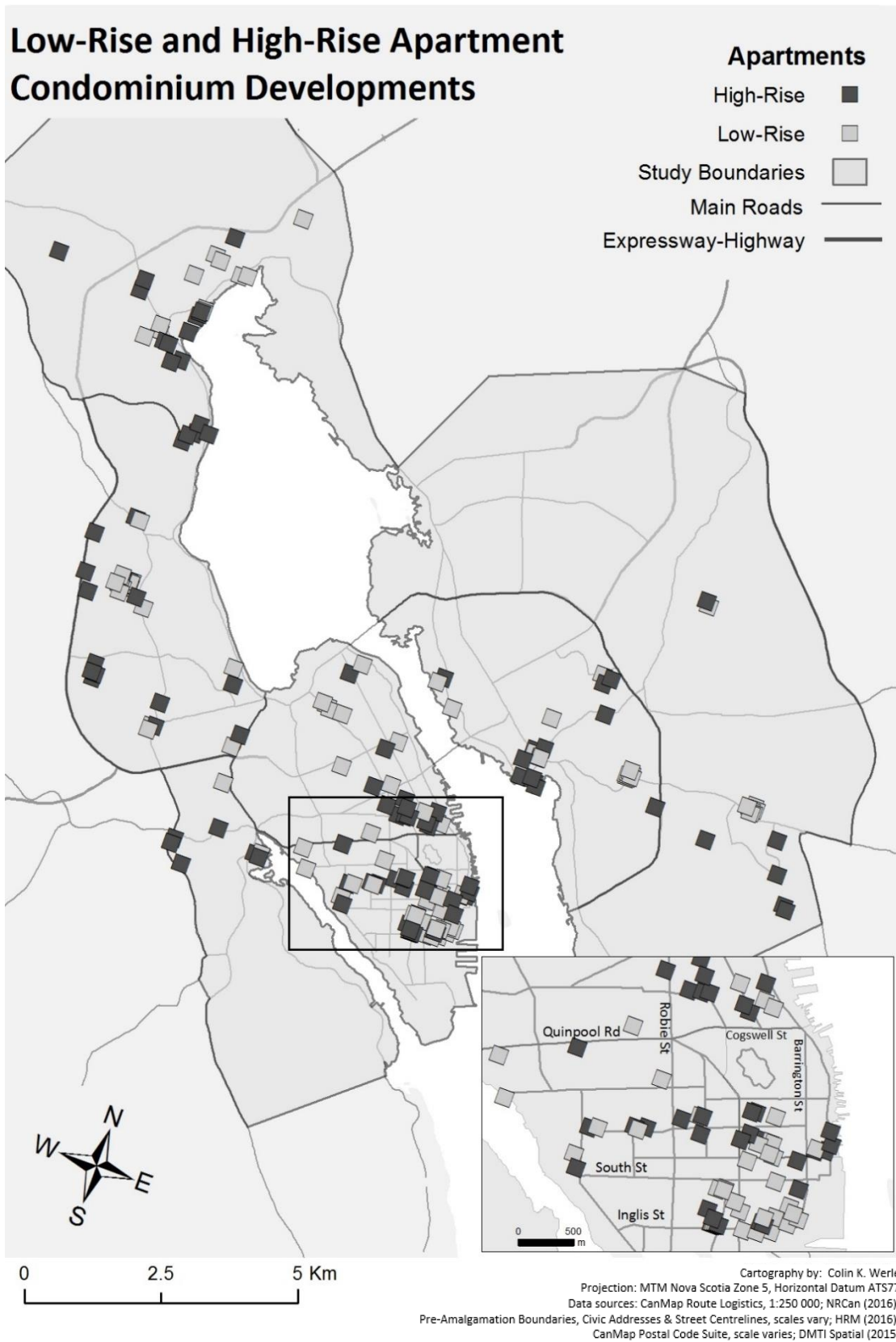
Figure 4.10 Map of High-rise and Low-rise Apartment Developments

Commercial Component

Mixed-use condominiums, which are condominium developments with commercial components, are not necessarily a recent phenomenon. The first condominium complex, which incorporated a commercial component, was developed in 1982, just 10 years after the beginning of condominiums in the Halifax area. The mixed use phenomenon has, however, become more common in the 21st century as over 50% of mixed use condominiums were built in the latest two decades (Table 4.2 and Figure 4.11). Commercial components are predominantly incorporated into apartment style complexes, but are not limited to them. One of the townhouse/rowhouse condominiums in the North End peninsula of Halifax has a small, but distinct beauty salon business incorporated into an entire unit of the development. Aside from the one townhouse/rowhouse complex, there are 27 other condominiums, all of which are apartment complexes that have a commercial component as part of their developments. These mixed-use apartments are predominantly concentrated in on the Halifax peninsula, and even more so in the South End near the downtown area. Others are found in more recent developments on the Dartmouth and Bedford waterfronts.

Corresponding with contemporary planning strategies, it makes sense that new apartment developments of high density are increasingly mixed used buildings. One of the main goals in the Downtown Halifax Secondary Municipal Planning Strategy is to "direct a mix of quality residential and commercial development to areas that can both accommodate it and benefit from it" (Halifax Regional Municipality, 2009). They comply with planning strategies as they are developing mixed land use complexes within the urban core, and making use of available infrastructure.

Old House Conversions

Old house conversions are a common form for condominiums, especially in Halifax. An old house conversion is typically a single detached house that was converted into multiple units. Some conversions were done on other buildings, such as an old church. There are 54 condominium

corporations that are old house conversions; all except for one (in Dartmouth) are located on the Halifax

peninsula. The bulk of the old house conversions are located in the South End of the Halifax peninsula.

Old house conversion condominiums range in unit sizes from 2 to 18 units, and include all styles of

condominium developments. There are 24 apartment developments, 12 townhouse and rowhouse

developments, and 18 duplex and triplex developments that were old house conversions. They were

most common in the second decade of condominium development in Halifax, where 72% were

registered at the time (Table 4.2 and Figure 4.12). Today, only four old house conversion condominiums

have been registered since 2012.

Table 4.2 Percentage of total OHC and Commercial Components Condos by Decade

Decade	1972-1981	1982-1991	1992-2001	2002-2011	2012+
Old House Conversion	0%	72%	9%	11%	7%
Commercial Component	0%	23%	15%	38%	23%

Condominium Size by Number of Units

Condominium developments were classified by the total number of units that they contain

(Figure 4.13). In the first class of 2 to 6 units, the majority of developments are located on the Halifax

peninsula, with clustering occurring in the North End near the MacDonald Bridge, and in the South End

and Downtown regions near the universities. The second class of 7 to 14 units has a relatively even

distribution across the research area, however, there is substantial clustering in some regions relative to

others: on the Halifax North Mainland, north of Lacewood Drive, and on the peninsula South End at the

east end of Inglis Street. The third class of building units with 15 to 36 units is the most evenly

distributed across the research area. Limited clustering is apparent north of Lacewood Drive and in

Clayton Park on the Halifax North Mainland; and in Bedford around the north end area of the Bedford

Basin. In the fourth class of 37 to 74 units, there is distribution across the whole research area, but

mostly on the Halifax and Bedford west side of the harbour. Most of the concentration in this class is apparent near the downtown core of Halifax. The fifth class and widest range of 75 to 200 units is well distributed throughout the research area, again with most occurring on the Halifax and west Bedford sides of the Harbour. Two choropleth maps were also created to show ranges of total condo units per region, and regional condo unit density throughout the research area (Figures 4.14 and 4.15). The Halifax Mainland North and Halifax North End peninsula contain the most units; though downtown Halifax has the highest unit density due to its much smaller area.

Condominium Units by Quadrat

Condominium units were also analysed by creating a quadrat grid over the research area, consisting of 500m x 500m grid squares. The number of units that were in each square was tallied for a total unit value. The sum of units within 500m x 500m blocks were divided into five total unit ranges, using a quantile classification scheme to evenly divide up the 110 quadrats (Figure 4.16).

The first class of 2 to 23 units is highly concentred on the Halifax peninsula with a relatively uneven distribution across the research area. The second class of 24 to 52 units is more evenly distributed across the research area, with the most substantial concentration occurring in the Bedford region, notably around the north end of the Bedford Basin. The third class of 53 to 98 units is less evenly distributed across the research area with none on the Halifax South Mainland, and the Halifax North End peninsula. The most concentrated region of this range is in the Halifax North Mainland. The fourth class of 99 to 154 units, is also unevenly distributed as most of the concentration in this range occurs on the Halifax peninsula. The fifth class of 155 to 394 units is well distributed over the Halifax and in Bedford on the west side of the harbour, with substantial concentration around the downtown core on the Halifax peninsula. In both Dartmouth regions there are only three blocks of this class, two of which are concentrated in the downtown area.
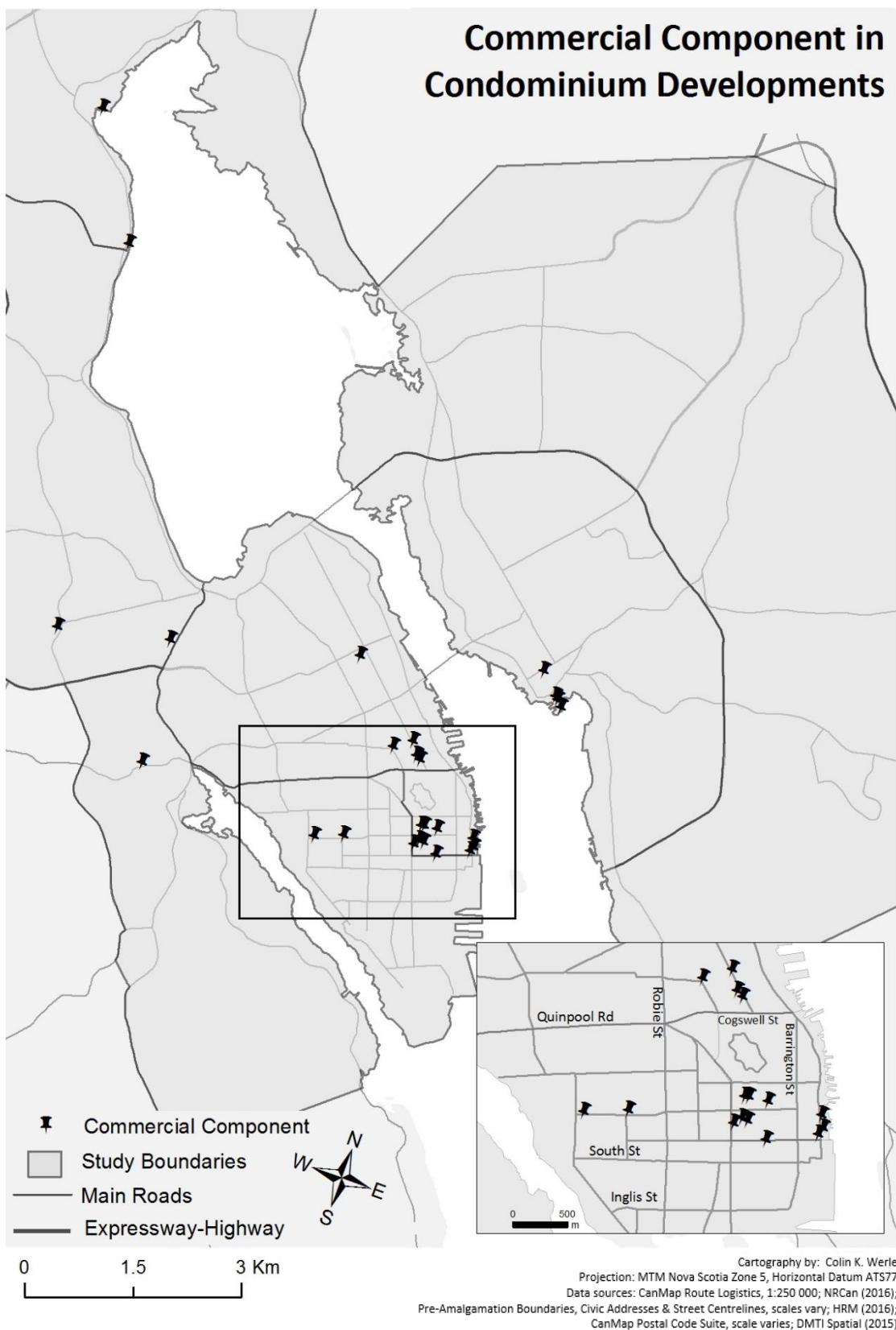
Figure 4.11 Map of Commercial Component Condominium Developments
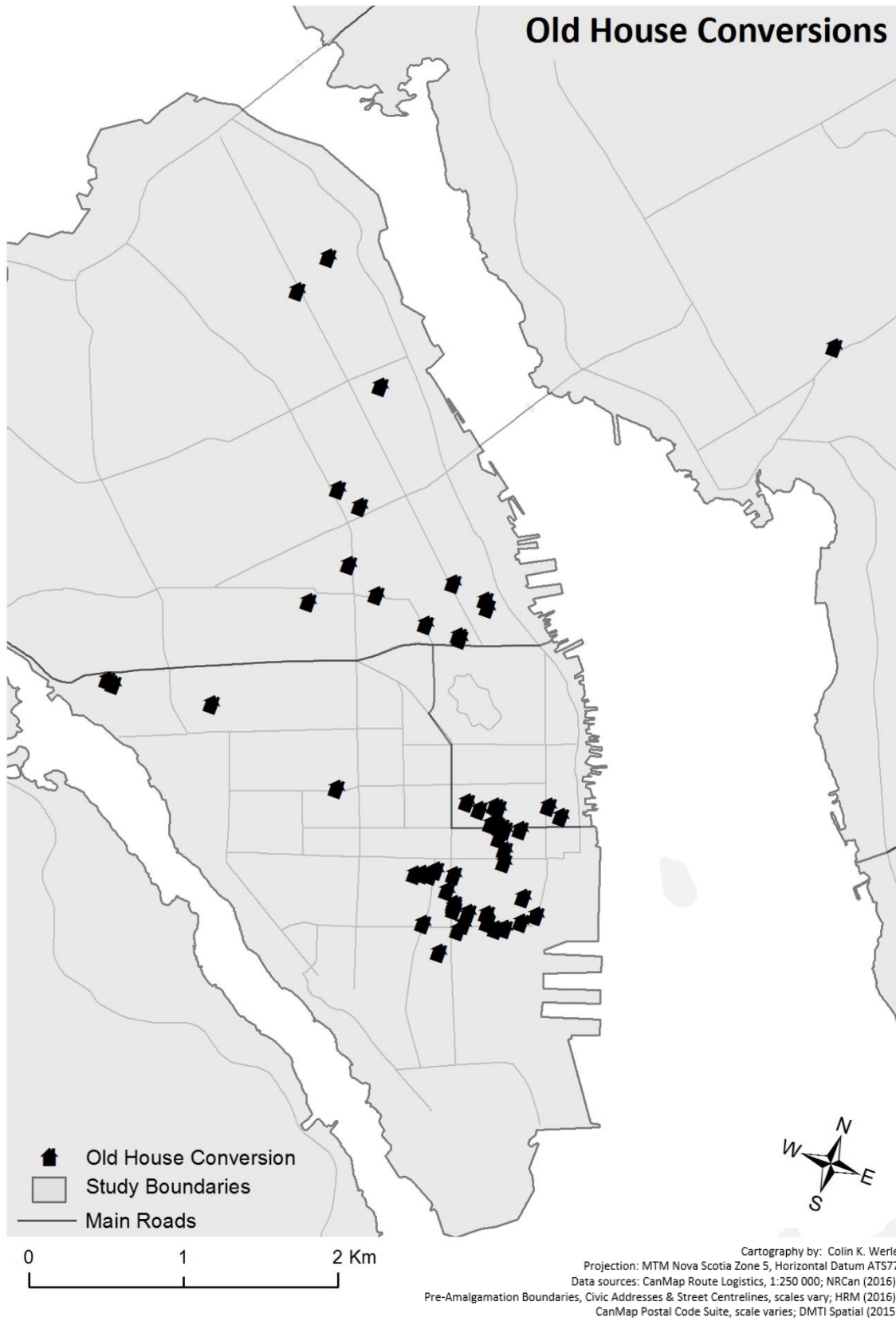
Figure 4.12 Map of Old House Conversion Condominium Developments

Condominium Developments by Number of Units

Units

2 - 6
7 - 14
15 - 36
37 - 74
75 - 200

Study Boundaries
Main Roads
Expressway-Highway

Quinpool Rd
Robie St
Cogswell St
Barrington St
South St
Inglis St

0   500 m

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
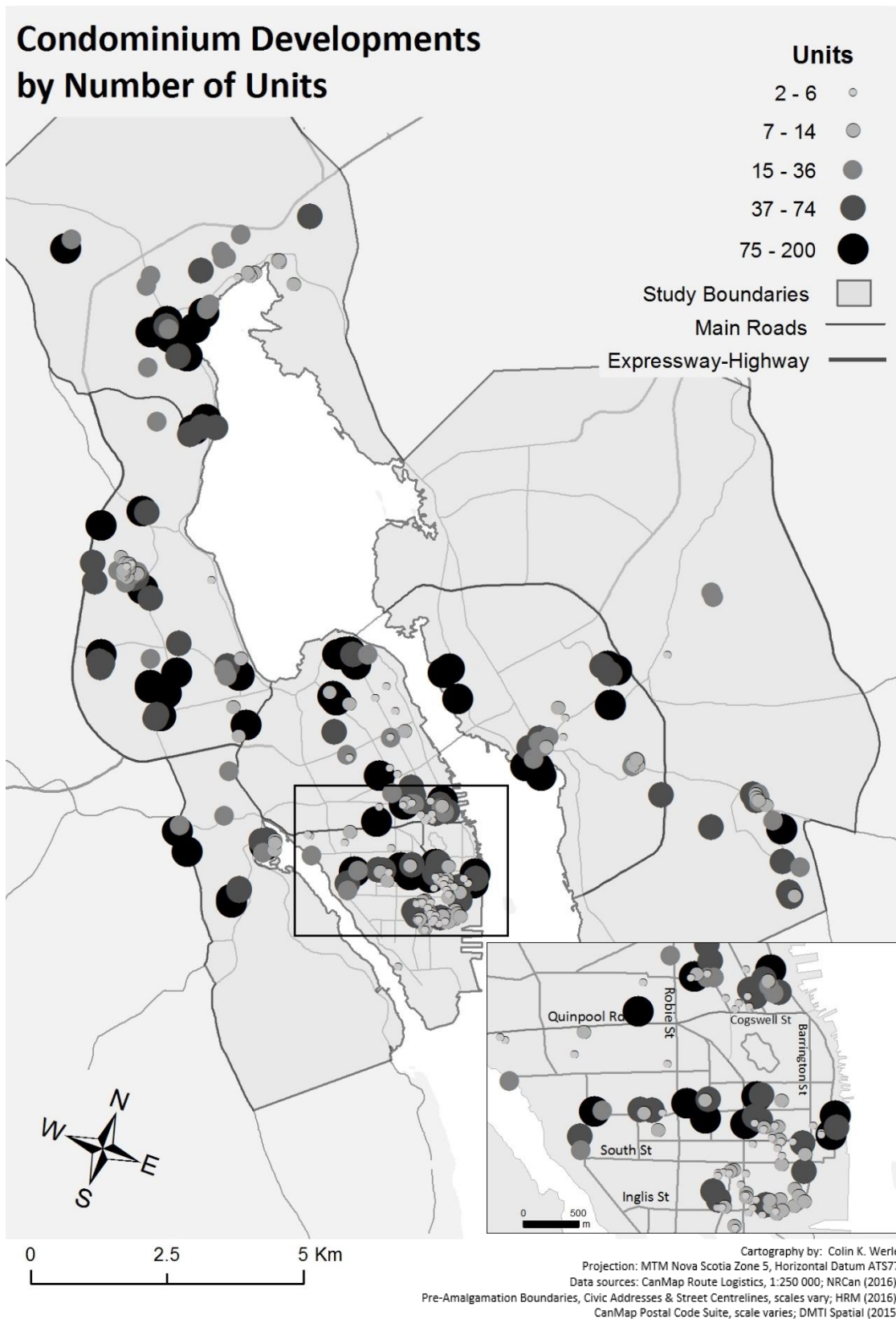CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)

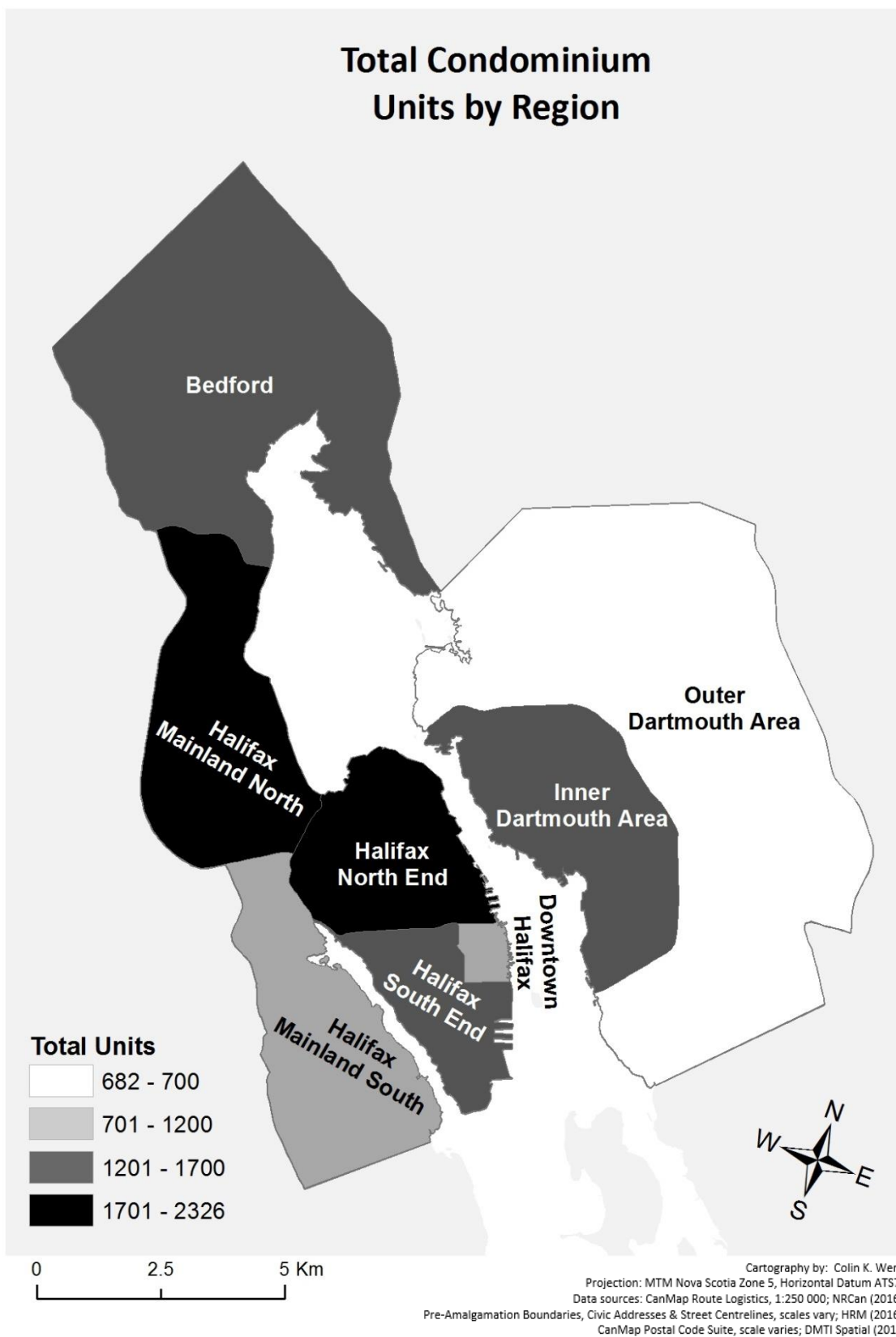*Figure 4.13 Map of Total Units in Condominium Developments*

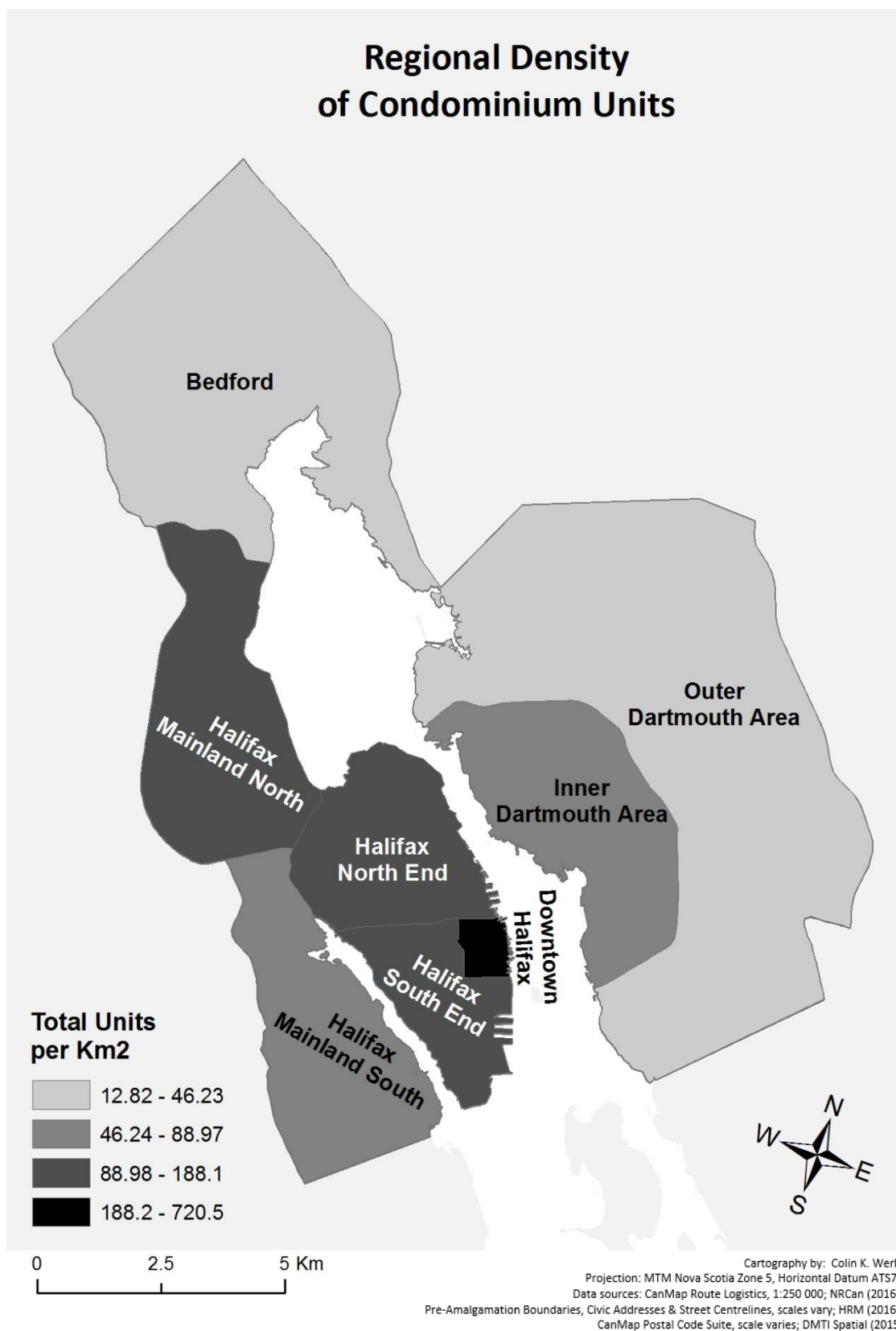*Figure 4.14 Map of Total Condominium Units by Region*

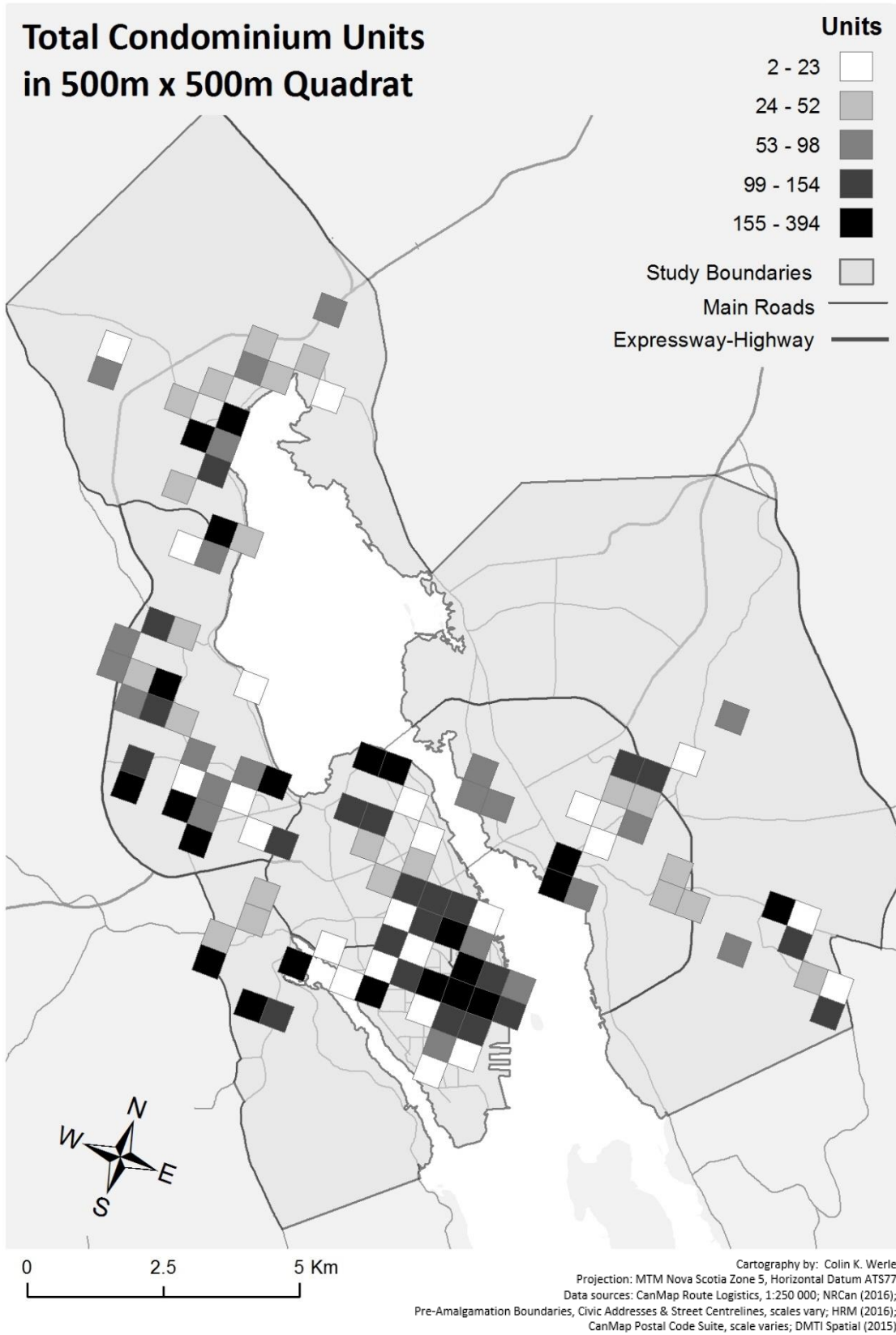*Figure 4.15 Map of Region Denisity for Condominium Units*

Figure 4.16 Map of Units in 500m x 500m Quadrat

Assessment Values

As condominiums are a form of land property ownership, the government assesses individual units based on market value in order to collect property taxes. Analysis was performed on the assessed values using two methods. The first is an average assessment of a condo corporation, the second is an aggregate assessment of individual units within a 500m x 500m quadrat. Both methods were conducted on the values in 2016 as well as the difference in values between 2012 and 2016 for a sense of appreciation and depreciation in value.

2016 Condominium Corporation Average Assessment Values

The condominium corporation average assessment values were classified into seven different classes using a manual classification scheme. Average assessment values for condominium developments in the research area range between $60,000 and $780,000 (Figure 4.17). The first class contains average values under $100,000, with the few of these values in the research area located on Halifax Mainland North, the Halifax North End peninsula, and in the Inner Dartmouth Areas. The second class of $100,000 to $149,999 has a good distribution across the research area with heavy clustering occurring north of Lacewood Drive on the Halifax North Mainland, and between the Inner and Outer Dartmouth areas along Portland Street. The third class of $150,000 to $199,999 has a good distribution across the research area with most of the clustering occurring south of the MacDonald Bridge on the Halifax North End peninsula, and north of Lacewood Drive on the Halifax North Mainland. The fourth class of $250,000 to $299,999 has evenly distributed data, with relatively substantial clustering in each region. However, the most apparent clustering is found on the Halifax South End peninsula near the downtown core, around the universities. Other lighter clustering is found on the North and South Mainland, as well as the Downtown Dartmouth area.

Moving towards the highest averages, the fifth range of $250,000 to $299,999 is distributed across the research area, but the most substantial concentration is found on the Halifax peninsula.

Heavy concentration appears in the South End near the downtown, and university areas. The sixth class of $300,000 to $499,999 is largely concentrated towards the Halifax peninsula, those on the close periphery are also gravitated towards Halifax as well. Bedford also has a relatively large concentration of this class along the shoreline of the basin. In the seventh and highest class of $500,000 to $776,783, the distribution is highly concentrated along to the Halifax South End peninsula and downtown areas. On the Halifax South Mainland there is a small cluster at Regatta Point along the shoreline of the Northwest Arm. The highest average value is found in the downtown core of Halifax.

2012 – 2016 Difference in Average Assessment Values

This section shows which condo corporations have had an appreciation or depreciation in average assessment values, demonstrating areas of growth and decline in their desirability. This analysis was broken up into seven classes showing change in average assessment values ranges between -$24,000 to +$112,000 (Figure 4.18). In the first class there are five condominium corporations that have a negative difference in average assessment values greater than -$10,000. Three of these corporations are located around the north end of the Northwest Arm. The other two are located in Dartmouth, one along Windmill Road area and the other in MicMac Village. The second class -$10,000 to $0 in negative average assessment value are distributed among 6 condominium corporations between Halifax North Mainland, Bedford, and Dartmouth. There is no clustering involved as it is a relatively sparse distribution with few condominium corporations within this class. For appreciation values, in the third class of +$1 - +$9,999 there is a relatively equal distribution across the research area except for on the Halifax South Mainland. There is substantial concentration on the North Mainland, Halifax peninsula South End, and across Bedford. The most prevalent clustering occurs in north of Lacewood Drive and the Portland Estates area. The fourth range between +$10,000 and +$19,999 is the most common of the classes, and is well distributed across the research area. There is heavy clustering occurring again north of Lacewood

Drive, on the Halifax peninsula North and South Ends, in the area south of the MacDonald Bridge and around the downtown area.

Moving towards the higher classes, the fifth class of +$20,000 to +$39,999 is also common across the research area. The most concentrated areas are across the Halifax peninsula, downtown Dartmouth and the Halifax North Mainland. The greatest clustering is occurring across the Halifax peninsula South End. Other smaller-scale clustering appears in north of Lacewood Drive, Clayton Park west, Downtown Dartmouth, Regatta Point, and south of the McDonald Bridge. The sixth class of +$40,000 to +$79,999 does not reach Dartmouth; all of the distribution is limited to the Halifax and Bedford sides of the Halifax Harbour. Most of the concentration appears on across the entire peninsula, with small clusters throughout the area. In the seventh and final class, there are only three condominium corporations which have an average assessment appreciation greater than $80,000. All of the condominiums are located in the Halifax peninsula South End, with two of them located near the downtown area.

2016 Aggregate Assessment Values 500m x 500m Quadrat

This section is looking at the aggregate value of individual assessments in 2016 through a 500m x 500m quadrat analysis (Figure 4.19). The values were broken up into five classes; the first class of values from $796,400 to $5,000,000 is unevenly distributed across the research area, as blocks are largely concentrated on the Halifax peninsula and Halifax North Mainland. The second class of $5,000,001 to $15,000,000, is well distributed across the entire research area with concentrations occurring in each region. The third class of $15,000,001 to $40,000,000 is well distributed across the research area. This class appears most prevalent in in the Halifax North Mainland, the Halifax South End peninsula, and around Portland Estates in the Outer Dartmouth Area. The fourth class of $40,000,001 to $80,000,000 is mainly distributed across the Halifax and west Bedford sides of the harbour. The most substantial concentration is found around the downtown area of Halifax. The fifth class of $80,000,001

to $122,303,900 only has three blocks that are appear around the downtown areas of Halifax and Dartmouth.

2012 – 2016 Difference in Aggregate Assessment Value 500m x 500m Quadrat

Building on the previous section, quadrat analysis shows the appreciation and depreciation in aggregate assessment value from 2012 to 2016 (Figure 4.20). Organized into seven classes, the first two show depreciation, while the following five show the aggregate value of appreciation throughout the research area. The first class of -$1,746,500 to -$1,000,000 has two blocks of depreciation both located in Dartmouth, one along Windmill Road, and the other in the MicMac Village area. The second class of - $999,999 to $0 also contains three blocks located at the bottom of Larry Uteck Boulevard, Clayton Park, and MicMac Village. The third class of +$1 to +$1,000,000 is distributed well across the entire research area, with relatively high concentration in the Inner Dartmouth Area, across the Halifax Peninsula, the Halifax North Mainland, and Bedford. The fourth class of +$1,000,001 to +$3,000,000 is distributed well across the research area. This is the dominant class in the Outer Dartmouth region, mainly in the Portland Estates area.

The higher aggregate values become more unevenly distributed throughout the next classes. The fifth class of +$3,000,001 to +$5,000,000 is predominantly found on the Halifax and west Bedford side of the harbour, though the most concentration is found on the Halifax South End peninsula. The sixth class of +$5,000,001 to +$8,000,000 largely concentrated on the Halifax peninsula mainly appearing around the downtown core. The seventh and largest appreciation class of +$8,000,001 to +$14,258,000 are located on the Halifax North End peninsula, and Halifax North & South Mainland.

2016 Average Assessment Values by Development

Assessment Value Range

- ○ $63,911 - $99,999
- ○ $100,000 - $149,999
- ◔ $150,000 - $199,999
- ● $200,000 - $249,999
- ● $250,000 - $299,999
- ● $300,000 - $449,999
- ● $450,000 - $776,783
- Study Boundaries
- Main Roads
- Expressway-Highway

Quinpool Rd

Robie St

Cogswell St

Barrington St

South St

Inglis St

W N E S

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)

Figure 4.17 Map of Average Assessment Values by Individual Developments in 2016
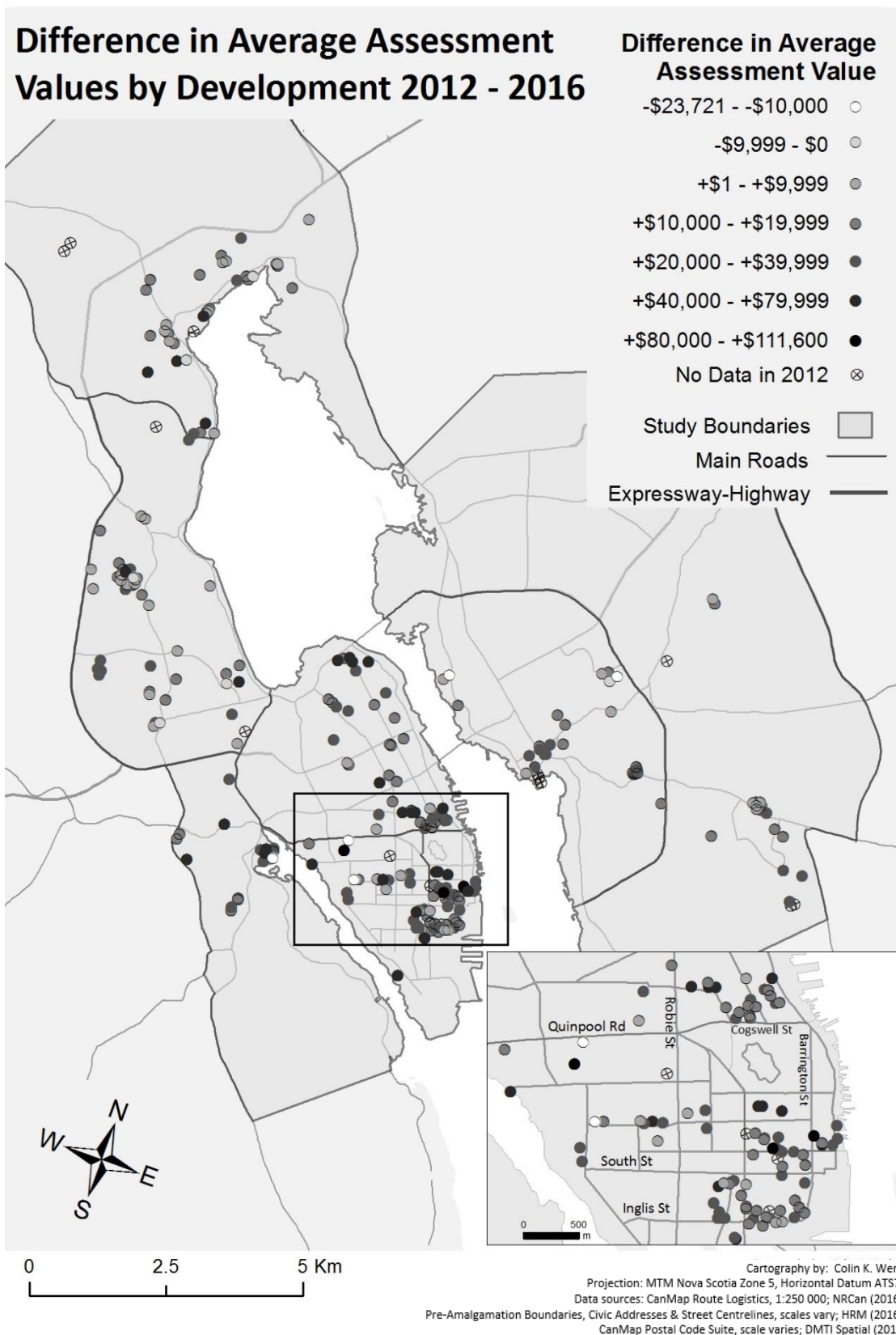
Figure 4.18 Map of Difference in Average Assessment Values by Development 2012 to 2016

Aggregate Assessment Values in 2016 | 500m x 500m Quadrat

Total Assessment Value

$796,400 - $5,000,000
$5,000,001 - $15,000,000
$15,000,001 - $40,000,000
$40,000,001 - $80,000,000
$80,000,001 - $122,303,900

Study Boundaries
Main Roads
Expressway-Highway

N W E S

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)

Figure 4.19 Map of Aggregate Assessment Values 2016

Difference in Aggregate Assessment Values 2012 - 2016 | 500m x 500mx Quadrat

Difference in Aggregate Assessment Value

-$1,746,500.00 - -$1,000,000

-$999,999 - $0

+$1 - +$1,000,000

+$1,000,001 - +$3,000,000

+$3,000,001 - +$5,000,000

+$5,000,001 - +$8,000,000.00

+$8,000,001 - +$14,258,000

No Data in 2012

Study Boundaries

Main Roads

Expressway-Highway

0   2.5   5 Km

Cartography by: Colin K. Werle
Projection: MTM Nova Scotia Zone 5, Horizontal Datum ATS77
Data sources: CanMap Route Logistics, 1:250 000; NRCan (2016);
Pre-Amalgamation Boundaries, Civic Addresses & Street Centrelines, scales vary; HRM (2016);
CanMap Postal Code Suite, scale varies; DMTI Spatial (2015)
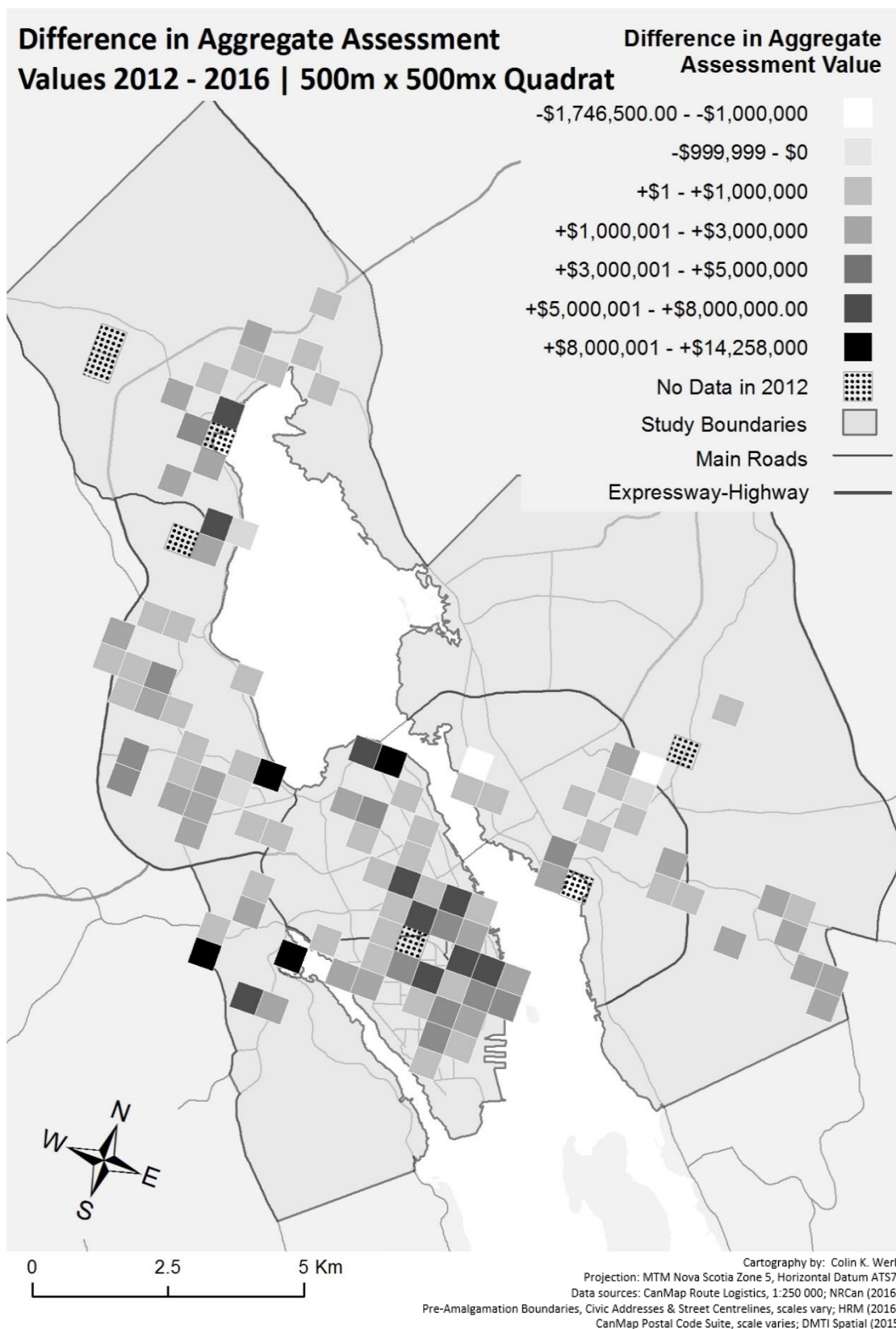
Figure 4.20 Map of Difference in Aggregate Assessment Values 2012 to 2016

CHAPTER 5

Discussion & Conclusion

Summary

The goal of this research was to analyse the spatial and temporal patterns of development of condominiums throughout the city of Halifax. The major findings of the thesis corresponded with some of the main themes found throughout the literature review. Condominium markets throughout North America have been largely based around the dynamic changes in city centres (Rosen and Walks, 2013). The greatest concentration of condominium developments, and most number of units, are found in on the Halifax South End peninsula and near the downtown core, but are by no means limited to the city centre.

Condominiums were first introduced to North America in the 1960s and Halifax was not far behind with its first development in 1972. The late 1980s saw the most condominium developments and total units per year, highlighting the fact that condominium development is not a recent phenomenon and had its greatest activity 30 years ago. The analysis on the size of developments by condominium units over Halifax illustrates the large differences in number of units per developments in a smaller city as opposed to what is found in a much larger city such as Toronto. For example, the largest condominium development in Halifax has 200 units, while in Toronto, developments can reach well over 1000 units (Webb and Webber, 2016). Regardless of obvious size differences, a similarity between the markets is that much of the development is concentrated around the downtown of the city.

Urban Transformation

The results of this thesis fit well within both Grant and Gregory's (2015) and Prouse et al (2014) research covering urban change over several decades in Halifax. Condominiums in Halifax began their development outside of the peninsula, and did not reach the central area for another five years after

their emergence to the city. During the era of suburbanisation, most development in Halifax was focused outside the core. Through the 1990s, commercial and residential growth was focused on the urban fringes, bringing jobs and people along with it. It was only recently that growth began to move in greater migrates back towards the city centre.

Over the past 4 years, Halifax has seen more developments in the urban core as opposed to anywhere else around the research area. The Halifax Regional Municipal Planning Strategy (2006, revised in 2014) and the 2009 Downtown Halifax Secondary Municipal Planning Strategy, encourage residential growth in the urban core. Their goals are that "the Regional Municipal Planning Strategy accommodates approximately 25,000 new residents in the Regional Centre over the next 25 years." The secondary MPS also states: "the potential for at least three million square feet of office space and up to 16,000 new residents in the downtown over the next 15-years" (Halifax Regional Municipality, 2009, pg. 6). The results of this research demonstrate that new developments are aligning with planners' goals to direct growth to urban cores after decades of suburbanisation (Filion et. al., 2016).

Gentrification

Roth and Grant's (2015) research highlighting the gentrification of the North End area of Halifax can be tied with a some of the findings in my research. The temporal analysis and assessment analysis indicated that there is an influx of newer condominium developments being built in the area. The condominium developments in the area also contain some of the higher assessed values throughout the research area. The condominium developments in the North End tend show a change in average assessment data that had relatively high appreciation values. Aside from the Gottingen Street area in the North End region, many of the highest appreciations in average assessment values were found at the end of Novalea Drive, north of Gottingen Street.

Another result of gentrification is the physical change occurring in the region. My research

shows the new condominium developments in the North End, including apartments and townhouses

containing many units, are fundamentally changing the traditional landscape of the area. The new styles

of condominium development going into the North End are much different from the conventional single

detached and social housing developments that the neighbourhood has been used to for many decades.

While not explicitly out to document gentrification, or the social issues it entails, my research

corroborates that neighbourhood change is occurring as new, relatively pricey developments are

locating in what were previously less affluent neighbourhoods.

Assessments

The results of the assessment data analysis for condominiums are in line with the general

pattern of residential conditions across the region. The highest assessments were found in the South

End of Halifax, corresponding with the image that the South End is the most affluent area in the city.

Other higher assessed areas were typically surrounding the downtown areas of Halifax, Bedford and

Dartmouth, indicating a higher market value for those areas with many popular amenities. High

assessment areas were also found near shorelines of the Northwest Arm, and Bedford Basing, which

indicate a desirability to live in area with a coastal view. The lower and mid-range assessed values were

relatively well distributed over the research area in Halifax. A decrease in assessment value was proven

to be an uncommon situation over the research area, as there were very few occurrences. A

depreciation in assessed value could be related to a variety of factors such as poor maintenance on the

building, or a neighbourhood decreasing in its desirability. Another indicator could be that a

condominium association collectively challenges their assessment value because they believe it is too

high and they are being taxed unfairly.

Condominium Features

Old house conversion condominiums were especially interesting as they appeared in such large quantities in the 1980s and 1990s, and prevailed greatly in urban core, much like the conversions of old houses on Jarvis Street in Toronto (Lombardo, 2014). Further research on the condominium market, could show who own and occupy the old house conversion condominiums. An assumption, based on the findings of the Jarvis Street case study, is that owner or occupiers could likely be young professionals taking advantage of outstanding proximity to amenities, or students renting the condominiums close to university campuses. Some of the properties of old house conversions were heritage buildings of Halifax, making them an important aspect to the city's culture, possibly highlighting the need for preservation as opposed to complete redevelopment of the properties.

Commercial component condominiums were found to be mainly centred around downtown regions of the study area, and have appeared more often in the 21st century, with over 60 per cent of condominium developments adding this feature since 2002. Commercial components in developments were mainly in apartment style condominiums, with the exception for one townhouse/rowhouse style condominium in the North End. Including commercial in developments is a good way for developers to implement a mixed land-use component in their developments, fitting with contemporary planning strategies. I would expect to see many more condominium developments with commercial components to appear in the future.

Future Research

Future research is needed on smaller scale cities, like Halifax, Winnipeg, or Québec City since their markets differ from the major metropolitan areas. It would be interesting to see demographic information on who is owning or occupying condominiums in the smaller cities similar to the work done in bigger centres employing surveying techniques (Rowe and Dunn, 2015; August, 2015). Of particular interest is why one choses a condominium and one's satisfaction with the living conditions. Other work

could look at condominium governance, and market affordability. It would also be interesting to see some qualitative research on the developers who build condominiums in Halifax. I would like to know some of the reasons as to why a developer chooses to build condominiums instead of rental apartments and vise versa. It would also be interesting how they perceive the effects of gentrification as developers are a key actor in the progression of neighbourhood change.

Since policy is such an important attribute to how urban development is formed, it would be beneficial to research the effect of planning policies on condominium developments in. As a result of my research, I am curious to know what the effects of the municipal planning strategy have on condominium developments in order to help explain these patterns. It would be valuable information in condominium development research to know whether or not recent and future developments been progression indicators for the municipal planning strategies.

Throughout this research project I have come to appreciate the issues that can go into data collection, management, and processing data for analysis. Rather than sitting unused, I hope the data compiled here is shared for further research. Expanding the project to include other variables such as neighbourhood amenities, planning policies, and demographic information would help us gain a better understanding of this important residential pattern in smaller urban areas.

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