

Act Small and Think Big: Exploring the Plurality and Complexity of Shrinking Cities

by

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## **AUTHOR'S DECLARATION**

*I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.*

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## ABSTRACT

Demographically and economically, there is an ongoing global shift that has resulted in the uneven development and distribution of monetary, human and knowledge capital, and the emergence of global and shrinking cities. The ability of local planners and decision-makers in shrinking cities to effectively manage population loss and economic decline has been limited by the deficiency of available strategies to address the challenges of shrinkage and the stigma of shrinkage within the growth-oriented culture of planning. Although the causes urban shrinkage have been widely discussed, little research has explored the complexity and diversity of the various processes contributing to urban shrinkage.

A two-dimensional shrinking city trajectory typology encompassing both economic and demographic change is developed as a baseline approach to discussing, depicting and classifying shrinking cities. The diversity of urban shrinkage experiences is demonstrated through the examination of the twenty largest American cities to lose population between 1980 and 1990 - fifteen of the twenty cities experienced varying degrees of population loss while simultaneously showing signs of economic growth. The diversity and complexity of urban shrinkage is further explored using a novel cross-correlation network analysis approach to disentangle the complex processes contributing to and stemming from population loss. Two Canadian shrinking municipalities, Chatham-Kent, Ontario and Cape Breton Regional Municipality, Nova Scotia are examined over a period of seventeen years (1997-2013). Results indicate that factors in the urban shrinkage process are strongly interrelated and exhibit circular trends and feedback mechanisms. The analysis also shows significant regional differentiation as each case study has a unique set of processes that preceded population loss. However there were commonalities between the distinct cross-correlation networks. Specifically, unemployment, employment and labor participation rates were indicative of immigration and emigration trends, changes in unemployment were inversely related to housing permit rates and intraprovincial migration was strongly linked to changes in housing starts and completions. Lastly, a shrinkage strategy transferability framework is developed to explore the diversity of local decision-makers' perceptions of the applicability of shrinkage strategies. The framework is applied to the two Canadian shrinking municipalities to evaluate the transferability of a service rightsizing strategy. Although deemed compatible and transferable by the author and six key informants, the strategy was ultimately considered inapplicable in both municipalities due to governance barriers. Despite similar conclusions, local perceptions of shrinkage and response strategies were found to be influenced by differences in geographic location and longevity of shrinkage.

This dissertation contributes to our understanding of the diversity and complexity of urban shrinkage experiences by (1) challenging the reliance on population change as the sole indicator of urban shrinkage trajectories, (2) demonstrating the complexity and distinctiveness of urban shrinkage processes and (3) advancing that the duration of shrinkage and local perceptions are tied to the stage of deindustrialization and the changing demographic makeup of the municipality.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

There is an enormous amount of space on the globe, yet people choose to live in dense urban agglomerations – cities – despite advances in telecommunication and relatively inexpensive long distance travel. In fact, the majority of the global population now resides in urban environments and it is projected that by 2050, approximately 66 percent of about 9.7 billion people will inhabit urban areas (United Nations, 2015). Like many industrialized nations, Canada is highly urbanized with over 80% of its population living in urban areas. More than one third of Canadians inhabit the nations three largest metropolitan areas - Toronto, Montreal and Vancouver. The rapid increase of both global population and urbanization in the past two centuries has resulted in extraordinary economic, social, and political evolution. The higher density of this relatively new urban living brings advantages such as increased social interactions and access to civic services (Mobaraki, Mohammadi, & Zarabi, 2012). In his book, *The Triumph of the City*, Glaeser (2011b) takes the argument further and contends that urbanization has led, and will continue to lead, to stronger economies, happier people and less environmental degradation. He argues that cities in the West are healthier, wealthier and more attractive than ever and that in impoverished parts of the world, cities expand because urban density offers the clearest road from poverty to prosperity.

While it is easy to marvel at the sheer scale of Tokyo, the skyscrapers of Manhattan or the dense beauty of Paris, it is important to remember that cities are not only defined by their urban structures, but also by their people. And although buildings may stand for centuries, populations are much more fluid. Examples from throughout history, from the ancient city of Angkor to modern-day Detroit, demonstrate how dramatically the dynamics of populations can shift over relatively short time frames. Planning academics and urbanists have long tried to understand, and guide, the processes that drive urban growth and change, incorporating population considerations as an essential element.

An early example of such efforts is neighbourhood life cycle theory, which postulated that places grow and die in a way comparable to the human body (Home Owners' Loan Corporation, 1940). Following this influential theory, many academics and policymakers concentrated on identifying planning interventions to slow or reverse the life cycle (Bradbury et al., 1982). For example, top-down monetary investments in underused or undervalued land, described as redevelopment or revitalization, requiring forced relocation were considered necessary to revitalize and prevent future deterioration (Blakely, 1994; Hollander & Németh, 2011).

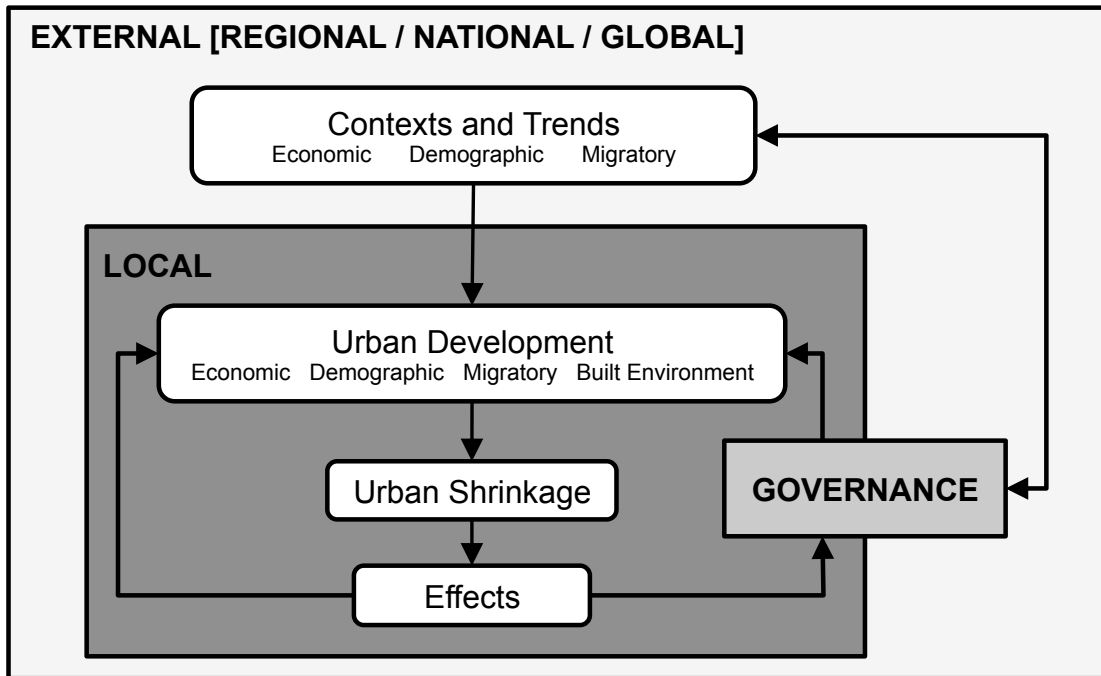
The life cycle theory has since been rejected (see Metzger, 2000) and alternative theories advance a more postmodern view of urban change, where growth and decline are disaggregated and are not conducive to grand sweeping narratives (Dear & Flusty, 1998; Hollander & Németh, 2011; Mitchell, 2002). Dear and Flusty (1998) contend that the features of every city, every neighbourhood and every block play both a distinct and contributory role in their own and surrounding development. This alternative view of urban change allows planners to be conscious of urban challenges whilst avoiding the inevitability ingrained in the urban life cycle discourse (Hollander & Németh, 2011). The integration of multiple geographic scales in urban change theory is apt considering the emergence of a global urban system and the effects of globalization on the structure of cities (Friedmann, 1986; Sassen, 2001; Scott & Storper, 2014).

The global restructuring of production, distribution and consumption in recent decades is considered characteristic of a shift towards a new global economic order which has resulted in the concentration of resources, key infrastructure and intellectual assets in a small number of “global” cities (Castells, 2004; Martinez-Fernandez et al., 2012; Soja, 2000). Concurrently, monetary and human capital are relocating from small and mid-sized cities to these “global” cities, leaving a myriad of social, economic and environmental challenges in their wake (Audirac et al., 2010). Cities experiencing these challenges, including population loss and economic restructuring, have been dubbed “shrinking cities” and recent academic literature has consistently concluded that this emergent phenomenon is a lasting symptom of globalization, not simply a step in an evolutionary cycle (Audirac et al., 2010; Großmann et al., 2013; Pallagst, 2010; Rieniets, 2006; Rink et al., 2012).

The increased economic and human mobility of our modern age that has allowed many cities to prosper and has also led to an extremely growth-focused culture where expansion is not only sought, but is assumed (Hackworth, 2014; Rieniets, 2006). Due to this narrow focus, the planning profession and literature provide little guidance on strategies to address the challenges of shrinkage (Oswalt & Rieniets, 2006a). Traditionally the role of urban planners has been to manage growth and its resultant issues (Schatz, 2010). The tools available to planners (such as comprehensive planning, zoning and urban growth boundaries) have predominantly focused on guiding growth and new development (Dawkins & Nelson, 2003). However, planning for shrinkage is fundamentally different from planning for growth (Kempenaar et al., 2015; Mallach, 2011; Rybczynski & Linneman, 1999) and there is agreement amongst planning academics and practitioners that planning, as it currently exists, is not equipped to manage shrinkage (Bernt et al., 2014). The overarching objective of this dissertation is to advance our understanding of the evolution of urban shrinkage as a process of urban change, and to examine the opportunities and barriers that exist when planning in shrinking cities.

### ***1.1.1 Conceptual framework***

In the coming chapters, this objective will be approached using three complementary forces that highlight the interconnected processes that drive urban shrinkage. By looking at the development of urban shrinkage as a manifestation of (1) external (regional, national and global) shifts, (2) local changes and (3) governance interventions, this dissertation is able to establish a robust, multi-faceted understanding of the evolution of urban shrinkage and the opportunities and barriers to planning in shrinking cities. The interconnections of the three forces are illustrated in Figure 1.1.



**Figure 1.1: Conceptual framework of urban shrinkage (adapted from Haase et al. 2013)**

It is important to consider the context in which shrinking cities evolve. Urban shrinkage has been shown to be the result of wider economic, demographic and migratory changes at the regional, federal and global level (Martinez-Fernandez Audirac et al., 2012). Large-scale external shifts, such as declining birth rates, economic recessions and migration patterns, have a direct influence on urban development at the local level (Figure 1.1). City, regional or even national boundaries are becoming increasingly permeable and ill defined as the flow of populations, goods and knowledge are now components of global economies and cultures (Soja, 2000). However, urban shrinkage is also the result of economic, demographic, migratory and built environment changes at the local level. Whether independent processes or the manifestation of larger trends, urban shrinkage is principally visible and felt locally. Figure 1.1 illustrates how the local effects of urban shrinkage (e.g. blight, vacant buildings and increased socioeconomic segregation) can become, in turn, drivers of further urban shrinkage (Haase, Bernt et al., 2013).

Systematic shifts in the global economy and the subsequent local manifestations are both key components of the development of urban shrinkage, but the role of governance also needs to be considered. In Figure 1.1 Governance is situated in both the local and external

spheres to illustrate how the decisions of policymakers, planners and politicians at all levels of government influence the development of shrinkage. Although many of the drivers of urban shrinkage are beyond the control of local decision-makers, the policy response to the subsequent challenges plays an enormous role in the future of the city. Government interventions can play a key role in a city's resilience, however many cities have actually perpetuated their demographic and economic decline through poor policy choices (for example see Gordon's (2009) examination of the political and planning history of St. Louis).

Exploring each of the three forces is imperative to advancing our understanding of why and how shrinking cities develop and evolve. Individually they allow us to provide insight to a distinct subset of the phenomenon of urban shrinkage. However the processes of external and local shifts as well as the governance decisions that stimulate change are inextricably intertwined. By exploring the three forces together, a much more comprehensive understanding of the evolution of urban shrinkage can be realized.

### ***1.1.2 Research rationale***

Shrinking cities research has grown over the past 15 years as the global prevalence of the phenomenon has become increasingly apparent, yet it remains a relatively new field of study, and as such, there are significant research gaps. In this subsection I identify the importance of studying urban shrinkage as a conceptual phenomenon, as it manifests in the Canadian context, as well as the originality of this work.

Urban growth and shrinkage do not happen in isolation. Modern globalization has resulted in an increasingly complex, interconnected world. Castells (2004) advocates that we think of cities as nodes in a global network and postulates that the global economy has prompted capital and labour to concentrate in specific nodes of great importance while weakening nodes of lesser connectivity. This uneven flow of capital and information has allowed economic and demographic trends to self-perpetuate in both global and shrinking cities. In order to understand urban change, including growth, we need to have a robust understanding of both sides of the dynamic processes. The growth focus of the academic literature has resulted in an underdeveloped understanding of urban shrinkage processes. Research into the dynamics of shrinkage is needed to provide insight to the complexity of the

urban shrinkage process and the diversity of urban shrinkage experiences (Großmann et al., 2013). Such a focus would lend itself to the advancement of our understanding of not only the processes and implications of urban shrinkage, but also urban resilience and growth.

The growth focus of the academic literature also stretches to planning practice. Research has shown that planning education is overwhelmingly growth-focused (Hartt, 2015) and practicing planners are ill-equipped to manage shrinkage (Bernt et al., 2014). The lack of tools available to planners in shrinking cities (Hollander & Németh, 2011; Hollander & Popper, 2007; Martinez-Fernandez, Kubo et al., 2012; Olsen, 2013) is problematic considering the inapplicability of traditional growth strategies in the context of shrinkage (Hollander & Popper, 2007; Wiechmann & Bontje, 2013). Therefore research on strategies to manage shrinkage processes and the associated challenges is necessary. Furthermore, Hollander et al. (2009) assert that the growth-oriented culture in which planners operate has produced an aversion to the notion of shrinkage. Accordingly, a better and more nuanced understanding of local actors and practitioner perception is needed to advance and facilitate the development and application of alternative planning approaches in shrinking cities (Bernt et al., 2014). Such research could help explain the mentality motivating the direction and objectives of decision-makers and, ultimately, help shrinking communities cope with the challenges of urban shrinkage.

Lastly, while urban shrinkage research is well established in Europe and is gaining momentum in the American discourse, Canadian academics and professionals have been reluctant to explore issues concerning slow growth, no growth and shrinkage (Schatz, 2010). Despite acknowledgement of a country-wide pattern of uneven growth by the Canadian urban geography and planning literature, academics and practitioners persist in assuming that continuous growth is normal and feasible while overlooking declining urban areas (Hall & Hall, 2008). The narrow growth focus of Canadian urban decision-makers has resulted in missed opportunities for qualitative development (Donald & Hall, 2015). Leadbeater (2009) identifies Canada as especially vulnerable to shrinking processes because it has both a high level of urbanization and many communities reliant on natural resources. The continuing rural-urban migration, declining birth rates (Statistics Canada, 2016) and looming aging population crisis (Christensen et al., 2009) magnifies this vulnerability further. Considering the dearth of research on Canadian shrinking cities, the fixation of Canadian urban research

on large urban areas and the tendency to ignore or discount depopulation and the associated costs (Hall, 2009), there is a pressing need for additional research on declining small and mid-sized urban areas as Canadian planning legislation and policy tools are ill-equipped to manage decline (Donald & Hall, 2015; Hollander & Popper, 2007).

### ***1.1.3 Research objectives***

The objectives of this research address key shortcomings in the academic literature outlined in the previous section. Specifically the objectives are to:

- 1) Establish and advance current thinking about how shrinking cities are perceived, defined, categorized and to analyze the Canadian urban landscape on this basis;
- 2) Develop and apply an approach to analyze the complex evolution of processes linked to urban change; and
- 3) Review strategies available to decision-makers in shrinking cities and explore the transferability of strategies between shrinking cities.

### ***1.1.4 Outline***

This introductory chapter discusses the dynamics of urban change; presents an overview of the shrinking cities literature including the history, definition, causes and effects and planning response; examines the past and future of the Canadian urban landscape and its representation in the Canadian urban academic literature; and provides a discussion of the role of planning education in managing urban shrinkage. Additionally, I outline the research strategy, design, case study selection and quality. Lastly I explain the dissertation structure and provide a summary of the chapters to follow.

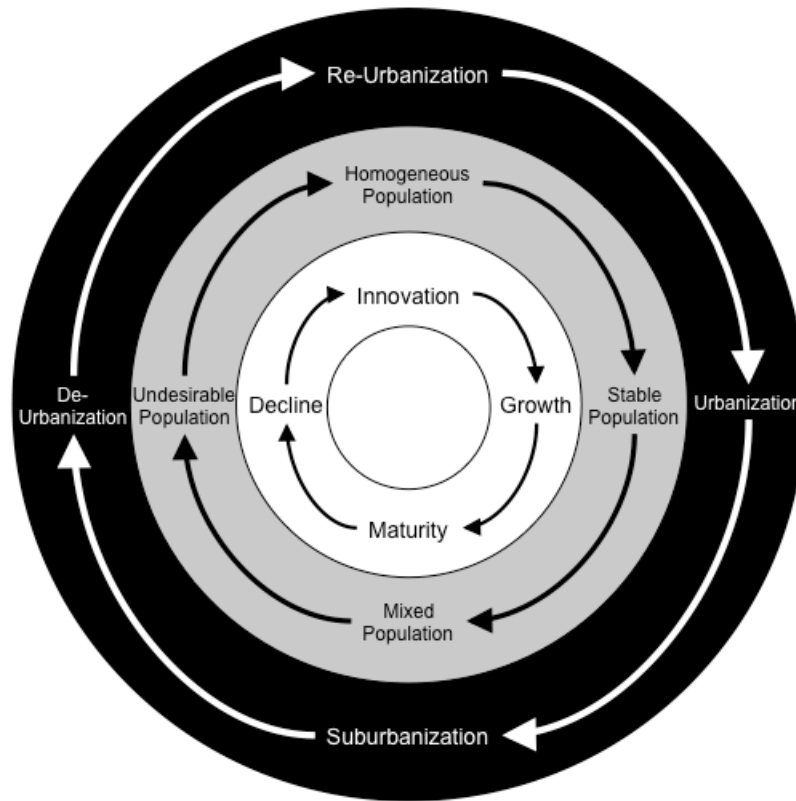
## **1.2 Dynamics of urban change**

Many researchers have concluded that urban change can be viewed as a natural cyclical process, alternating between growth and decline (Berry, 1976; Hall, 1988; Hoover & Vernon, 1959; Hoyt, 1939; McKenzie, 1924; Rust, 1975). This conception of an urban



lifecycle process has been identified by urban sociologists but also echoes urban and economic theory (Martinez-Fernandez, Audirac, et al., 2012). In this subsection, I introduce and demonstrate the similarity between prominent urban change theories from the economic, social and urban literature and highlight why the concept of cyclical change may no longer hold at the local scale. Further detail on the cyclical theories and the role of globalization can be found in Chapter 2.

Economic cycle theory postulates that capitalist economic trends begin with innovation and the manifestation of new technologies, followed by their propagation and their eventual decline to redundancy, after which the innovation phase would begin anew (Schumpeter, 1934, 1939). Friedrichs (1993) introduced a spatial dimension, speculating that the stages were locationally linked because following the primary development stages, production conditions become standardized which allows manufacturing to relocate or cut costs. Thus, regions and urban centres evolve alongside product development cycles that can quickly fluctuate from periods of swift expansion to decline. Urban sociologists have also theorized that urban development cycles are part of a natural process. Concentrating on invasion succession at the neighbourhood level, many argued that urban change was the result of changing demographics and property devaluation (Hoover & Vernon, 1959; McKenzie, 1924). Homogeneous neighbourhoods would grow then stabilize, and as they began to decline, an increasing number of lower income households would move in until the neighbourhood was made up of an “undesirable population” at which point it would be ripe for redevelopment (Home Owners’ Loan Corporation, 1940). The urban planning literature provides a similar, albeit more abstract, model of cyclical change, consisting of: (1) urbanization, (2) suburbanization, (3) de-urbanization and (4) re-urbanization (Van den Berg et al., 1982). Figure 1.2 illustrates the similarity between economic, social and urban theories of cyclical change.



**Figure 1.2: Summary of economic, social and urban theories of cyclical change**

In each field, it has been argued that the dynamic processes of change can never reach a state of equilibrium. More recent literature suggests that although these processes may be in constant flux, it is unlikely that they follow regular patterns of growth and decline (Soja, 2000). The scale of change has been altered as economic and social cycles are increasingly disconnected from local actions and decisions due to the speed, diversity and reach of international trade, migration and media (Backhaus, 1999; Berge, 2012; Hirst & Thompson, 1996). As a result, urban growth and shrinkage should no longer be expected to diminish over time, meaning that perpetual growth (or shrinkage) is a distinct possibility for many urban areas.

### **1.3 Shrinking cities**

Having reviewed the wider urban change literature, I turn now to the central focus of this dissertation - shrinking cities. In this section I provide a brief history of the term and

detailed explanation of how a “shrinking city” is defined in the literature, a summary of the identified causes and effects, a discussion of the complexity of the process, how planning can respond to the associated challenges and the role of planning education in preparing planners to manage urban shrinkage.

### ***1.3.1 What is a shrinking city?***

The concept of a “shrinking city” (or “urban shrinkage”) first emerged in West Germany during the 1970s where it was used to describe changing demographics in East Germany (Gob, 1977 as cited in Großmann et al., 2008). Häußermann and Siebel (1988) introduced the specific term “*schrumpfende Städte*” (shrinking cities) as a metaphor to portray economic and demographic decline of post-deindustrialization German cities. “The term describes the massive post-reunification population losses of the cities and towns in eastern Germany, due to job migration, sub-urbanization, and negative population growth” (Großmann et al., 2008, p. 79).

The term has continued to be used, although it only garnered widespread attention within German public discourse after 2000 when a state-commissioned report suggested a state-sponsored demolition program to diminish vacancies (Pfeiffer et al., 2000). Through the mid-2000s shrinking cities achieved international recognition thanks to large-scale projects, such as the Shrinking Cities Project (Shrinking Cities, 2008), Shrink Smart (Shrink Smart, 2012) and the Shrinking Cities International Research Network (SCiRN, 2007). More recently, shrinking cities has come to the forefront of much media and political interest due to the effects of the 2008 global financial crisis (Martinez-Fernandez et al., 2012).

Unlike in Germany where shrinking cities prompted non-growth oriented approaches in research and planning, the Anglo-American debate surrounding shrinking cities, until very recently, has been dominated by a growth-oriented outlook and a desire to reverse the decline trends (Hollander, 2011; Pallagst, 2005). Terms associated with strong negative connotations, such as “urban decline” and “urban decay”, have been commonplace for decades in Western Europe and North America (Beauregard, 1993). But to say a city is “in decline” can mean different things; it could refer to economic, environmental, physical, social or any number of different aspects of a city. Decline is a general term for which it is difficult to formulate a

consensus definition that eases inter-disciplinary or international discourse. The same can be said for “urban decay” or “urban degradation”. For these two reasons, many scholars have adopted the term shrinking city to avoid negative connotations and to build towards consensus for a more specific trans-national field of study.

The different definitions for shrinking cities have at least one common indicator – population loss (Buhnik, 2010; Hollander et al., 2009). Although population decline is the principle indicator, Rink et al. (2009) stress that this alone does not represent the phenomenon of urban shrinkage. Most definitions of urban shrinkage emphasize population loss and economic transformations as the two central processes (Buhnik, 2010; Pallagst et al., 2009; Rink et al., 2011; Wiechmann, 2008; Zakirova, 2010). Another common descriptor of shrinking cities is the emphasis on the complexity and multidimensionality of the process and the multidimensional effects arising from having economic, demographic, geographic, social and physical dimensions which are constantly evolving (Martinez-Fernandez, Audirac, et al., 2012; Zakirova, 2010).

The last decade of research has built towards a consensus term, but there remain inconsistencies in the definitions of the term shrinking cities. One aspect is the temporal scale. Rieniets (2009) emphasizes the time delay between urban population loss, which can change within a relatively short period of time, and the relatively long-term physical and legal adaptations caused by the demographic change. Leadbeater (2009, p. 89) argues that “... the process of shrinking in a given urban area or region refers to a *long-term* population decrease.”

In 2007, a consensus definition was proposed by a global group of interdisciplinary shrinking cities specialists, the Shrinking Cities International Research Network (SCiRN). SCiRN defines a shrinking city as a densely populated urban area with a minimum population of 10,000 residents that has faced population losses in large parts for more than two years and is undergoing economic transformations with some symptoms of a structural crisis (Pallagst et al., 2009; Wiechmann, 2008). Although the definition has been widely adopted in the literature, it does not reflect the Canadian context. Many Canadian municipalities, both growing and shrinking, have multiple urban and rural centers due to the pervasiveness of municipal amalgamations. Furthermore, population loss in the Canadian context is predominantly a slower-paced phenomenon (see Appendix A for Canadian

municipal population growth and decline rates). As such, a version of the SCiRN shrinking cities definition amended for the Canadian context will be used for the majority of the dissertation where the geographic concentration is the Canadian context (Chapter 2 focuses more broadly and as such the original SCiRN definition can be used). Generally speaking, a shrinking Canadian city is municipal district with a minimum population of 10,000 residents that has faced population losses for more than two years and is undergoing economic transformations with some symptoms of a structural crisis.

### ***1.3.2 Causes and effects of urban shrinkage***

The root causes of economic decline and population loss are inherently context dependent. The shrinking cities literature reflects this singularity and presents numerous typologies highlighting the causes of urban shrinkage (Bernt et al., 2012; Buhnik, 2010; Cunningham-Sabot & Fol, 2009; Kaugurs, 2011; Oswalt & Rieniets, 2006b; Schatz, 2010; Wiechmann, 2008). Many similarities arise between the classifications from the literature, with suburbanization, demographic change, political transformation, and economic decline and restructuring as recurring themes.

Wars, city fires, natural disasters, epidemics and loss of significance were the major causes of urban shrinkage in the preindustrial era (Oswalt & Rieniets, 2006b). However, in the postindustrial period there was a pronounced change in the principal causes of shrinkage (Schatz, 2010). Sanitary and healthcare infrastructure advancements successfully managed demographically significant epidemics, and improved support and response systems have helped citizens to remain in place following natural disasters (Beauregard, 2003). Yet wars, natural and ecological disasters and violent conflicts do continue to bear consequence in postindustrial shrinking cities (Oswalt & Rieniets, 2006b), as seen in Hiroshima during the Second World War, and New Orleans after Hurricane Katrina. Shock events such as these tend to be isolated cases and often, especially in developing countries, occur within a larger context of high growth rates (Rieniets, 2006).

Shrinkage in recent years has become a slower process that results from a number of different factors either acting independently, or more often, in concert (Schatz, 2010). New facets of urban development have emerged along with global industrialization and successive

deindustrialization, including “new” causes of shrinkage that tend to affect cities in the developed world, especially older industrial centers (Rieniets, 2006).

In order to classify these new causes of shrinkage, Oswalt and Rieniets (2006a) present a four-part typology consisting of destruction, loss, shifting and change. Each factor is also subdivided into a number of particular factors. This typology encompasses the major urban transformations, since the dawn of global industrialization, leading to urban shrinkage. By combining a variety of conflicting causes and effects, Oswalt and Rieniets’ (2006a) classifications exemplify how ostensibly unrelated factors may in fact contribute to one another. A full summary of the typology and its factors can be seen in Table 1.6. Although thorough and emphasizing inter-relatability, due to the combination of conflicting causes, Oswalt and Rieniets’ (2006a) typology is not conducive to natural common classifications. By classifying economic, social, political and cultural aspects together (as in the “Change” classification), analytically objective study becomes difficult.

**Table 1.1: Oswalt and Rieniets' (2006) typology of shrinking cities**

| <b>Destruction</b>  | <b>Loss</b>   | <b>Shifting</b>   | <b>Change</b>  |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>• Wars and armed conflicts</li> <li>• Natural disasters</li> <li>• Death toll</li> <li>• Environmental disasters</li> <li>• Epidemics</li> <li>• War</li> <li>• Environmental pollution</li> </ul> | <ul style="list-style-type: none"> <li>• Shrinking societies</li> <li>• Unemployment</li> <li>• Oil extraction and consumption</li> <li>• Energy consumption</li> </ul> | <ul style="list-style-type: none"> <li>• Mobility</li> <li>• Suburbanization</li> <li>• Push and pull</li> <li>• Flight</li> <li>• Offshoring</li> <li>• Migration</li> </ul> | <ul style="list-style-type: none"> <li>• Political transformation</li> <li>• Life expectancy</li> <li>• Natural population growth</li> <li>• Aging</li> <li>• Demographic change</li> <li>• Economic transformation</li> </ul> |

As the shock occurrences of war, natural and ecological disaster and armed conflict are perceived to be isolated cases (Rieniets, 2006), many scholars omit these events from their urban shrinkage classifications. Although many typologies are organized for specific geographic regions (such as Buhnik, 2010 and Wiechmann, 2008), the causal factors of urban shrinkage can be reorganized into four distinct categories. The drivers and effects of shrinkage are synthesized, generalized and presented in Table 1.7 as a four-part

comprehensive typology consisting of: (1) economic restructuring, (2) demographic change, (3) suburbanization, and (4) political transformation.

**Table 1.2: Drivers and effects of urban shrinkage**

|                | <b>Economic Restructuring</b>   | <b>Demographic Change</b>  | <b>Suburbanization</b>   | <b>Political Transformation</b>  |
|----------------|---|--|--|--|
| <b>Drivers</b> | <ul style="list-style-type: none"> <li>• Increased mobility of labor</li> <li>• Industrial restructuring</li> <li>• Internationalization of production process</li> <li>• Growth of transnational corporations</li> <li>• Increased international trade and investment</li> <li>• Increased concentration of capital</li> <li>• Emergence of a global market</li> </ul> | <ul style="list-style-type: none"> <li>• Decline in birth rate</li> <li>• Aging of population</li> <li>• Absolute population decline</li> <li>• Emigration of youth</li> <li>• Low immigration</li> </ul>    | <ul style="list-style-type: none"> <li>• “White”/middle class flight</li> <li>• Increased mobility</li> <li>• Facilitation by planning and policy</li> <li>• Expected increased quality of life</li> <li>• Greater demands on residential areas</li> </ul> | <ul style="list-style-type: none"> <li>• Collapse of political system</li> <li>• Economic reorganization</li> <li>• Political/economic instability</li> <li>• Privatization of state industrial regions</li> </ul> |
| <b>Effects</b> | <ul style="list-style-type: none"> <li>• Emergence of global cities</li> <li>• Decline of city cores</li> <li>• High unemployment</li> <li>• Gentrification</li> <li>• Increased socio-economic inequality</li> <li>• Brown field sites</li> </ul>  | <ul style="list-style-type: none"> <li>• High number of vacancies</li> <li>• Wastage of infrastructure</li> <li>• Increased socio-economic inequality</li> <li>• Abandonment of residential areas</li> </ul> | <ul style="list-style-type: none"> <li>• Downtown dilapidation</li> <li>• High number of vacancies in city</li> <li>• Stretched infrastructure</li> <li>• Public transport obsolescence</li> <li>• Inner-city crime</li> </ul>                             | <ul style="list-style-type: none"> <li>• Mass emigration</li> <li>• Job loss</li> <li>• Falling birth rates</li> <li>• Decreased life expectancy</li> </ul>  |

### *Economic restructuring*

Economic restructuring and globalization are considered to be key causes of urban shrinkage (Martinez-Fernandez, Audirac, et al., 2012; Schatz, 2010). The restructuring shift from industrial Fordist economies to post-Fordist globalization has led to population loss in older industrial centres all over the globe. This economic shift is driven by a number of factors including the increased mobility of labor and the globalization of the production

process, both which are mirrored by the increased concentration of capital in the emerging global market and the growth of transnational corporations (Castells, 2004). The structural shift from a manufacturing-based economy to a knowledge-based economy has manifested itself in the form of unemployment and outmigration (Hollander et al., 2009), increased socio-economic inequality (Soja, 2000), gentrification (Audirac et al., 2012) and increased brownfield sites (Zakirova, 2010).

### *Demographic change*

Postindustrial urban shrinkage, according to the literature, is strongly related to demographic change and migratory movements (Bernt et al., 2012; Buhnik, 2010; Wiechmann, 2008). In the past fifty years, the majority of shrinking cities have been located in Western industrial countries (Rieniets, 2005) and in most Western industrial countries birth rates are declining and populations are aging (Wiechmann, 2008). In many of these countries, urban growth only results from immigration or redistribution of residents within the country (Rieniets, 2005). The combination of demographic aging, low immigration, and in many post-socialist countries, the emigration of youth, produce an absolute decline of the population (Audirac et al., 2012; Beauregard, 2003; Turok & Mykhnenko, 2007). In turn, this leads to a high number of vacancies (Großmann et al., 2008), underused infrastructure (Buhnik, 2010; Wiechmann & Pallagst, 2012), increased socio-economic inequality (Martinez-Fernandez & Wu, 2009) and the abandonment of residential areas (Hollander, 2011; Martinez-Fernandez & Wu, 2009; Wiechmann, 2008).

### *Suburbanization*

Van den Berg et al. (1982) describe suburbanization as being associated with a two part process: (1) population and job loss within the inner city and (2) the simultaneous constant growth of the entire region. While suburbanization is considered by many researchers to be a principal cause of urban shrinkage (Bernt et al., 2012; Buhnik, 2010; Pallagst, 2005), its extent does vary from country to country, being more prominent in the United States and Britain and less in Europe and Japan (Beauregard, 2003; Buhnik, 2010; Hesse, 2006).



Suburbanization is driven by a number of factors, many of which are associated with increased mobility and the expected increase in quality of life outside the city (Rieniets, 2005). It is also driven by the greater demands on residential areas and has been facilitated by planning and policy (Schatz, 2010). The American suburbs grew at a frantic pace between 1950 and 1970, doubling in population and, for the first time, exceeding the urban population (Rieniets, 2005). This exodus to the suburbs is known as “white flight” in the United States because it was principally white citizens who fled the cities after an influx of minorities migrated from southern regions in search of jobs (Beauregard, 2003). This was in part driven by the many federal policies focused solely on new infrastructure and new development, as opposed to rehabilitation or infill redevelopment (Németh & Langhorst, 2013). Redlining, the denial of home loans in certain neighborhoods showing supposed physical decline, by insurance and banking institutions further promoted suburban development and was particularly detrimental to African-American communities (ibid.). When large populations of residents relocate to suburban areas, large amounts of tax dollars must also be re-allocated as infrastructure must be stretched to accommodate more distance and is, simultaneously, underused in the city core (Großmann et al., 2008). Other effects of suburbanization include downtown dilapidation, high vacancies in the city centre and increased inner-city crime (Hollander et al., 2009; Wiechmann & Pallagst, 2012).

### *Political transformation*

Two of the most prominent political transformations in the post-Fordist era have been German reunification and the collapse of the Soviet Union, which resulted in severe urban shrinkage in Eastern Germany, the former Soviet Union and other former Eastern European planned economies (Bontje, 2004). Massive population losses are due to the economic reorganization and collapse of an entire political and social system. Formerly state-planned industrial regions were particularly affected as they were forced to generate a new economic foundation. These shifts led to mass outmigration, especially of well-trained young adults, job loss, rapidly falling birth rates and even decreased life expectancy (Martinez-Fernandez, Audirac, et al., 2012; Rieniets, 2006; Wiechmann & Pallagst, 2012).

### *1.3.3 Urban shrinkage processes*

Although causal typologies exploring the drivers and effects of urban shrinkage have been instrumental in shaping our understanding of shrinking cities, the linear narrative presupposed in many of the articles underplays the complexity of the urban shrinkage process. The multifaceted complexity of the urban shrinkage process has been recognized in the literature (Martinez-Fernandez, Audirac, et al., 2012; Zakirova, 2010), yet it has been the focus of little academic research. The drivers outlined in the various causal typologies undoubtedly play a key role in the development of urban shrinkage, however it is important to recognize that they manifest within a larger complex system complete with interdependencies and feedback loops. Studying the processes in isolation is an important starting point, but to gain a deeper understanding of the phenomenon research cannot rely solely upon linear, static approaches and analysis. Empirical research examining the dynamic processes of shrinkage is necessary in order to grasp the nonlinear interdependencies between the causes and effects (Großmann et al., 2013).

Hoekveld (2012) recognizes the scarcity of, and need for, empirical research to disentangle the complex causal relations in shrinking cities. She contends that the sequence of developments in the shrinkage process and the regional differentiation of the causes and degree of shrinkage have been largely overlooked. Using multivariate statistical analysis, Hoekveld's (2012) examination of the spatial clustering and temporal sequencing of demographic, economic and spatial variables determined that the attractiveness of a shrinking municipality and its relation to other municipalities influenced intraregional differentiation. Furthermore, Hoekveld's research demonstrated the potential to incorporate quantitative methods and an empirically driven systems approach to shrinking cities research.

A clearer understanding of the complexity of the urban shrinkage processes will shed light on the common and distinctive characteristics of shrinking cities. Such insight will be timely as Großmann et al. (2013) note that the diversity of urban shrinkage experiences has resulted in futile international debates. They recommend a shift in focus from the causes to the context and dynamics of shrinkage to help build a better understanding of the complexity of the urban shrinkage process and the diversity of urban shrinkage experiences. The authors further contend that contrasting urban shrinkage experiences may help uncover "blind spots" that could contribute to developing strategies to manage the challenges of urban shrinkage.

#### *1.3.4 Planning response*

Shrinking cities often need to support increased urban services, maintain superfluous infrastructure and manage growing blight and abandonment while economic activity and revenues wane. It is a uniquely difficult position and many scholars have concluded that traditional growth strategies are often inapplicable within the context of population loss and economic restructuring (Ehrenfeucht & Nelson, 2011; Martinez-Fernandez, Kubo, et al., 2012; Martinez-Fernandez et al., 2015). Many cities experiencing shrinkage have attempted to reverse the trend through large-scale reimagining projects such as Detroit's Renaissance Center (Neill, 2015) and Flint's AutoWorld theme park (Wisniewski, 2013). Large-scale developments are a considerable financial risk for a resource-stricken city and as such Großmann et al. (2008) contend that cities should concentrate on adapting to urban shrinkage rather than searching in vain for a "silver bullet" solution.

In fact, many academics have called for a paradigm shift away from growth-focused planning in shrinking cities (Audirac et al., 2010; Blanco et al., 2009; Hollander et al., 2009; Hummel, 2014; Pallagst, 2010). Although the planning toolbox remains dominated by growth-centric approaches (Ehrenfeucht & Nelson, 2011; Hollander & Németh, 2011; Hollander & Popper, 2007; Martinez-Fernandez, Kubo, et al., 2012; Olsen, 2013), alternative strategies that do not target or rely upon population growth have begun to garner attention. Demolition and rightsizing strategies aimed at reducing a city's physical size have been discussed, debated and implemented in many areas (Bernt, 2009; Bertron, 2013; Hackworth, 2015; Mallach & Brachman, 2013; Yin & Silverman, 2015). However, strategies for shrinking cities are not limited to contraction, as strategies incorporating green infrastructure (Schilling, 2009), urban agriculture (Delgado, 2015; Draus et al., 2013; Schwarz et al., 2016), temporary use (Németh & Langhorst, 2013) and even a zombie apocalypse theme park (Schindler, 2014) have been proposed.

Hospers (2013) classifies strategies in shrinking cities in terms of their overarching goal, stating that strategies either trivialize, counter, accept or use shrinkage. Ehrenfeucht and Nelson (2011, p. 129) propose that planning in shrinking cities require four interrelated elements: "strategies for targeted investment and consolidation, less intensive alternatives for underused areas, mechanisms to maintain or integrate unused parcels in areas with sparse settlement and plans for sustainable urban service provision and infrastructure maintenance."

Considering the role of planners in shrinking cities, Schatz (2010) advocates that planners must change the role they play in the community by leaving behind assumptions of growth and by increasing citizen participation in the planning process.

Although the literature on planning and planning strategies for shrinking cities has increased, there remains a gap in our understanding of how practitioners perceive these strategies, their applicability and their feasibility. Some research has explored the perceptions of practitioners to urban shrinkage (Hollstein, 2014; Schatz, 2010; Warkentin, 2012), but there is very little literature examining practitioners' assessments and opinions of strategies to move forward. Großmann et al. (2013) and Bernt et al. (2014) both recognize the need to study the roles of policy actors, their perceptions and their methods of cooperation and decision making. As a starting point to better understand practicing planners perceptions, the next section investigates the role of shrinkage in planning education.

### ***1.3.5 Are planners equipped to manage shrinkage?***

Like many professions, planning has dedicated, accredited university and college programs. Planning certification can be achieved through a combination of experience and non-planning education, however, “the preferred, normal route to membership is through successful completion of a university degree in planning from a program formally accredited by the planning profession” (Professional Standards Board, 2014). A masters-level graduate degree is now considered to be the standard for planning practitioners and a requirement for many planning positions (American Planning Association, 2015). Although there are over 130 universities and colleges that offer planning programs in the United States and Canada, only 94 of these are recognized by regional and national certification and accreditation boards. Many of these institutions offer programs at the undergraduate, masters and doctoral level; however, masters programs are the most common.

National and regional accreditation bodies preserve and enhance the consistency, transparency and modernity of professional planning programs (Planning Accreditation Board, 2014). Accreditation bodies, such as the Planning Accreditation Board (PAB) in the United States and the Professional Standards Board (PSB) in Canada, dictate program and curriculum guidelines to best prepare students for public and private planning professions. By

setting pedagogical standards across the profession, consistent baseline knowledge and training are assured, preparing planners for successful careers and mobilizing knowledge across the public and private realms (Association of Collegiate Schools of Planning, 2009; Planning Accreditation Board, 2014; Professional Standards Board, 2014).

Accredited planning programs are regularly reviewed to ensure high quality education for future planners (Planning Accreditation Board, 2014; Professional Standards Board, 2014). Early career planners graduating from accredited programs have been found to be proficient with growth-related planning functions; however, they struggle to deal with decline-related challenges (Greenlee et al., 2015). Issues related to decline and its symptoms were found to be further afield from the formal training and education received by early career planners (ibid.). In this section I explore the role of post-secondary education in preparing planners for urban shrinkage, economic decline and aging populations through a review of accredited planning curriculums across North America.

In order to determine whether planning programs address economic decline, urban shrinkage or aging populations, I examined the 2013/2014 course offerings of every accredited program in the United States and Canada. Curricula from all 94 accredited North American planning programs, accessed via their websites, were included in the analysis. I examined the course offerings in order to assess their integration of coursework pertaining to the three major trends – economic decline, population loss and aging. All course titles and descriptions were fully read, rather than performing a key word search, so as to be certain to capture both apparent and embedded mentions of urban shrinkage, economic decline or aging populations. If a course title or description included any explicit or implicit reference to shrinkage, decline, population loss, or aging it was highlighted in the analysis. The search criteria also included courses pertaining to redevelopment and revitalization. This method proved to be time-intensive, but ensured comprehensiveness and consistency. It is possible that course offerings may have touched on decline, population loss or aging without explicit or implicit mention in the course title or description, however it was felt that the inclusion or exclusion of these trends as a central theme in a course is a notable result. The goal is not to question or devalue planning education, but rather to start an important discussion about emerging challenges facing future planners. It must be noted that most programs offer

Special Topics and Reading courses, for which the details usually were not available, so this analysis contains only clearly stated offerings.

The analysis of the 94 accredited North American planning programs found that only 1% of institutions offered a course in aging communities. Only 2% offered a course in either decline or urban shrinkage. Not surprisingly, the decline and urban shrinkage courses were offered at universities located in Northeast and Midwestern United States (University of Cincinnati, Pratt Institute (Brooklyn), SUNY (Buffalo), Wayne State University (Detroit)). However, economic and population decline are not limited to only one region or “belt” of the continent (Hollander, 2011). Many regions in Northern and Eastern Canada have decades-long histories of population loss and economic decline, yet the planning programs at their local universities do not reflect those trends in their coursework. Although focused on regrowth rather than managing and optimizing population loss, it is noteworthy that there were 19 separate courses (at 18 institutions as Jackson State University offers revitalization courses at both the Masters and PhD level) focused on redevelopment and/or revitalization. Appendix D contains the full results of the study.

Based on these results, planners working in shrinking, aging or declining urban areas have had little to no opportunity for formal university training on how to manage the symptoms of population shrinkage and economic decline. Guidance outside of formal university education may be available, but considering the degree of the demographic and economic trends, post-secondary planning education needs to play a stronger role. Newly graduated planners entering the workforce must be exposed to, familiar with, and have a clear understanding of the challenges and opportunities present in these communities and the different approaches and techniques implementable. This dissertation begins to bridge that gap by exploring the evolution of shrinking cities and potential response strategies to the challenges of urban shrinkage.

## **1.4 Canadian urban landscape**

This section focuses on the Canadian urban landscape, recent and future demographic trends, and takes a closer look at the Canadian urban academic literature.

### ***1.4.1 Recent demographic trends***

Canadian fertility rates have long been declining (Beaujot & Kerr, 2004; Bourne & Simmons, 2003; Palmer, 2003; Schatz, 2010; Simmons & Bourne, 2007) from seven children per woman in 1851 (Beaujot & Kerr, 2004) to an average of 1.61 children per woman in 2012 (Statistics Canada, 2016). Falling fertility rates are coupled with an aging national population, characteristic of a second demographic transition (van de Kaa, 2002), hence community populations can only grow by regional migration and immigration (Bourne & Simmons, 2003; Schatz, 2010; Simmons & Bourne, 2007), with immigration accounting for an increasing proportion of Canada's national growth (Simmons & Bourne, 2007). Between 2001 and 2011, net international migration was responsible for two-thirds of the nation's population growth (Statistics Canada, 2012). Although immigrants are settling slightly more diversely than in the past (with concentrations in Toronto, Vancouver, Montreal and Calgary), they continue to settle in large metropolitan areas and do not tend to disperse to other cities and regions over time (Simmons & Bourne, 2007).

As immigration is the principal form of national growth and immigrants tend to settle in large metropolitan areas, it follows that urban shrinkage in Canada occurs outside the larger cities where net migration is consistently negative. More specifically, it is most prevalent in the country's periphery (Polèse & Shearmur, 2005), which is defined as a location more than one hour's travel from a urban centre of 500,000 or more. This includes a variety of communities and in particular communities with resource-based economies and in hinterland regions (Leadbeater, 2009). And often, communities that are identified as "stable or even fluctuating might equally be considered 'stagnating' and share conditions similar to those with persisting decline" (Leadbeater, 2009, p. 90).

The common rationale in the literature for this growth disparity is related to globalization and structural economic shifts (Schatz, 2010). Canadian cities in resource and manufacturing-based regions have experienced significant job losses due to the growth of the service sector, the concentration of knowledge-based jobs in large metropolitan areas and the decline of the resource and manufacturing sectors themselves (Bourne & Simmons, 2003; Hall & Hall, 2008).

Leadbeater (2009, p. 94) explains that changing conditions at the community and macro-level have shifted the development prospects and created a new "crisis of hinterland

development”. This crisis is characterized by (1) an increase in productivity in resource industries, (2) massive increases in the concentration of both domestic and international capital, (3) major shifts in state policy resulting in cutbacks in employment and social programs, (4) environmental limits on production and consumption, and (5) increased political resistance regarding sovereignty and land claims from Aboriginal peoples. These changes have resulted in declining employment and an exodus of residents in search of economic well-being elsewhere (Shearmur & Polèse, 2007).

Table 1.1 depicts the demographic trends of census agglomerations (CA) and census metropolitan areas (CMA)<sup>1</sup> over the four census periods from 1991 to 2011. In the table, “shrink” is defined as less than 0% growth, “no/slow growth” as positive growth that is less than the Canadian average, and “growth” as greater than the Canadian average. Between 2006 and 2011, the population of 19% of CAs and CMAs shrank. This is the lowest of the four census periods, with the previous three having 26% (2001-2006), 45% (1996-2001) and 24% (1991-1996) of CAs and CMAs with declining populations. However, the percentage of no/slow growth CAs and CMAs had increased each census period since 1996. Thirteen of the CAs and CMAs posted negative growth through all four of the census periods. These shrinking communities are most commonly found in Northern regions and in Eastern Canada. A detailed description of the growth rates of all CAs and CMAs over the four periods can be found in Appendix A.

**Table 1.3: Population change of CAs and CMAs 1991-2011 (Source: Statistics Canada)**

| Population Change | CA and CMAs |    |           |    |           |    |           |    |
|-------------------|-------------|----|-----------|----|-----------|----|-----------|----|
|                   | 2006-2011   |    | 2001-2006 |    | 1996-2001 |    | 1991-1996 |    |
|                   | %           | #  | %         | #  | %         | #  | %         | #  |
| Shrink            | 19%         | 29 | 26%       | 37 | 45%       | 63 | 24%       | 31 |
| No/Slow Growth    | 46%         | 72 | 42%       | 60 | 31%       | 43 | 45%       | 58 |
| Growth            | 35%         | 54 | 33%       | 47 | 24%       | 33 | 32%       | 41 |

Population change by urban size was also examined in order to acquire a better understanding of the changing urban landscape (Statistics Canada, 2013c). Overall, between

<sup>1</sup> Area consisting of one or more adjacent municipalities situated around a major urban core. To form a census metropolitan area, the urban core must have a population of at least 100,000. To form a census agglomeration, the urban core must have a population of at least 10,000. 69.1% (2011) of Canadians live in the 33 CMAs. Source: Statistics Canada



2001 and 2011 the number of urban dwellers in Canada increased by 14%. Every large urban area (population greater than 500,000) grew and together they experienced considerable growth, changing by 16% in a decade. Middle size urban areas (population between 50,000 and 500,000) saw almost as much growth with a change of 14%, however, growth was not as ubiquitous as 11% of the middle size urban areas declined in population. The population of 27% of small urban areas (population between 10,000 and 50,000) declined and overall the population living in these areas decreased by 2%. Small cities or towns constituted the majority of Canada's declining urban areas; none of the large urban areas experienced population loss.

Although Canada has been one of the fastest growing G8 countries over the last 15 years (United Nations, 2015), growth is not evenly dispersed across the entire country. Population growth in Canada is still mainly concentrated in large urban areas and the majority of CAs and CMAs are growing slower than the nation as a whole. Historical trends in population are extremely important to understanding the urban landscape, however, projections painting a picture of future trends are also crucial. The next section will focus on local-scale population projections and the future of Canadian urban change.

#### ***1.4.2 Projecting Canadian urban change***

Population projections, at all levels of government, are needed to gauge future vulnerabilities and appropriately inform decisions (Wilson & Rees, 2005). In Canada, population projections are produced and published regularly at the federal, provincial and territorial level by Statistics Canada and at the census division level by some provincial ministries of finance. However, once the jurisdictional scale moves to the local level, there is no single organization that produces population projections. This means that municipalities are left to their own devices to calculate these figures. Furthermore, there are no current regulations, guidelines or best practice available to instruct actors at the individual municipalities. Often municipal population projections are developer driven, as they are integral in identifying development needs and opportunities (Klosterman, 2013). However, as private sector municipal population projections often utilize freely available source data (e.g.

Statistics Canada or Ministry of Finance), it is beneficial for municipalities to produce their own projections to control the inherent bias (Klosterman, 2013).

This has resulted in a wide range of methods, assumptions and levels of accuracy in forecasting populations. For example, the City of Belleville, ON employs extrapolation techniques, both linear and polynomial, to calculate its projected population (City of Belleville, 2010). This means the City relies exclusively on past trends in population to forecast future change. In the City of North Bay, ON a housing unit method is used to project its population (Watson & Associates, 2009). This, in short, means that the forecasted population is based on the development of new housing. The City assumes that average occupancy will hold true for any new housing built. Assuming that an increase in housing development guarantees a similar increase in population is not only a volatile basis for planning decisions, but counterintuitive. However, at least projections are being made, whereas in some smaller municipalities they are not produced at all.

The lack of methodological consistency across cities makes municipal comparison ineffectual and has implications for a regional understanding of development, competition, and collaboration. Furthermore, poor projections leave individual municipalities vulnerable to making long-term decisions based on inaccurate information. Larger metropolitan areas such as Toronto, Montreal, and Vancouver have both the monetary resources and staff expertise to invest in more complex, expensive and time-consuming methods similar to those used by Statistics Canada. However, smaller municipalities must work within much tighter monetary constraints, yet population projections are still vital to their planning and development.

In order to gauge the potential for future shrinkage in the Canadian urban landscape, comparable population projections at the local level were necessary for this research. Therefore, a thorough review and analysis of population projection methods was conducted, concluding that a share-capture model is most appropriate at the local scale (Hartt & Woudsma, 2014). The share-capture model, which assumes that the local municipal share of a surrounding region's population will remain consistently proportional into the future, was applied to all municipalities (with populations above 10,000) in Ontario, Alberta and British Columbia projecting populations by five-year age cohorts to the year 2036. As this method is only possible with available projections for the surrounding region, data availability limited

the scope of the shrinkage vulnerability analysis. That being said, by using census level projections from the Ontario Ministry of Finance, the Alberta Treasury Board and Finance department and sub-provincial populations projections from the British Columbia Stats' P.E.O.P.L.E. database, I was able to calculate cohort-based population projections for 262 communities (see Appendix B for summary projection results). It is worth noting that in calculating population projections the Alberta Treasury Board and Finance department (2012) does note the volatility of their economic base (oil and gas). Their population projection model did assume an eventual decrease in migration due to a waning provincial economy, however the assumptions did not fully anticipate the recent decline of the oil and gas industry. As a result, short-term projections based on these figures may be overly optimistic.

**Table 1.4: Trends in 2036 projected populations of Alberta, British Columbia and Ontario CAs and CMAs**

| Population Change | Alberta |      | BC |      | Ontario |      | Total |      |
|-------------------|---------|------|----|------|---------|------|-------|------|
|                   | #       | %    | #  | %    | #       | %    | #     | %    |
| Shrink            | 0       | 0    | 1  | 1.7  | 22      | 13.8 | 23    | 8.8  |
| No/Slow Growth    | 6       | 14.0 | 28 | 46.7 | 72      | 45.3 | 106   | 40.5 |
| Growth            | 37      | 86.0 | 31 | 45.3 | 65      | 40.9 | 133   | 50.8 |

According to Statistics Canada's medium growth scenario, Canada's population is expected to grow to 42,903,400 by 2036 – a change of 22% from 2013 estimates (Statistics Canada, 2015). Table 1.2 depicts the number and percentage of municipalities in Alberta, British Columbia and Ontario with populations projected to shrink, experience no/slow growth (positive growth lower than the national average) or grow by 2036. The results show that there is widespread growth projected across Alberta with Wood Buffalo expecting exceptional (53%) growth. The majority of British Columbia is also expected to grow, albeit at a slower pace, with the exception of the shrinkage of the resource-based community of Powell River (expected to shrink by 10%). There is less parity amongst the projections for Ontario municipalities. Southern Ontario is predominantly expected to grow, especially surrounding the Greater Toronto Area, yet there are pockets of projected population decline on the outskirts of Ottawa and in southwestern industrial areas. Large swaths of the northern half of Ontario are expected to remain stagnant, grow very slowly or shrink. In general across

the provinces, the large metropolitan areas are expected to grow substantially. The greatest areas of projected growth and shrinkage are detailed in Table 1.3.

**Table 1.5: Projected population growth and shrinkage by 2036**

| SHRINK               |                 |                 | GROW            |                 |                 |
|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| City                 | Absolute Change | Relative Change | City            | Absolute Change | Relative Change |
| Sault Ste. Marie, ON | -5155           | -6.9%           | Toronto, ON     | 624260          | 22.1%           |
| Chatham-Kent, ON     | -5015           | -4.8%           | Calgary, AB     | 596052          | 50.9%           |
| Cornwall, ON         | -2602           | -5.6%           | Edmonton, AB    | 386436          | 45.0%           |
| Norfolk, ON          | -2213           | -3.5%           | Ottawa, ON      | 382200          | 41.0%           |
| Timmins, ON          | -1636           | -3.8%           | Mississauga, ON | 314558          | 43.6%           |

It would be shortsighted to discuss future demographic trends in the Canadian context without touching on the subject of aging. The nationally rising median age and resulting issues are well known to academics, demographers, practitioners and to the general public. Birth rates across the country have remained, predominantly, below the replacement rate, while the mobility of younger educated adults has resulted in a rise of select migration away from smaller, peripheral towns (Townshend & Walker, 2015). Such changes in population challenge the viability of economic systems, as older citizens are dependent on a smaller working population (Nefs et al., 2013). This can be represented by the dependency ratio, which measures the number of older people (aged 65 and above) and young people (aged 0 to 14) per 100 persons of working age (between 15 and 64).

Using the results from the population projections, I calculated dependency ratios for every municipality with a population of over 10,000 in Alberta, British Columbia and Ontario. When examining the change in dependency between the base year of the projections (2013) and the endpoint (2036), every single municipality save one (Grande Prairie, AB) is projected to become more dependent. The projected top five most and least dependent municipalities in these three provinces are listed in Table 1.4. Of the cities that are predicted to have the highest dependency ratios in 2036, all but Parksville, BC are projected to experience over 50% growth of dependency ratio – with Hawkesbury, ON over 100%.

**Table 1.6: Projected dependency ratios**

| MOST DEPENDENT  |                  |       | LEAST DEPENDENT    |                  |      |
|-----------------|------------------|-------|--------------------|------------------|------|
| City            | Dependency Ratio |       | City               | Dependency Ratio |      |
|                 | 2013             | 2036  |                    | 2013             | 2036 |
| Sidney, BC      | 94.8             | 150.9 | Grande Prairie, AB | 35.9             | 36.1 |
| Elliot Lake, ON | 85.1             | 149.3 | Kamloops, BC       | 25.5             | 37.2 |
| Cobourg, ON     | 68.7             | 134.2 | Wood Buffalo, AB   | 26.4             | 41.2 |
| Parksville, BC  | 97.6             | 128.0 | Cold Lake, AB      | 40.5             | 44.8 |
| Hawkesbury, ON  | 58.8             | 122.0 | Beaumont, AB       | 43.4             | 47.8 |

Dependency ratios are an important indicator of future demographic change in cities; they capture both the old and young dependents. As Canada’s aging population is a growing concern, the dependency ratio only tells part of the story. To capture the current and forthcoming old-age dependency of a municipality, I calculated the current and projected number of older people aged 65 and above per 100 persons of working age between 15 and 64. The results show that every single one of the 262 municipalities is expected to experience an increase in old-age dependency. For the municipalities in Ontario, the projected overall old-age dependency is 53.4, whereas it is 49.9 and 29.0 in British Columbia and Alberta respectively. Table 1.5 shows that some communities such as Parksville, BC already boast a high share of older residents, which has benefits and challenges of its own, but other cities, such as Hawkesbury, ON are expected to undergo a radical change in demographics. In contrast, Wood Buffalo, AB’s old age dependency in 2013 was only 2.6 and is expected to rise to 17.6 in 2036 – still a significant jump, but a very different situation than the others outlined in the table.

**Table 1.7: Projected old age dependency ratios**

| City            | 2013 Old-Age Dependency | 2036 Old-Age Dependency | % Change in Old-Age Dependency |
|-----------------|-------------------------|-------------------------|--------------------------------|
| Sidney, BC      | 75.0                    | 130.0                   | 73.4                           |
| Elliot Lake, ON | 66.4                    | 126.8                   | 91.0                           |
| Cobourg, ON     | 46.2                    | 106.7                   | 131.2                          |
| Parksville, BC  | 77.3                    | 105.2                   | 36.1                           |
| Hawkesbury, ON  | 38.5                    | 96.9                    | 151.6                          |

When comparing the population change and dependency tables, there does not appear to be much of a connection. Cities with the most extreme growth or shrinkage are not the ones expected to witness the most significant change in dependency. However, cities with relatively high old-age dependency ratios in 2013 are projected to become even more dependent. If we assume that these trends were to continue, some of the cities experiencing growing old-age dependency are likely to become shrinking cities as death rates rise in unison.

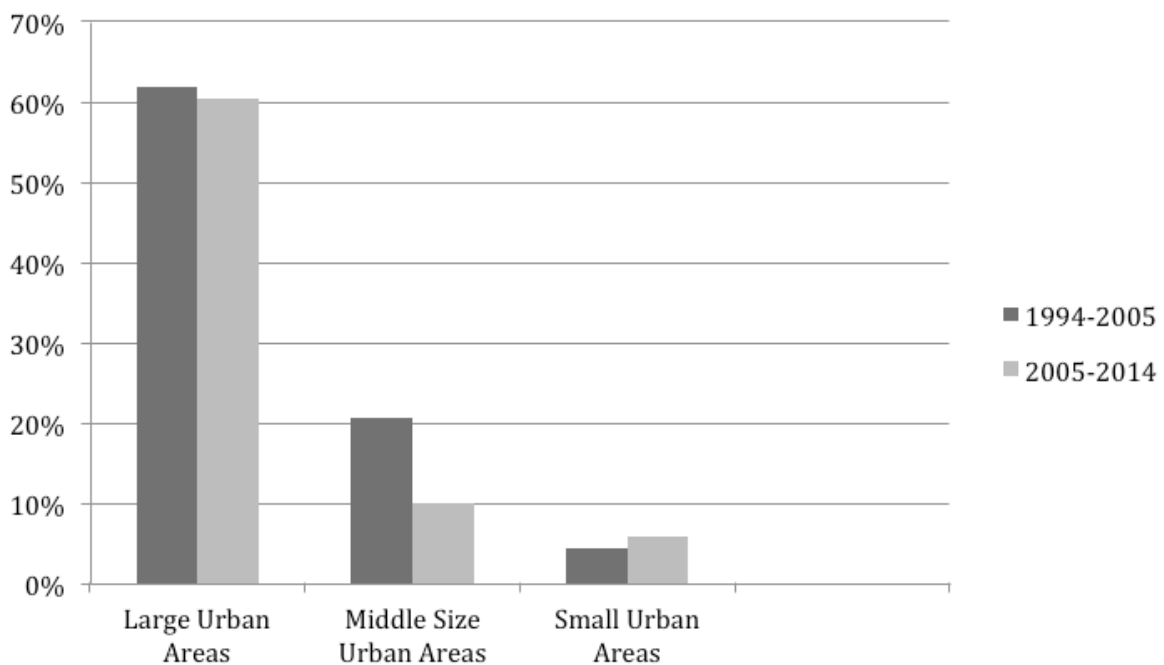
This section has examined Canadian demography and demonstrated the unevenness of growth over the past twenty years and the potential challenges for Canadian municipalities. In the next section the focus shifts to the Canadian academic literature and how it has represented the changing Canadian urban landscape.

#### ***1.4.3 Representation in the Canadian urban literature***

Hall and Hall (2008) examined the increasing unevenness of the Canadian urban system and the overrepresentation of growth-related research in the urban geography, planning and policy-related Canadian literature. By classifying journal articles published between 1994-2005 according to their implicit or explicit viewpoint towards urban growth and decline, they were able to determine the prevalence of both growth-centric and metropolitan-centric research. The results supported their hypothesis that growth is overwhelmingly presented as expected and natural. They showed that urban research is fixated on large metropolitan areas and that very few articles, only 4%, concentrated on small urban areas even though they made up 9% of the total national urban population. Furthermore, virtually no articles discussed decline or no-growth as ongoing trends requiring additional research. When decline was discussed, it was generally presented in the context of attracting growth and the anticipated challenges associated with growth management. The authors concluded by stressing the critical need for research on shrinking and no-growth urban areas in the Canada context.

Since the publication of the Hall and Hall (2008) article, significant changes in the global economic system have impacted countries and cities throughout the world. The Great Recession in 2007-2008, considered the worst global recession since World War II

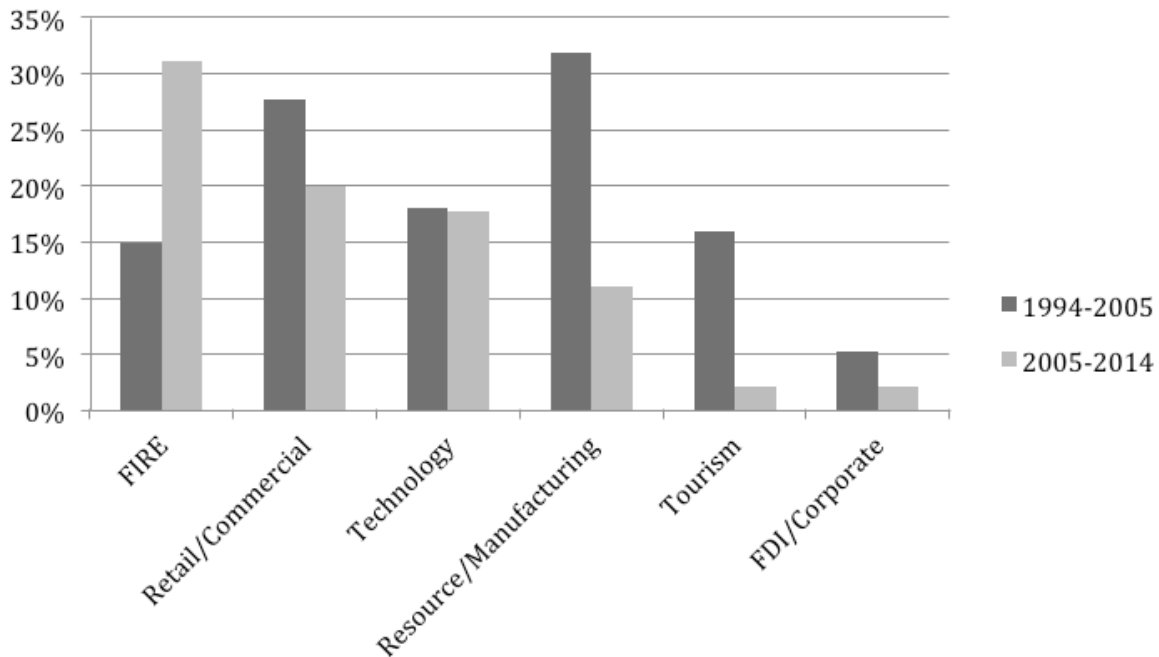
(International Monetary Fund, 2009), led to increased unemployment and debt, and has had negative consequences for mental and physical health (Arribas-Bel & Gerritse, 2015; Frank et al., 2013). Birth rates fell and foreign-born population growth declined, and in some cases even reversed, in major immigrant-receiving countries in Europe and North America (Papademetriou et al., 2011). As Hall and Hall's study only included journal articles published between 1994 and 2005, the global economic recession and subsequent repercussions were not captured in their study. Therefore, in order to gauge the prevalence of growth-centric and metropolitan-centric research in the Canadian urban literature, I recreated Hall and Hall's (2008) study, examining 1518 articles from eight English-language urban geography, planning and policy-related journals. In this section I provide a summary of the findings - a full detailed review of the methods, analysis and results can be found in Appendix C.



**Figure 1.3: Comparing distribution of articles by urban size**

Articles on large urban areas dominated the literature. As can be seen in Figure 1.3, approximately 60% of the articles in both study periods focused on urban areas with a population larger than 500,000. However, the number of articles dedicated to middle size

urban areas decreased dramatically from 21% to 10%. This can be seen as an even more pronounced under representation as middle size urban areas make up close to 30% of the nation’s urban population. However, articles that concentrated on all three categories of urban size – small, middle and large - could account for some of this loss. In the original study, only 0.7% of articles were found to discuss all three categories; however between 2005 and 2014 over 12% of articles examined considered all three urban sizes of areas together. Hall and Hall (2008) found that articles focusing solely on small urban areas were particularly under-represented and, as suggested by the title of their paper *Canada’s Forgotten Interior*, this was a cause of concern. This trend continues to be true, however, the gap has been partially bridged as the percentage of articles focusing on small urban areas has increased from 4.4% to 5.9% while small urban area’s share of urban population fell from 8.9% in 2001 to 7.6% in 2011.



**Figure 1.4: Comparing percentage of articles by economic sector**

Figure 1.4 compares the focus of articles by economic sector and shows perhaps the most significant and telling changes occurring in urban Canada. The focus on the resource extraction and manufacturing sector has plummeted over the decade from 32% of the articles



down to 11%. Despite the recent growth of the service-based economy (Vinodrai, 2015), the results show that articles focused on retail, commercial and entertainment sectors have actually decreased from 27.7% to 20%. An even more severe decline was seen in articles on tourism, which have shifted from 16% to 2.2%. In stark contrast, articles on the financial, insurance, real estate, and business and producer services sector have increased dramatically from 14.9% to 31.1%.

Scholarly research does not necessarily follow trends in the economy or population demographics. In fact, it can be argued that due to the length of the peer-review publication process there could be a consistent delay as academia takes time to react to real world events. However, trends in the literature do provide insight to the general focus of academia. A number of developments, both within and outside academia, could potentially have swayed the focus of the Canadian urban literature since 2005 (the endpoint of Hall and Hall's study). The Great Recession and an increased economic dependence on oil and gas (until very recently) influenced migration patterns and the fiscal health of government at all scales as well as private sector enterprises. Shrinking cities, legacy cities, urban exploring and other topics related to population loss garnered widespread attention as academic scholarship flourished worldwide and cities, like Detroit, became the focus of countless articles, book and documentaries. However, in Canada large urban areas remained very much the focus of urban academics. Staying consistent with the findings from Hall and Hall (2008), small and mid-sized urban areas continued to be underrepresented in the literature. But articles examining areas of multiple sizes became much more commonplace. This suggests a growing interest in regional geographies and systems. By recognizing that multiple urban areas work within a larger system, perhaps Canada's smaller and declining cities will be better represented and our larger urban systems better understood.

#### ***1.4.4 Summary***

Over the past 25 years, the Canadian urban landscape has changed considerably. Birth rates have long been declining and population growth, nationally, continues to be reliant on immigration. Examining the four census periods between 1991-2011, it is clear that the percentage of shrinking CAs and CMAs has declined; however the percentage of no/slow

growth areas has increased significantly. Further examination suggests that this is largely driven by the unevenness of the Canadian urban economic and population landscape. Every large urban area has grown considerably, whereas many small urban areas are experiencing decline. Despite reporting significant growth overall, many middle size urban areas are also shrinking. The lack of parity in growth can be partially attributed to immigrant settlement patterns, which tend to favour large metropolitan areas.

Looking to the future, we see that the Canadian urban economic and population landscape is projected to remain uneven. The no/slow growth trend is expected to continue in areas outside of metropolitan commuter sheds, especially in rural and northern parts of the country. Furthermore, dependency ratios are expected to increase across almost all of Alberta, British Columbia and Ontario and, more importantly, old-age dependency is expected to increase in every single municipality with population over 10,000 in these three provinces. With so many municipalities projected to have such a top-heavy population structure, an increase in shrinking and no/slow growth cities can be expected as birth rates continue to drop and death rates begin to rise.

These results present a clarion call for Canadian planners, policymakers and urban academics to rethink planning and economic development approaches and strategies for a context without population growth. This call is especially critical as the Canadian English language urban geography, planning and policy-related literature continues to focus on growth and metropolitan-centric research while underrepresenting small and mid-sized urban areas.

## **1.5 Research strategy**

According to Yin (2014) there are three conditions that dictate the selection of appropriate research methods: (1) research question type, (2) degree of researcher control over behavioral events, and (3) the concentration on contemporary versus historical events. The first condition, research question type, can be categorized into questions asking “who”, “what”, “where”, “how” and “why”. The first three questions generally favour exploratory studies or investigations about the prevalence of a phenomenon. The latter two, “how” and “why” are more explanatory, often examining operational links over time, rather than static

events. The overarching research goals of this dissertation are firmly rooted in the latter category, seeking explanations for complex events that change over time, and therefore according to Yin (2014) are most suited to a case study, experiment or history research method.

The second condition is contingent upon the degree of control held by the researcher. In an experiment, the researcher has considerable control and can influence behaviors directly, precisely and systematically. In contrast, a history method is preferred when the researcher has effectively no control – concentrating exclusively on the “dead” past. Similarly a case study method also explores behavioral events that cannot be manipulated, however, the temporal nature of a case study differentiates it from the history method. Case studies are intended for contemporary events where researchers have the opportunity to directly observe the events being studied and interview persons involved. Although this dissertation relies heavily on secondary historic data, key informants interviews were needed to gather important contextual information. Considering the explanatory nature of the research objectives, the lack of researcher control over the events and the contemporary nature of the phenomenon being studied, I chose to use a case study research method.

Yin (2014, p. 17) provides a twofold definition of a case study. Part one of the definition concentrates on the scope and part two on the features of a case study:

“1. A case study is an empirical inquiry that investigates a contemporary phenomenon (the “case”) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident.

2. A case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis.”

The blur between phenomenon and context is often present in planning research. It is particularly present in the topic of this dissertation, shrinking cities, where the phenomenon is

inherently context dependent and can self-propagate through internal, and external, feedback loops. Economic, demographic and socioeconomic factors are highly and closely interrelated and can result in (and/or be a result of) local, provincial, federal or international governance decisions. As highlighted by Yin (2014), this research relies on multiple sources of evidence guided by established theoretical propositions. A further discussion of case study selection, research design, methods, data collection and analysis and quality of research is included the following subsections.

### ***1.5.1 Case study selection***

As previously mentioned, the overarching goal of this dissertation is to advance our understanding of the evolution of urban shrinkage as a process of urban change and the opportunities and barriers to planning in shrinking cities. Considering the dearth of research on Canadian shrinkage (Hall & Hall, 2008; Schatz, 2010; Warkentin, 2012) and the location of study for this dissertation, it follows that my focus is on the Canadian shrinkage experience. Following Eisenhardt (1989), I chose to concentrate on polar examples of shrinkage, long and short-term, within the Canadian urban landscape. This methodological approach does come with limitations. By examining polar examples of shrinkage, the context, extent and experience of decline in each case study will differ considerably. Although this does hinder comparability, I believe that the limitations are outweighed by the insights regarding the diverse Canadian urban landscape provided by the comparison. Additional case studies would be useful, however due to time and budget constraints I decided to concentrate my research on two case study locales.

I selected Cape Breton Regional Municipality, NS first as it has a long history of economic and population decline dating back over half a century yet has been the focus of very little planning academic research. I had already established local contacts in the political science department at Cape Breton University who shared an interest in shrinking cities and proved to be helpful in expanding my network to members of the municipality's planning and economic development departments. Additionally, although I have no family or personal contacts in CBRM, I was born and raised in Nova Scotia and was already very familiar with the demographic and economic decline of the city as well as the province as a whole.

In order to select the second case I followed a systematic process. First, comparably sized case studies were needed as the scope of planning and economic development strategies vary considerably depending on a city's geographic and population size. Second, the two cases also needed to have comparable governance structures in order to compare and contrast government perceptions and responses to shrinkage.

To begin I explored the population change of the 147 CAs and CMAs in Canada over the past four census periods. In order to limit the search to recent and persistent shrinkage, only those who had experienced population decline in at least two of the last three census periods were considered. Using the remaining 39 CAs as a guideline, I turned to the specific municipalities within the CAs (CA and municipal boundaries can differ). The population and geographic size of the shrinking municipalities were compared to find the most similar cases. With populations of 103,671 (2011) and 97,398 (2011), and a geographic footprint of 2,458 km<sup>2</sup> and 2,433 km<sup>2</sup> respectively, Chatham-Kent, Ontario was the most similar to CBRM, NS. Furthermore, they both have single-tier regional governments, underwent significant amalgamations in the 1990s and represent two distinctly different regions of the Canadian landscape. Further discussion of their respective economic, demographic and planning histories can be found in the following chapters.

### ***1.5.2 Research design***

Research methodology is a design process (Creswell, 1994). Gaber and Gaber (2007, p. 141) argue that “by the very nature of what [planners] do on a daily basis, the comprehensive and intricately woven nature of our work makes all planning and policy research projects mixed method in orientation.” After considering my research objectives, access to data and familiarity with different analysis techniques, I decided upon a quantitative/qualitative (or “QUAN + qual” according to Gaber and Gaber (2007)) mixed method research design. This allowed my research to be driven by a structured quantitative framework, but to also include qualitative research allowing for open-ended questions to provide context and explore unexpected findings.

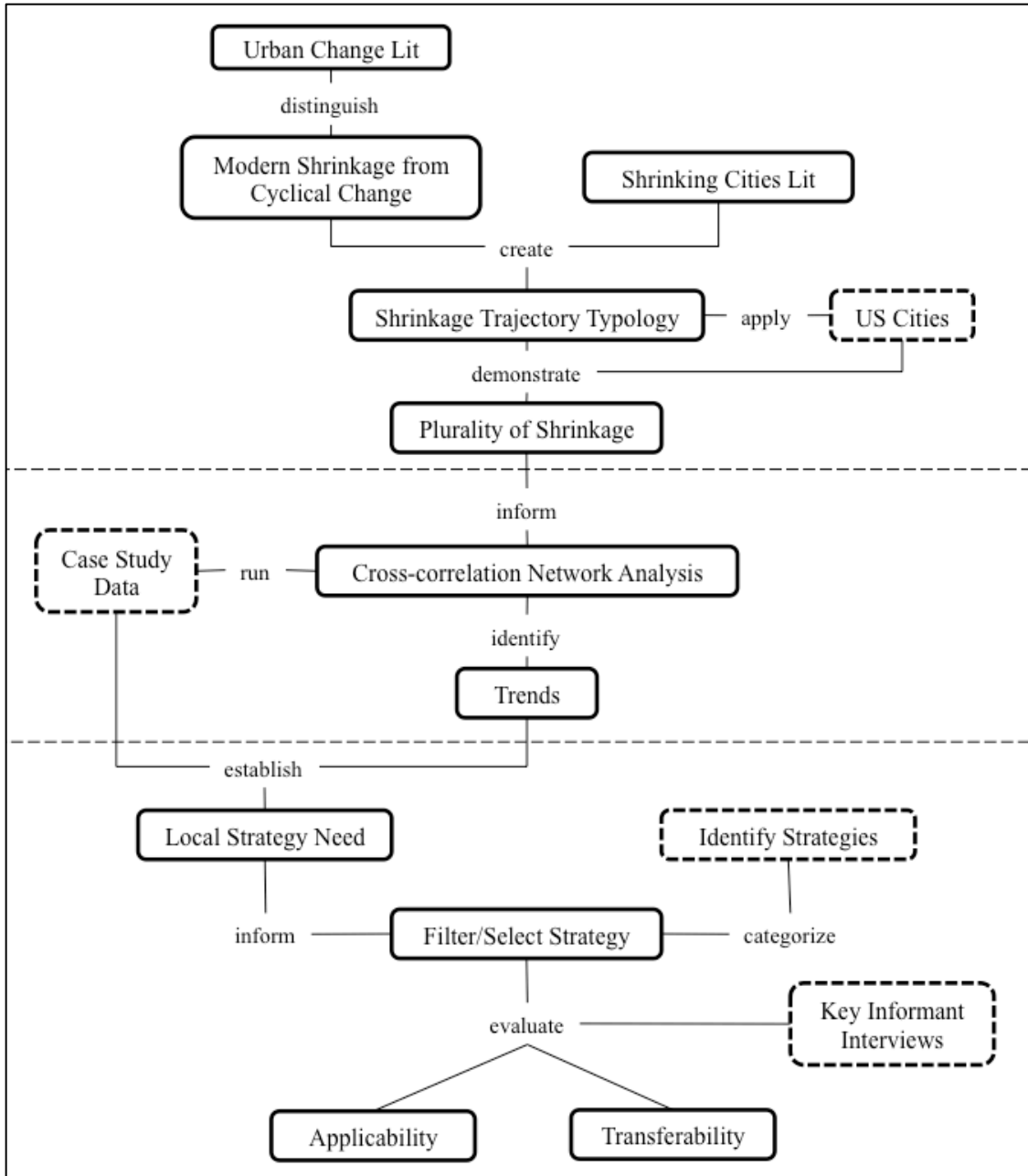
Gaber and Gaber (2007) outline several types of mixed method research designs and provide guidelines to match the research purpose and type of data to specific design types.

My interest in the trajectories and relationships between factors contributing to and resulting from urban shrinkage necessitate a variety of what Gaber and Gaber (2007) label “disparate data slices.” Therefore, a development research design, which connects single-faceted data slices through a theoretical or methodological framework, was best suited for my research (Gaber & Gaber, 2007). The following subsections outline the three sequential stages of my research design, the associated research methods and an overview of the data collection process.

#### *1.5.2.1 Methods*

The interdisciplinary research design undertaken in this dissertation calls upon not only the shrinking cities and planning literature, but also looks to system sciences, public policy and even signal processing research for methodological inspiration. Figure 1.6 depicts the methodological framework outlining the order and the actions undertaken in this research. Additional specific discussion and detail of the methods applied in each stage can be found in the respective chapters.

The first stage of the research design concentrates on how urban change and shrinkage have been conceptualized in the academic literature. Following an in depth review of the economic, sociological and urban planning literature, I focus on the diversity of urban shrinkage experiences by exploring the trajectories of shrinkage over time. Methodologically, I expand the conceptualization of the shrinkage trajectory typologies offered by Turok and Mykhnenko (2007), Martinez-Fernandez and Weyman (2015) and Wiechmann and Wolf (2013) to include both key concurrent causative processes of urban shrinkage: population loss and economic decline (Buhnik, 2010; Pallagst et al., 2009; Rink et al., 2011; Wiechmann, 2008; Zakirova, 2010). Incorporating Wiechmann and Pallagst’s (2012) matrix approach to classifying urban growth and shrinkage, I construct and apply a novel two-dimensional urban shrinkage trajectory typology that encompasses both central causative processes of urban shrinkage and allows for more complex urban development trends to be considered.



**Figure 1.5: Methodological framework**

The second stage of the research design delves even further into the trajectory and development of urban shrinkage by investigating, and disentangling, the complex demographic, migratory, economic and built environment relationships within the shrinkage process. I develop and apply a cross-correlation network analysis approach to determine and visually represent the order and influence of processes contributing to urban shrinkage in the

two case studies. This approach builds upon the time series analysis method introduced to the shrinking cities literature by Hoekveld (2012) (commonly used in signal processing research, for example Knapp and Carter (1976)) to empirically analyze the relationships between factors and adopts elements of systems science (Forrester, 1971) and network analysis (Marin & Wellman, 2011) to represent complex time series data. Together I am able to capture the strength, time and direction of processes in complex systems in order to better understand their trajectory and allow for deeper analysis and comparison.

In the first two stages of the research, the focus is on understanding and unpacking the evolution and the manifestation of shrinkage. The third stage concentrates on how actors in the urban sphere respond to urban shrinkage and its associated challenges. Specifically, I explore urban shrinkage response strategies, their transferability and applicability, and the perceptions of local actors. Whereas Bernt et al. (2014) look to policy window and agenda setting research in their exploration of the shrinking city policy-making process, I offer a complementary approach by calling upon the policy transfer literature (Rose, 2005; Williams et al., 2014) to develop and apply a iterative shrinkage strategy transferability framework. Using the framework, I combine and build upon existing shrinking cities, planning, and policy transfer literature (Arnstein, 1969; Buffet et al., 2011; Hospers, 2013; Hummel, 2014) to assess the compatibility, transferability and applicability of a service rightsizing strategy in both case studies. Analyzing the results via Farke's (2005) phases of shrinkage perception, I gauge the perception of local decision-makers, identify opportunities and barriers concerning the feasibility of the rightsizing strategy, and explore the commonalities and differences between the two case studies to offer insight to the temporal and spatial influence of urban shrinkage on local perceptions.

#### *1.5.2.2 Data*

Much of the data used in this dissertation was collected from governmental sources. Secondary economic, demographic and socioeconomic data were accessed from Statistics Canada's Census of the Population and National Household Survey, the Canadian Mortgage and Housing Corporation, Cape Breton Regional Municipality, the Municipality of Chatham-



Kent, and the United States Census Bureau. Additionally the Social Explorer and CANSIM databases were used to access some American and Canadian socioeconomic data.

Primary data was also collected through key informant interviews for the final stage of the research design. A round of informal pre-interviews were conducted in October 2014 with academics from Cape Breton University and local CBRM government employees from the planning and economic development departments to help develop the research instrument and identify potential interviewees. Further reviews of documents, local news and municipal websites were conducted to finalize key informant selection and coordinate initial contact. The three informants in each case study were selected to represent three distinct perspectives of challenges associated with and municipal responses to urban shrinkage: planning, economic development and social housing. Semi-structured interviews with three key informants from each of the case studies were conducted to provide context and local insight to the transferability of planning strategies. The interview instrument (Appendix I) contained three distinct sections: (1) general inquiries, (2) rightsizing and (3) green infrastructure. On average the initial interviews lasted approximately two hours, with the first half generally spent discussing the general state of population and economic change as well as the challenges facing the municipality and current strategic approaches being applied to meet these challenges. The latter half concentrated on the applicability of rightsizing and urban greening strategies. The rightsizing discussions proved to be thorough and insightful, whereas the key informants were largely dismissive of and disinterested in discussing urban greening strategies. Therefore, due to the targeted nature of a manuscript-based dissertation, Chapter 4 focuses solely on the general challenges and opportunities in the municipalities regarding urban shrinkage and the applicability of a rightsizing strategy. Ethics clearance from the University of Waterloo's Office of Human Research was received prior to conducting the interviews. Four interviews were done in person at the informant's place of work, while the other two needed to be re-scheduled and were done by phone. After transcribing the interviews, I identified any instances of unclear or conflicting statements and conducted follow-up interviews. The position of the informant and the date and place of interview are recorded in Table 1.8.

**Table 1.8: Key informant interview details**

| <b>Case Study</b> | <b>Position/Place of Employment</b>                                     | <b>Interview Date</b> | <b>Follow-Up Interview Date</b> |
|-------------------|---|-----------------------|---------------------------------|
| Chatham-Kent      | Planner, Municipality of Chatham-Kent                                   | July 29, 2015         | February 1, 2016                |
|                   | Senior employee, Municipality of Chatham-Kent Economic Development      | July 29, 2015         | February 3, 2016                |
|                   | Senior employee, Municipality of Chatham-Kent Housing Services          | August 12, 2015       | February 1, 2016                |
| CBRM              | Planner, Cape Breton Regional Municipality                              | June 9, 2015          | January 22, 2016                |
|                   | Senior employee, Cape Breton Regional Municipality Economic Development | July 2, 2015          | January 20, 2016                |
|                   | Senior employee, social housing initiative                              | June 9, 2015          | January 28, 2016                |

*1.5.2.3 Data Analysis*

The contribution of the first stage of the research design is largely conceptual, however an illustrative example of the two-dimensional trajectory typology is included in the analysis. The analysis examined trends in historical population and economic change in U.S. cities over several decades. The typology was applied to the cases selected and the population and economic trajectories were determined. Further analysis involved comparing and contrasting the trajectories to determine economic, demographic and spatial similarities and differences between the cities.

In the second stage of my research design I develop and apply a cross-correlation network analysis approach to explore the strength, timing and direction of pairwise relationships between 15 variables in two Canadian case studies. Using a three-step analysis procedure I was able to compare and contrast the two case studies. First, for each of the two case studies I examine all of the significant relationships of each of the 15 individual variables in order to recognize potential explanatory connections between temporal stages of the trajectories. Second, I compare every pairwise relationship between the two case studies in order to identify any identical, similar or contrary relationships between the two complex systems. Last, I compare and contrast the findings of the analysis against each other as well

as within the wider context of deindustrialized and developmental urban histories. As the methodological approach relies on correlation coefficients, it is important to embed the findings within the local and wider context in order to make targeted inferences regarding the trajectory trends in the two municipalities.

To analyze the key informant interviews in the third stage of my research design, I transcribed the interviews myself using qualitative data analysis software (NVivo). According to Meyer (2001), although time consuming this helps give the researcher a better grasp of the data. The data was coded using NVivo into themes derived from my research questions and objectives. Themes also arose in the coding process itself. The broad themes largely revolved around perceptions of urban shrinkage and evaluation of the transferability of shrinkage strategies. Following the initial coding, I examined and summarized the the themes present in each case study, which allowed me to become familiar with each case as a stand-alone entity (Eisenhardt, 1989). Eisenhardt (1989, p.50) stresses the importance of this familiarity as it “allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases.” After becoming familiar with each case study individually, the cases were compared using previously determined themes as well as those that emerged during the analysis. I compared and contrast the themes in each case following Eisenhardt’s (1989) systematic cross-case comparison technique. Finally I compared the results of the analysis to theories already developed in the literature (Farke, 2005; Wray, 2012) to determine which patterns could be explained by existing theories, and just as importantly, which could not.

### ***1.5.3 Research limitations***

In addition to the case study selection limitations detailed in Section 1.6.1, there were several other methodological and data limitations encountered when undertaking this research.

The two-dimensional trajectory typology presented in Chapter 2 provides an important reconceptualization of the trajectories of shrinking cities. By incorporating both the population and economic components of urban shrinkage, the typology demonstrates the diversity of shrinkage experiences and provides an opportunity to challenge the preconceived

notion that a shrinking city can only be prosperous through demographic growth. However, the research is limited by the operationalization of the economic change component. Given that there are limitations associated with representing economic change with any single factor, median income per capita was selected as it captures the change in prosperity of people and the migratory movement of the second demographic transition (characterized by more educated, higher earners having fewer children) within an area (Glaeser & Redlick, 2008; van de Kaa, 2002). This limitation provides an opportunity for future research to expand this study to include a wider variety of variables to capture changes in cost of living, employment trends, GDP per economic sector and much more (see Section 5.5.1 for more details regarding proposed future research).

In Chapter 3, I develop and present cross-correlation network analysis – a methodological approach to determining (and visually representing) the order and influence of contributing processes to urban shrinkage. Although the approach was successful in capturing and representing the strength, time and direction of processes in complex systems, the analysis was limited by the inability to gauge causality. The statistically significant correlation coefficients resulting from the analysis provide insight into the evolution of the individual cases as well as the similarities and differences between the two. The conclusions inferred from the results sufficiently contributed to the research objectives in this dissertation. However, the development of the methodological approach also offers an incredibly rich area for additional research. By applying cross-correlation analysis to a large number of shrinking cities, stronger statistical evidence could provide important insight regarding the evolution of urban shrinkage.

In order to evaluate the compatibility, transferability and applicability of a service rightsizing strategy, a transferability framework is developed and applied to the two case studies in Chapter 4. Semi-structured interviews were conducted with three key informants in each case study locale. The modest number of informants can be viewed as a limitation, however I believe that due to the choice of key informants, six was an appropriate match for the research design. It is important to note that the objective was not to test the effectiveness of the framework, but rather to (1) create a systematic transferability framework to facilitate the exchange of shrinkage strategies and (2) use the framework to explore how local decision-makers in shrinking cities perceive the applicability of shrinkage strategies. The

latter focus on decision-maker perspective guided the choice to focus on key informants from municipal governments, rather than the general public. The small size of the planning, economic development and social housing departments in Chatham-Kent and CBRM combined with the successful recruitment of senior employees as key informants resulted in my decision to limit the data collection to three informants in each case study. The knowledge, experience and seniority of the key informants was apparent throughout the interviews and provided an adequate level of information and insight to the analysis. Future research involving local community members, stakeholders and members of different levels of government to capture a broader perspective of urban shrinkage and potential strategy responses could provide important insight into the perceptions of shrinkage and would complement the methodology and findings in Chapter 4.

#### ***1.5.4 Quality of research***

Regardless of approach, design or methodological tools, all research is subject to questions of validity and reliability to evaluate whether findings and conclusions are an accurate portrayal of reality (Gaber & Gaber, 2007). In this subsection, I will review my research design using the four criteria widely used to establish the quality of empirical research: construct validity, internal validity, external validity, and reliability.

##### *1.5.4.1 Construct validity*

Broadly, “validity pertains to the degree that a method investigates what it is intended to investigate” (Kvale, 2011, p. 122). Construct validity refers to the degree to which the operationalization of a variable reflects the theoretical meaning of a concept. Yin (2014) identifies two steps to meet the test of construct validity: (1) defining the change being studied in terms of specific concepts and (2) identifying operational measures to match the concepts. Although generally centered on urban shrinkage, the specific concepts and operational measures identified and explored in each chapter differ slightly. For example, Chapter 2 explores urban shrinkage as defined by population loss and economic change. The former is specifically measured through absolute population change and the latter by changes in median income per capita. Whereas Chapter 3 also explores the concept of urban

shrinkage but includes a much larger range of operationalized measures (dependency ratio, birth rate, unemployment rate, immigration rate to name a few). Each manuscript details the rationale and limitations regarding the choice of operational measures. Following Yin's (2014) recommended tactics to increase construct validity, the triangulation of multiple sources of evidence is used in each study to develop a converging line of inquiry and, in Chapter 4 where key informant interviews were used, a chain of evidence is established using direct quotes from multiple informants.

#### *1.5.4.2 Internal validity*

Internal validity assesses the ability of a study to “establish a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships” (Yin, 2014, p. 46). Establishing internal validity is especially difficult when examining “wicked problems” in complex systems. Chapter 3 specifically explores one of the primary methods for establishing internal validity – temporal precedence. However, as in most complex systems, significant interrelations between variables and a variety of feedback loops make establishing explicit temporal precedence problematic. In order to increase internal validity I followed Yin's (2014) recommendations to employ pattern matching and explanation building by examining a wide range of variables and interviewing several informants in multiple case studies.

#### *1.5.4.3 External validity*

Testing for external validity judges whether research findings are generalizable outside of the given case study (Yin, 2014). An important distinction is needed between statistical generalization and analytic generalization. In the former, “an inference is made about a population (or universe) on the basis of empirical data collected from a sample of that universe” (Yin, 2014, p. 40). The latter “may be based on either (a) corroborating, modifying, rejecting, or otherwise advancing theoretical concepts that you referenced in designing your case study or (b) new concepts that arose upon the completion of your case study” (Yin, 2014, p. 41). Yin (2014) stresses that a case study should not be thought of as a sample of a wider population. Rather, the goal of case study research is to achieve analytic generalization

by garnering new insight regarding a theoretical concept or principle. Lessons learned may be relevant to a range of situations exceeding any explicit definition of like-cases. Multiple cases can be used to provide stronger support for analytically generalizable findings. This dissertation relies on two dissimilar case studies (time and cost constraints limited further cases from being included) intended to achieve theoretical replication.

#### *1.5.4.4 Reliability*

Reliability refers to whether a study could be replicated by different researchers and achieve the same results. According to Yin (2014, p. 49) “the goal of reliability is to minimize the errors and biases in a study.” In this section, I have provided detailed documentation of my research procedures to complement methodological descriptions in each of the manuscripts. The sequential research design (Figure 1.6) of this dissertation helps provide a step-by-step guide of the data collection and analysis. Following Yin (2014), I have operationalized as many steps as possible to maximize the reliability of the findings.

## **1.6 Dissertation structure**

This dissertation follows a manuscript-based format that consists of three stand-alone manuscripts prepared for peer-reviewed journals. The introduction and conclusion chapters are used to frame the overarching research design guiding the three manuscripts and synthesize the findings. Furthermore, the introductory chapter is used to present the dissertation’s overall theoretical and methodological approach and discuss the quality of research to complement the specific detail presented in each manuscript. Each of the three manuscripts contributes to the overarching research objectives of the dissertation (Table 1.9).

**Table 1.9: Overview of the dissertation structure**

| <b>Manuscript</b> | <b>Chapter</b> | <b>Research Objective</b> |
|-------------------|----------------|---------------------------|
| 1                 | 2              | 1, 2                      |
| 2                 | 3              | 1, 2                      |
| 3                 | 4              | 1, 3                      |

It is important to note that the peer-review process that is inherently involved in adopting a manuscript-based dissertation format did impact the final product. Following reviewers' recommendations, in Manuscript 1 (Chapter 2) I apply the shrinking cities trajectory typology to 20 American cities. Originally written as an exclusively conceptual paper, the reviewers felt that an empirical analysis to illustrate the typology was necessary. Furthermore, they felt that the application of the typology to American cities would have the greatest impact in the academic literature. This adjustment did not influence the conceptual development of the manuscript or its contribution to the research objectives of this dissertation.

## **1.7 Summary of chapters**

In this introductory chapter I have provided additional context from the shrinking cities literature and methodological depth to support and complement to the three manuscripts (Chapters 2, 3 and 4) that make up the body of this dissertation. Chapter 2 explores the evolution of urban change conceptually through an examination of the economic, social and urban literature, and empirically through an examination of the trajectories of 20 shrinking cities. Chapter 3 unpacks the processes contributing to urban shrinkage to determine their extent and influence in two Canadian shrinking cities. And Chapter 4 evaluates the transferability of urban shrinkage strategies and explores how perceptions of shrinkage change over time. Lastly, I summarize the findings from the three manuscripts and reflect on the overall contribution of the dissertation in Chapter 5.



## CHAPTER 2

### THE DIVERSITY OF SHRINKING CITIES: A TWO-DIMENSIONAL TRAJECTORY TYPOLOGY

Traditionally, the principle role of urban planners has been to focus on managing growth and its resulting issues (Schatz, 2010). Rieniets (2009) argues that this narrow focus may translate into the constantly growing use of land, causing new challenges such as housing and social service scarcity, exhaustion of essential resources, economic instability, environmental degradation and, consequently, social strains and conflicts. However, many cities are not experiencing growth at all. Almost half of America's largest cities have declined in population in every decade since 1950 (Hollander, 2011) and worldwide it is estimated that one in four cities with at least 100,000 people are shrinking (Oswalt & Rieniets, 2006b). Actors in the North American urban sphere are convinced of the need for growth – population decline is generally viewed as a temporary issue, which should be as short as possible, and economic revitalization is considered a precondition for population growth (Bontje, 2004; Wiechmann & Pallagst, 2012). However, studies have shown that population growth does not necessarily lead to economic growth (Glaeser & Resseger, 2009), and cities like Leipzig have demonstrated that a loss of population can coexist with economic prosperity (Wiechmann & Pallagst, 2012). This chapter contributes to the debate by reconceptualising how we view and analyze the trajectories of economic and population change in shrinking cities. Calling upon urban change theories from the economic, social and urban literature, this chapter explores how globalization has altered the evolution of urban shrinkage and demonstrates the diversity of shrinkage experiences.

Cities have been growing and shrinking since their inception and, appropriately, there has been significant research done in the area of urban change. Economist, sociologists and urban planners have all contributed important works to our understanding of urban growth and decline. Understandably, theories of urban change have evolved as the world has undergone major population shifts to urban areas and a significant global economic restructuring. The first section of this chapter examines the evolution of the theoretical conceptualization of urban change from three distinct lenses (economic, social, urban) and

the implications for shrinking cities – paying close attention to shifts in scale and what that means for local decision-makers.

The second section of this chapter concentrates on the conceptualization and classification of shrinking cities. Urban shrinkage is a complex phenomenon. Cities are shrinking all over the world from a multitude of causes with a wide range of different effects, thus it stands to reason that the term itself, “shrinking cities”, has some variation depending on the context. However definitions introduced in the academic literature, including the consensus definition recommended by the Shrinking Cities International Research Network, generally focus on two concurrent causative processes: population loss and economic decline (Wiechmann and Pallagst, 2012). Causal typologies of urban shrinkage recognize both demographic and economic change as key drivers of the phenomenon, however, classifications examining and comparing the trajectories of urban shrinkage focus solely on population loss. This chapter expands the conceptualization of urban shrinkage trajectories by constructing a novel two-dimensional urban shrinkage typology, which incorporates and classifies shrinking cities by both population and economic change. An illustrative application of the typology is presented as the diversity of urban shrinkage experiences in 20 shrinking U.S. cities are examined and the relationship between population and economic change is explored.

## **2.1 Theories of urban growth and decline**

The economic, social, demographic and physical evolution of urban spaces has long been of interest to scholars. This section explores the transition of the conceptualization of urban change and shrinkage as a natural cyclical process to a manifestation of modern globalization. By comparing and contrasting theories from economic, social and urban literature, urban shrinkage is explored within the larger context of modern urbanization.

### ***2.1.1 Economic***

Schumpeter’s (1934) influential publications on evolutionary economics led to the popularization of the term “creative destruction”, which according to Schumpeter, is the

process by which the evolution of capitalism is characterized. This process begins with innovation and the manifestation of new technologies, their propagation and their eventual decline to redundancy. Schumpeter proposed naming the economic cycles “Kondratieff waves” in recognition of the pioneering Russian economist who first brought the idea of cyclical economies to international attention (1925, re-published in English as: Kondratieff, 1984).

According to Kondratieff’s theory (1984), the major economic cycles consist of three phases: expansion, stagnation and recession. Similarly, the product-cycle theory described by Friedrichs (1993, p. 908) to explain urban decline “postulates that each industrial product undergoes a lifecycle comprised of four locationally-linked stages: 1) the innovation stage; 2) the growth or expansion stage; 3) the maturity stage; and 4) the stagnation/decline stage.” Friedrichs considers these stages to be locationally-linked, for after the primary development stages the production conditions become standardized. Then the product can be manufactured at a reduced cost by relocating production, adapting the product, or developing manufacturing innovations. Thus, regions and urban centers evolve alongside product development cycles that can quickly fluctuate from periods of swift expansion to decline.

In recent decades the spatial scope of economic cycles have shifted as increased international trade in goods and financial products have contributed to global economic synchronization (Berge, 2012). As a result, cycles of growth and decline are increasingly disconnected from local actions and decisions. Hirst and Thompson (1996) postulate the beginning of a new stage in international economic, political and cultural relationships. They contend that companies are internationalizing rather than globalizing as the most prominent economic relationships are still between the most developed market economies. Kose et al. (2003) support the view that globalization has increased the synchronization of economic cycles, however they also found that macroeconomic fluctuations caused by international trade and financial integration are stronger in industrialized countries.

In the past, cyclical models of innovation, expansion, propagation and eventual decline could explain demographic and economic trends. However, advances in economic theory have demonstrated that local economies are increasingly linked to global, or at least international, markets. The presumption that stages of innovation and growth follow decline

no longer holds. The trajectory of a city's economy, or population, is increasingly impacted by external forces, and as such, increasingly difficult to generalize.

### **2.1.2 Social**

Urban growth and decline is a multi-faceted complex issue, and as such, economists were not alone in thinking that the development cycles of cities are part of a natural process. The Chicago School of Urban Sociology hypothesized that urban change resulted from a natural lifecycle. Hoyt (1939) expanded on McKenzie's (1924) invasion succession model with a cyclical approach based on property devaluation trends resulting from an influx of low socioeconomic status residents. There was a strong research focus on local-scale urban change in America beginning in the 1930s, in part due to the U.S. Home Owner's Loan Corps (HOLC) publications on the stages of neighborhood change. The HOLC produced two models (1935, 1940), which Hoover and Vernon (1959) built upon with their five-stage lifecycle published in 1959. In 1975, the Real Estate Research Corporation expanded even further on the stages of neighbourhood change. The stages of the various neighborhood change lifecycles are described in Table 2.1.

While the Chicago School of Urban Sociology's influence was being felt in the public sector, sociologist Pitirim Sorokin (1947) also concluded, albeit from a more abstract perspective, that social change grew and declined regularly over time. However, he posited that the introduction of new factors precluded the recurrence of identical cycles, therefore rejecting the notion of cyclical social change. Sorokin's recognition of the ever-fluctuating patterns of social change crystalized over the decades as local cultures were exposed to a growing number of external forces.

The increasing influence of international factors became widely recognized as "globalization", defined by Robertson (1992, p. 8) as a "concept that refers to both the compression of the world and the intensification of consciousness of the world as a whole". Robertson considers globalization a local phenomenon as the worldwide fusion of culture is always done in local terms. Appadurai (1996) further adds that globalization is both a process of cultural homogenization and, at the same time, cultural heterogization. As such, the new global cultural economy must be thought of in terms of complexity, overlap and disorder.

**Table 2.1: The stages of neighborhood lifecycle theory. Source: Metzger, 2000, modified**

|                | <b>U.S. Home Owners' Loan Corp. (1935)</b>  | <b>U.S. Home Owners' Loan Corp. (1940)</b>  | <b>Hoover and Vernon (1959)</b>   | <b>Real Estate Research Corporation (1975)</b>  |
|----------------|---|---|---|---|
| <b>Stage 1</b> | Well-planned, homogeneous population  | New residential construction  | Single-family residential development   | Homogenous housing and moderate to upper income, insurance and conventional financing available   |
| <b>Stage 2</b> | Completely developed, stable  | Normal use and maintenance  | Transition to high density, apartment construction  | Aging housing, decline in income and education level, influx of middle-income minorities, fear of racial transition   |
| <b>Stage 3</b> | In transition and decline from age, obsolescence, lack of restrictions, lower household incomes and housing values, lack of homogeneity | Age, obsolescence, structural neglect   | Downgrading to accommodate higher density through conversion and overcrowding of existing structures, spread of ethnic and minority districts | Higher density, visible deterioration, decrease in white in-movers, more minority children in schools, mostly rental housing, problems in securing insurance and financing  |
| <b>Stage 4</b> | Final stage of decline, mostly low-income rental housing, "undesirable population"  | Falling investment and rent values, neglect of maintenance, district-wide deterioration | Thinning-out or "shrinkage" characterized by population loss and decline in housing units   | Increasing vacancies, predominantly low-income and minority tenants or elderly ethnics, high unemployment, fear of crime, no insurance or institutional financing available, declining public services, absentee-owned properties |
| <b>Stage 5</b> | -   | Slum area with depreciated values, substandard housing, social problems                 | Renewal through public intervention, redevelopment and replacement of obsolete housing with new multifamily apartments                        | Severe dilapidation, poverty and squatters, high crime and arson, negative cash flow from buildings   |

Advances in communication technology and the consolidation of the global media system have brought about a new phase of globalization (Backhaus, 1999). Migration and media have always driven social change, however the speed, diversity and reach have

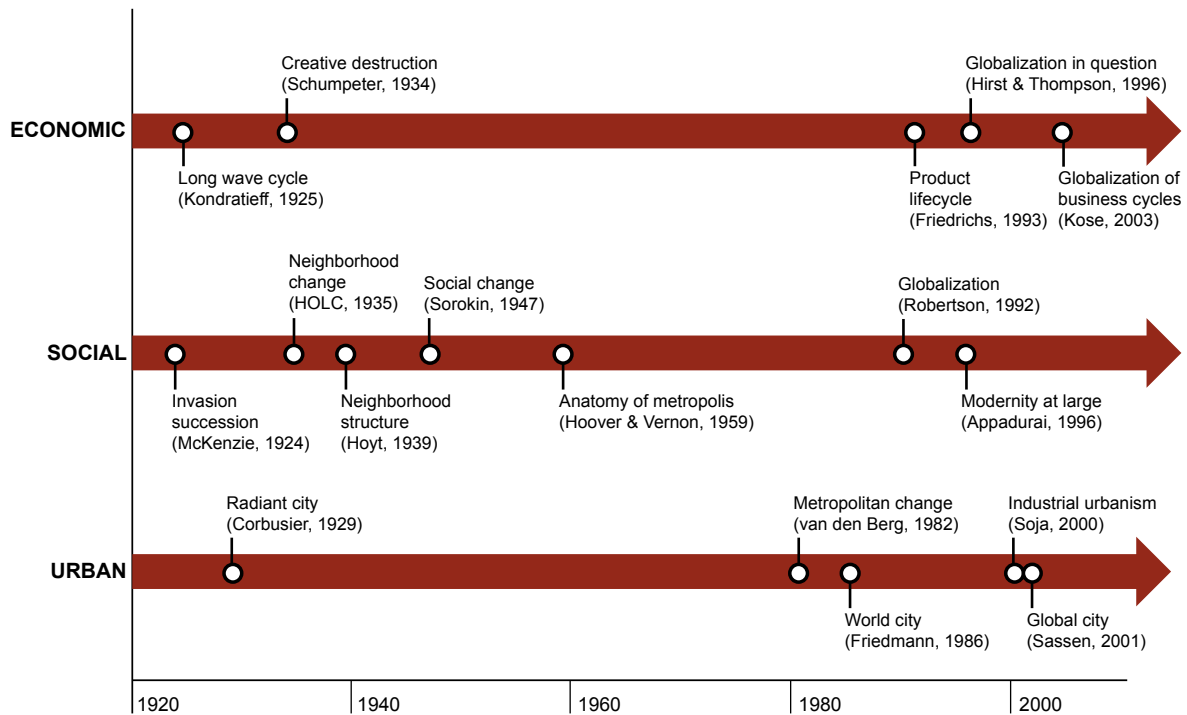
increased. Like population and economic cycles, social changes in the past may have been cyclical. The early social urban change theories can be seen as an apt descriptor of the suburbanization model of population loss. The initial stages of the cycles are defined by middle-class, well-planned, homogeneous populations which perpetually lead to population shrinkage, vacancies and widespread deterioration due to the exodus of the initial populations to the outer regions or suburbs. However, the rise of global culture and the complex local-global relationship has forever altered patterns of social urban change.

### ***2.1.3 Urban***

Many of the predominant early urban theories focused on remedying urban health concerns and creating utopias, rather than analyzing the cyclical transitions of urban evolution (Corbusier, 1929; Howard, 1898). However, it was eventually postulated that the growth and decline of cities followed a regular pattern that could be distinguished by development stages (Hall & Hay, 1980). Van den Berg et al. (1982) concluded that the dynamic processes of the urban system do not lead to equilibrium if left alone and developed the four stages of the theory of metropolitan evolution: urbanization, suburbanization, de-urbanization and re-urbanization. This theory assumed a direct relationship between the development phase of a region or town and the changing structure of the urban system.

Soon after, seminal works by Friedmann (1986) and Sassen (2001) initiated a paradigm shift in how urban scholarship understood the evolution of urban areas (McCann & Ward, 2013). The global cities literature argues that economic globalization did not diminish the importance of place, location and distance, but rather reinforced and heightened the significance of select cities in a global market. Soja (2000) examined the deindustrialization, de-territorialization and the respective geographic complexities of Fordist economies and their restructuralization into flexible forms of production. He concludes that city, or even national, boundaries are permeable and ill defined and that the flow of populations, goods and knowledge are now components of global economies and cultures. These processes of post-Fordist economic and cultural restructuring have led to extremely uneven development and the emergence of both global and shrinking cities. Soja (2000) continues to argue that governmental responses to these structural shifts have also grown less influential as the

nation-state is no longer the political, economic or cultural epicenter as, cognitively, territories are being redrawn and new forms of economic organizations and cultural identities are emerging at the transnational level.



**Figure 2.1: Timeline of change theories**

Figure 2.1 depicts the timeline of the economic, social and urban theories discussed in this section. In all three fields, the concept of globalization made a distinct impact on the spatial scale of theories. Many of the classical models of urban change and decline were products of the Fordist industrialization era. As such, Bontje (2004) argues that these theories born of a period of mass standardized production and mass industrial employment are far less relevant in the current situation of cities searching for new employment bases after industrial restructuring.

The scope of the social and sociospatial theories of urban change evolved from concentrating on a general urban region as an independent organism to a regional system made up of specific neighbourhoods and gradually to an urban region within a global system. Similarly, the economic and urban change theorists recognized the contemporary

restructuralization of production and consumption and its influence on local change. The urban effects of modern globalization have been very diverse (Newman & Thornley, 2011). Some cities are able to adapt and flourish, while others are confronted with difficult adjustments (ibid.). Regardless of the success or failure of cities, it is clear that global forces increasingly influence economic, social and urban change and that generalized cyclical models of growth and decline are no longer applicable to the majority of cities. In the modern context, shrinking cities are arguably not simply at a temporary stage in a cyclical process, but rather reflect a more permanent spatial symptom of an emerging global progression (Martinez-Fernandez, Audirac et al., 2012).

The increasingly global structure of economic and social cycles have diminished the autonomy of local action and compelled a reconceptualization of the evolution of urban shrinkage. However less attention has been given to how the processes contributing to urban shrinkage evolve without the structure of local cyclical growth and decline. The classical models of urban growth and decline paired economic and demographic trends within a cyclical structure, however, the notion that the trends run in parallel in a modern shrinking city is doubtful considering the global scale of economic and social change and the complexity and diversity of how the changes manifest at the local level. But if not cyclical, how do economic and demographic processes evolve in shrinking cities? The following section explores how shrinking cities trajectories have been conceptualized in the academic literature and presents a two-dimensional trajectory typology for shrinking cities.

## **2.2 Trajectory typologies of urban shrinkage**

Urban shrinkage trajectory typologies classify cities that have experienced population loss by the path of their population change over time (for causal typologies see Section 1.2). Such classifications provide a framework to understand and compare the temporal transformations of cities. Rather than focus exclusively on delineating the trajectories of cities experiencing continual shrinkage over time, this chapter concentrates on typologies that incorporate the potential for cities to stabilize or recover following a period of shrinkage. The inclusion of resilience is critical, as it does not limit cities experiencing population loss to a perpetual decline cycle.



Turok and Mykhnenko's (2007) examination of the population trajectories of 310 European cities revealed that one quarter of the cities had lost population since 1980 and, almost 40% had declined since 1990. Based on their findings Turok and Mykhnenko outlined nine distinct population trajectories of European cities. These trajectories were adapted by Martinez-Fernandez and Weyman (2015) to classify patterns of growth and shrinkage in Australia. Martinez-Fernandez and Weyman identified four universal population trajectories: shrinkage, stabilized shrinkage, growth, and relapsing-remitting. Similarly, Wiechmann and Wolf's (2013) examination of 7035 cities in 37 European countries concluded that cities follow one of four shrinkage trajectories: continuous, episodic, temporary or no shrinkage.

Turok and Mykhnenko, Wiechmann and Wolf, and Martinez-Fernandez and Weyman all provided fundamental empirical evidence of the pervasiveness of population decline in their respective geographic foci. Furthermore, all three population-trajectory typologies contributed to the methodological advancement of the urban shrinkage literature. However, urban shrinkage is not only defined by demographic trends. Although population decline is the principle indicator, Rink et al. (2009) stress that it alone does not represent the phenomenon of urban shrinkage. Definitions of urban shrinkage, including the consensus definition proposed by the Shrinking Cities International Research Network, emphasize population loss and economic transformations as the two central processes (Buhnik, 2010; Pallagst et al., 2009; Rink et al., 2011; Wiechmann, 2008; Zakirova, 2010).

The focus on both demographic and economic change within the definitions of urban shrinkage is absent from the trajectory typologies - which exclusively concentrate on population change. Wiechmann and Pallagst's (2012) matrix of urban growth and shrinkage presents a useful conceptualization of the relationship between economic and demographic change. By differentiating economic and demographic growth and shrinkage processes and placing them on separate axes, they distinguish four types of city: urban growth poles (both population and economic growth), urban gravitation centres (population growth and economic decline), downgrading areas (both population and economic decline) and transition areas (population decline and economic growth).

The acknowledgement of the multiplicity of shrinking city attributes could be applied to the trajectory typologies, thereby allowing for more complex urban development trends to be considered. Combining the strengths of the classification systems developed by Turok and

Mykhnenko (2007) and Martinez-Fernandez and Weyman (2015) with Wiechmann and Pallagst’s (2012) matrix conceptualization of shrinkage, a two-dimensional trajectory typology that encompasses both central components of urban shrinkage is presented.

**2.2.1 Two-dimensional trajectory typology of shrinking cities**

Based on the aforementioned typologies, six different trajectories are considered: (1) shrinkage (continuous shrinkage throughout time period), (2) stabilized shrinkage (shrinkage followed by stabilization and growth with overall net loss), (3) cyclic shrinkage (cycles of shrinkage and growth with overall net loss), (4) cyclic growth (cycles of shrinkage and growth with overall net gain), (5) recovery (shrinkage followed by stabilization and growth with overall net gain), and (6) growth (continuous growth throughout time period). The six classifications of the typology are considered for both population and economic change allowing for a more representative trajectory analysis of urban shrinkage. The two-dimensional trajectory typology classifies 36 different types of shrinkage trajectories (Table 2.2).

**Table 2.2: Two-dimensional trajectory typology of shrinking cities**

|                   |          | <b>Economic</b> |        |          |          |         |      |
|-------------------|----------|-----------------|--------|----------|----------|---------|------|
|                   |          | Shrink          | Stable | Cyclic - | Cyclic + | Recover | Grow |
| <b>Population</b> | Shrink   |                 |        |          |          |         |      |
|                   | Stable   |                 |        |          |          |         |      |
|                   | Cyclic - |                 |        |          |          |         |      |
|                   | Cyclic + |                 |        |          |          |         |      |
|                   | Recover  |                 |        |          |          |         |      |
|                   | Grow     |                 |        |          |          |         |      |

**2.2.2 Two-dimensional trajectories of 20 American shrinking cities**

The trajectories of 20 American cities are examined over 30 years from 1980 to 2010 as an illustrative example of the two-dimensional typology’s application. The start date of the analysis follows Sassen’s (2001, 2012) work on global cities, which identifies pronounced changes in the geography, structure and institutional framework of the world economy

beginning in the late 1970s and early 1980s. Economic and demographic urban decline were present prior to the 1980s, however the temporal focus reflects the fact that modern urban shrinkage is considered to be a spatial symptom of contemporary globalization (Martinez-Fernandez, Audirac, et al., 2012).

The 20 largest American cities to lose population between 1980-1990 were selected to investigate the differences and similarities between their population and economic trajectories<sup>2</sup>. Data was collected at the beginning of each decade (1980, 1990, 2000, 2010) as opposed to annually to ensure only clear trends were captured. Due to availability, population and economic change data were collected at different geographic scales. Population data was collected at the municipal level (U.S. Census Bureau, 2013) and median income per capita, collected at the county level (U.S. Census Bureau, 2010b), was used as a proxy for economic change (all values adjusted to 2010 dollars). Although still illustrating the utility of the two-dimensional trajectory typology, the results must be viewed with the spatial scale limitation in mind. The economic changes over time still inform the wider discussion and illustrate differences between cities, however the wider geographic context of decline and growth must be considered when comparing population and economic change. Given that there are limitations associated with representing economic change with any single factor, median income per capita was selected as it captures the change in prosperity of people and the migratory movement of the second demographic transition (characterized by more educated, higher earners having fewer children) within an area (Glaeser & Redlick, 2008; van de Kaa, 2002). Results are listed in Table 2.3 (population and income data for each city can be found in Appendix D).

12 of the cities lost population in every decade and 17 of the 20 cities had net population shrinkage over the total time period. Only Memphis, Denver and Kansas surpassed their 1980 population mark. 14 of the cities experienced cyclic income growth and four cities' incomes increased every decade. Only two cities, Milwaukee and Detroit, had lower income levels in 2010 than in 1980.

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<sup>2</sup> Louisville, Kentucky was the 20<sup>th</sup> largest city in America to lose population between 1980 and 1990 but was not included due to a city-county merger in 2003.

**Table 2.3: Population and economic trajectories of 20 shrinking U.S. cities (U.S. Census Bureau, 2010b, 2013).**

| <b>City</b>      | <b>Population</b> | <b>Economic</b> |
|------------------|-------------------|-----------------|
| Milwaukee, WI    | Shrink            | Stable          |
| Detroit, MI      | Shrink            | Cyclic -        |
| Birmingham, AL   | Shrink            | Cyclic +        |
| Buffalo, NY      | Shrink            | Cyclic +        |
| Cincinnati, OH   | Shrink            | Cyclic +        |
| Cleveland, OH    | Shrink            | Cyclic +        |
| Minneapolis, MN  | Shrink            | Cyclic +        |
| Pittsburgh, PA   | Shrink            | Cyclic +        |
| Toledo, OH       | Shrink            | Cyclic +        |
| Baltimore, MD    | Shrink            | Grow            |
| New Orleans, LA  | Shrink            | Grow            |
| St. Louis, MO    | Shrink            | Grow            |
| Atlanta, GA      | Stable            | Cyclic +        |
| Newark, NJ       | Stable            | Cyclic +        |
| Philadelphia, PA | Stable            | Cyclic +        |
| Washington DC    | Stable            | Grow            |
| Chicago, IL      | Cyclic -          | Cyclic +        |
| Memphis, TN      | Cyclic +          | Cyclic +        |
| Denver, CO       | Recover           | Cyclic +        |
| Kansas City, MO  | Recover           | Cyclic +        |

Geographically, the population trajectories echo shrinkage trends established in the literature. All but one of the 12 cities located in the “rust belt” region around the great lakes lost population every decade. Only Chicago did not shrink continuously, although it did experience cyclic shrinkage. Of the four cities located on the east coast (Philadelphia, Washington, Baltimore and Newark), all but Baltimore stabilized their population loss. Both cities located towards the center of the country (Denver and Kansas City) recovered and surpassed their 1980 population levels.

Comparing the trajectories, only Memphis experienced the same trend in both population and income (cyclic growth). Three quarters of the cities experienced contradictory trends – having a total loss of population with a total gain in income over the time period. The most common trajectory combination was population shrinkage with cyclic income growth – experienced by seven of the cities. Three cities, Baltimore, New Orleans and St. Louis, had completely opposing trends with population shrinkage and income growth in every decade.

### **2.3 Discussion**

In the growth-oriented culture of North America, population decline is regarded as a consequence of economic decline (Hollander et al., 2009; Wiechmann & Pallagst, 2012), and as a result economic revitalization is considered a necessary precondition for population growth. However, Glaeser and Resseger (2009) have shown that population growth does not necessarily produce economic growth. Furthermore, population decline is not inextricably linked to a decline in quality of life (Hollander, 2010). So although economic decline may often be a precursor to population decline, it is possible that economic growth does not require population growth. The exploratory results from this chapter further indicate that many cities that experience population loss do not simultaneously experience economic decline. Although comparing different spatial scales (local population to county income per capita), it is worth noting that 15 of the 20 cities examined had divergent economic and population trajectories. St. Louis, Baltimore and New Orleans exemplified the potential disconnect between economic and population trajectories with income growth and population loss in every decade. Demographic and economic change may not be independent processes, but their relationship can manifest in a number of different ways.

These findings combined with the potential permanence of urban shrinkage established in Section 2.1 give credence to Pallagst's (2010) call to rethink planning in shrinking cities, investigate the principles upon which planning has traditionally been based and to move away from the necessity of population growth as a precondition for prosperity. Local decision-makers in shrinking cities need to prepare for the possibility that their population may never surpass or even return to historic highpoints. Strategies to adapt

infrastructure and services for a smaller population need to be considered. The global nature of urban change has diminished the ability of local decision-makers in shrinking cities to shape and guide their economic and demographic development in isolation. While broadening the scope of local strategies to include planned shrinkage is advisable, decision-makers also need to recognize their position within larger shifting economic systems. By acting in concert with other cities within an economic region, a shrinking city can amplify its presence within the global economic market. Multi-level initiatives have been shown to play a pivotal role in the stabilization of urban shrinkage (Rink et al., 2012). Additional cooperation and communication between cities and higher-levels of government could be instrumental in stabilizing declining economies especially considering that many cities shrink within a larger context of growth (the metropolitan areas of 14 of the 20 cities examined in this chapter experienced growth between 2000 and 2010).

Urban shrinkage within a wider shrinking area (metropolitan region decline) is considerably different than urban shrinkage within a context of regional growth. In both cases, population decline has a direct impact on the municipal tax base. In a shrinking city within a shrinking region, population decline generally results in a diminished tax base and a slew of economic, socioeconomic and even environmental challenges at the municipal level. This can also be the case for a shrinking city amidst a growing region; however, population decline in a booming region could also be the result of an increase in commercial properties or gentrification and changing household types. Such changes could result in an increase in municipal tax revenue and a completely different set of challenges to be faced by the municipality.

Shrinkage within a growing region can also be the result of the growth of prosperous suburban communities located in the city's periphery. The proximity of a potentially higher quality of life, better ranked schools and more diverse amenities can attract many of the more mobile, and often more affluent, residents. The resulting socioeconomic polarization between suburban and urban communities can be extremely stark. For example, three of the wealthiest suburban cities in U.S. (Town & Country, Ladue and Frontenac) are all located outside of St. Louis, MO. Ladue's median household income is over five times that of St. Louis. Such polarization can exacerbate challenges and vulnerabilities for the shrinking urban are, but

also provide opportunities to attract firms and development due to the city's access to an educated workforce – even if they do not live within the city boundaries.

To this effect, research has also indicated that the makeup of the population may play a greater role than the quantity in achieving a stable or growing economy. Florida's (2002) work on the "creative class" has highlighted the benefits of attracting and retaining a well-educated urban population. Although criticized for both requiring and perpetuating socioeconomic inequalities (Pallagst et al., 2009), elements of the "creative class" theory help explain the seemingly counterintuitive trend of population decline and income growth experienced in each decade in St. Louis, Baltimore and New Orleans. The divergence could potentially be explained by agglomeration economies as the relative level of skill in all three cities increased while their population shrank<sup>3</sup>. The relationship was even more consistent in cities with stabilized or cyclic shrinkage, where all five cities had income and skill increases. In growing cities an increase in skill leads to increased incomes (Glaeser & Resseger, 2009), exploratory evidence suggests this is also true in shrinking cities.

The typology presented in this chapter makes a conceptual contribution to the literature and provides a good framework for more rigorous analysis. The variables used in this study could be refined to more fully capture the processes of economic and demographic change. Including indicators to distinguish between changes in demographic and migratory factors would have useful practical application for planners and decision-makers. This would provide valuable insight regarding population age structure, out-migration trends and skill agglomeration. Median income per capita is a useful economic measure for quality of life, however a more robust economic change analysis could include employment trends and GDP per economic sector to capture structural changes in the local economy. Lastly, simultaneous investigation at different spatial levels and temporal stages could help uncover commonalities and singularities between short and long term shrinkage, and local and regional shifts.

## **2.4 Conclusion**

Population and economic decline are not new processes. Many researchers in the English language literature have concluded that urban change can be viewed as a natural

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<sup>3</sup> Skill measured by percentage of population with college education (U.S. Census Bureau, 2010a).

cyclical process (Hall, 1988; Hoover & Vernon, 1959; Hoyt, 1939; McKenzie, 1924). This conception of an urban lifecycle process has been principally identified by urban sociologists but also echoes the cycle theory of economics (Martinez-Fernandez, Audirac, et al., 2012). During the Fordist industrialization era, the cyclical trends of economic, social and urban growth and decline were largely manifestations of the local economy and local decision-makers (Bontje, 2004). However, globalization has altered the spatial scale at which economic and social changes occur and their manifestation at the local level. The international synchronization of economic cycles and the increased speed and reach of media and migration have deteriorated the autonomy of local economies and decisions. Economic, social and urban theories have all reflected the distinct evolution and impact of globalization (Appadurai, 1996; Friedmann, 1986; Hirst & Thompson, 1996; Kose et al., 2003; Robertson, 1992; Sassen, 2001). Consequently, contemporary urban shrinkage is no longer considered a temporary stage of a cyclical process, but an enduring spatial symptom of globalization (Martinez-Fernandez, Audirac, et al., 2012). Considering the potential permanence of urban shrinkage, planners and decision-makers in shrinking cities need to expand the scope of local strategies to include the possibility of planned shrinkage. An increasing number of academics have similarly called for shrinking cities to “accept” their demographic reality and plan accordingly (Hollander et al., 2009; Pallagst et al., 2009; Rieniets, 2009), stating that shrinkage does not necessarily have to be negative experience and that perhaps shrinkage can be accompanied by an increase in quality of life. Some shrinking cities prove to be resilient and “bounce back” from economic and demographic decline, however considering the dependence of shrinking cities’ fate on wider economic trends, it is negligent for decision-makers to solely pursue growth strategies.

Urban shrinkage is consistently defined in the academic literature as both a demographic and economic process. Typologies focusing only on the population change of a city fail to capture the full extent of the phenomenon and miss an opportunity to demonstrate the diversity of the shrinking experience. In order to shift the preconceived notion that a shrinking city can only be prosperous through demographic growth, discussions, depictions and classifications of shrinkage need to include both causal processes. By separating demographic and economic trends in two-dimensional trajectory typology, this chapter offers a framework to capture the complexity and multiplicity of urban shrinkage experiences. This



distinction advances a more nuanced understanding of shrinkage, a better structure for city comparisons and an improved baseline for planning and policy decisions.

The examination of the trajectories of 20 American shrinking cities clearly demonstrated the diversity of economic and demographic trajectory combinations. 15 of the cities experienced overall population decline while income simultaneously grew. Three of the cities lost population and gained income in every decade of the analysis. These exploratory results display the value of a two-dimensional trajectory typology and, hopefully, will incite further research examining the economic and demographic change of shrinking cities with more robust variables.

## CHAPTER 3

### HOW CITIES SHRINK: COMPLEX PATHWAYS TO POPULATION DECLINE

The dominant narrative of urban shrinkage research advocates that population loss and economic restructuring stem from the interplay of macro economic and demographic trends at the local scale (Rink et al., 2012). This has been well documented through case study analysis, however the linear narrative presupposed in many articles underplays the complexity of urban shrinkage processes (Hoekveld, 2012). Economic and demographic trends undoubtedly play a central role in the development of urban shrinkage, but are also part of a larger complex system complete with interdependencies and feedback loops. Rather than study these trends in isolation, the relationships between economic, demographic and other processes must be taken into consideration in order to gain a more robust understanding of the evolution of urban shrinkage. Within a nonlinear system, how do economic and demographic processes related to urban shrinkage evolve at the local scale? And furthermore, how can the complex relationships between contributing factors be captured, represented and analyzed?

Empirical research examining the dynamic processes of shrinkage is necessary in order to grasp the nonlinear interdependencies between the causes and effects (Großmann et al., 2013). Thus far the academic discourse has predominantly relied upon linear, static approaches and analysis to explore the causes, effects and extent of urban shrinkage. Hoekveld's (2012) work on the temporal and spatial aspects of shrinkage in the Netherlands is one of few studies to examine the complexities of shrinking trajectories. She concludes that the individual processes leading to shrinkage are strongly interrelated and display feedback mechanisms and circular causal trends.

This chapter contributes to the effort to disentangle the causes and effects in the shrinking process. It does so by examining the relationships between fifteen demographic, migratory, economic and built environment factors in two case studies over a period of seventeen years from 1997 to 2013. A novel cross-correlation network analysis approach to

evaluate and represent complex time-series data is introduced and applied to the Canadian case studies of Chatham-Kent, Ontario and Cape Breton Regional Municipality (CBRM), Nova Scotia. The cross-correlation network analysis is used to determine the order and influence of contributing processes to urban shrinkage. The analysis unpacks the processes leading to and stemming from urban shrinkage, providing empirical confirmation of the individuality of urban shrinkage trajectories and offering insights into the complexity of shrinking city systems.

### **3.1 Circular causality of urban shrinkage**

Broadly speaking, a shrinking Canadian city is municipal district with a minimum population of 10,000 residents that has faced population losses for more than two years and is undergoing economic transformations with some symptoms of a structural crisis (adapted from Pallagst et al., 2009; Wiechmann, 2008). Although cities have been transforming, losing and gaining population since their inception, the recent phenomenon of urban shrinkage is considered distinct from historical population loss. Martinez-Fernandez, Audirac et al. (2012) contend that modern urban shrinkage is a socio-spatial manifestation of globalization. The emergence of a global economy and the internationalization of the production process have altered manufacturing, distribution and consumption systems and contributed to the shrinkage of industrial cities across the globe (ibid.). The mobility and uneven development of human, financial and knowledge capital has assured the significance of large global cities (Sassen, 2001; Weaver & Holtkamp, 2015). And the global shift of populations to urban centers has been reinforced by new immigrants' tendencies to settle in larger, metropolitan regions (Skeldon, 2014).

Castells' (2004) network society presents cities as nodes in an information network. He postulates that the global economy has prompted capital and labour to concentrate in specific nodes of great importance while weakening nodes of lesser connectivity. This uneven flow of capital and information has allowed economic and demographic trends to self-perpetuate in both global and shrinking cities. Changing economic and demographic contexts and trends, at varying scales, have consequences for local urban development, which can lead to population decline, which in turn once again impacts urban development (Haase

et al., 2013). This cyclical mechanism can be further reinforced by changes to migratory trends and the degradation of the built environment. These feedback loops, present at the local and external scale, can also influence and be influenced by governance, potentially leading to further reinforcement of demographic and economic feedback mechanisms (ibid.). These dynamic processes continue to have direct and indirect impacts on local urban development.

Due to the nonlinearity and circular causality of the processes in shrinking cities, effects of the process can in turn become drivers. The continued loss of population and of economic decline in shrinking cities is often a result of self-reinforcing feedback mechanisms. However, the evolution of shrinking cities is regularly described as a linear process wherein the local economy suffered, jobs were lost and residents left to find work elsewhere. Many researchers have recognized the multidimensionality of urban shrinkage (Martinez-Fernandez et al., 2015; Pallagst et al., 2009), however little work has been done to disentangle the temporal dimension of these processes. Influenced by Jay Forrester (1971), the research presented in this chapter integrates elements of system dynamics to shed light on the multidimensionality of urban shrinkage processes.

### **3.2 Methods**

Time series analysis is often applied to investigate temporal relationships, however capturing the intricacies of feedback loops and cycling mechanisms within and between the processes can be very challenging. This chapter presents a novel approach to representing and analyzing complex time series data. Cross-correlation network analysis is able to capture the strength, time and direction of processes in complex systems in order to better understand their trajectory and allow for deeper analysis and comparison. This section explains and defines the cross-correlation function, the variables in the study and the network visualization approach.

### 3.2.1 Cross-correlation

In many complex systems, like shrinking cities, a change in one variable precedes a change in another. In order to measure the time and direction, as well as the strength of the relationships between variables, cross-correlations coefficients are calculated. Essentially, cross-correlation coefficients are used to determine how one time series is related to past lags of another time series (Gottman, 1981). This time series analysis technique is often used in signal processing research to determine the time delay between signals (Knapp & Carter, 1976). Figure 3.1 shows an example of two highly correlated time series,  $y_t$  and  $x_t$ . Because of their lack of synchronicity, a simple correlation calculation would not capture the full extent of their relationship. Using a cross-correlation function, we are able to examine the relationship between these time series' while taking into account a potential lag between them. Results would show that the series' are highly correlated with  $x_t$  preceding  $y_t$  by a lag of  $t_2-t_1$ .

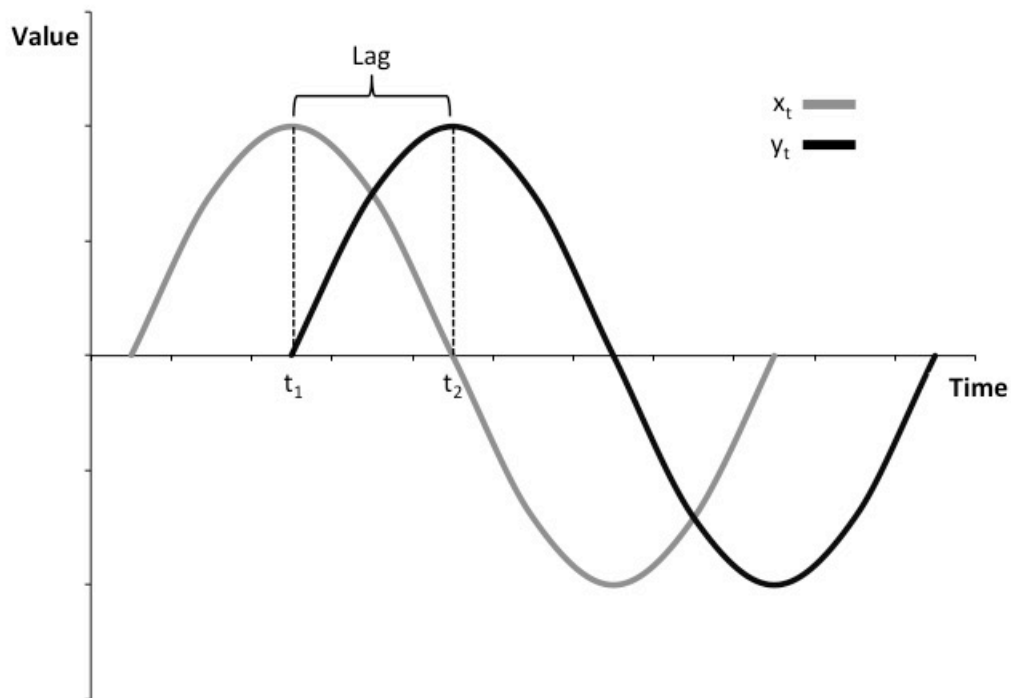


Figure 3.1: Example of two highly correlated, but lagged time series (author's illustration)

From the coefficients it is possible to conclude the significance and direction (which variable precedes which) of the relationship at different lags. For this study, the lag range was from 0 to 5 years. In other words, cross-correlation coefficients were calculated for each lag from 0 to 5 years for every pairwise relationship. Only relationships significant at the 0.01 level were included in the analysis.

### ***3.2.2 Variables***

This study included fifteen economic, demographic, migratory and built environment variables collected annually over a span of seventeen years from 1997 to 2013 (Table 3.1). All data were collected at the municipal scale as rates relative to the population, rather than absolute values. This enables a more robust comparison of values across time periods and more accurate calculation of lagged cross-correlation coefficients.

The academic literature consistently cites economic and demographic change as key drivers of urban shrinkage (Bernt et al., 2012; Buhnik, 2010; Wiechmann, 2008). This research unpacks these drivers and examines the dynamic and interrelated processes contributing to population loss. Four demographic (dependency ratio, proportion of residents aged 65 and older, birth rate and death rate) and five migratory variables (immigration, emigration, interprovincial, intraprovincial and non-permanent resident rate) are used to capture changes in the population structure and understand local migration processes. Unemployment, employment and labour participation are included to gauge changes in labour and economic structure. Furthermore, as the built environment has been a primary focus of shrinking cities scholarship (Martinez-Fernandez et al., 2015), three housing-related variables (housing permits, starts and completions) are included to explore the relationships between economic, demographic and migratory changes and the built environment.

**Table 3.1: List of included variables**

| <b>Variable Type</b> | <b>Variable</b>                           | <b>Source</b>   |
|----------------------|---|---|
| Demographic          | Dependency ratio                          | Statistics Canada   |
| Demographic          | Proportion of residents aged 65 and older | Statistics Canada   |
| Demographic          | Birth rate                                | Statistics Canada   |
| Demographic          | Death rate                                | Statistics Canada   |
| Economic             | Unemployment rate                         | Statistics Canada   |
| Economic             | Employment rate                           | Statistics Canada   |
| Economic             | Labour participation rate                 | Statistics Canada   |
| Migration            | Immigration rate                          | Statistics Canada   |
| Migration            | Emigration rate                           | Statistics Canada   |
| Migration            | Interprovincial migration rate            | Statistics Canada   |
| Migration            | Intraprovincial migration rate            | Statistics Canada   |
| Migration            | Non-permanent resident migration rate     | Statistics Canada   |
| Built Environment    | Housing permit rate                       | Cape Breton Regional Municipality, Municipality of Chatham-Kent |
| Built Environment    | Housing start rate                        | Canadian Mortgage and Housing Corporation                       |
| Built Environment    | Housing completion rate                   | Canadian Mortgage and Housing Corporation                       |

Dependency ratio is defined as the ratio of dependents (number of people aged 0 to 15 and over 65 years old) to working age population (number of people between the ages of 15 and 65 years old). Labour participation rate is expressed as the total labour force (persons above the age of 15 who are employed or unemployed and actively seeking work) relative to the size of the working-age population. Considering the volatility and unpredictability of local level migration trends (Wilson & Rowe, 2011), subcomponents of migration (immigration, emigration, interprovincial migration, intraprovincial migration and non-permanent resident migration) are examined to gain a deeper understanding of the migration process. Net interprovincial migration captures the movement of people between provinces, while net intraprovincial migration captures the movement of people within the province.

### ***3.2.3 Network visualization***

The amount of detail associated with such a range of variables provides an opportunity to further understand the relationships and feedback mechanisms leading to changes in population. However, by including this many variables and digging for a deeper analysis of a complex system, the analysis becomes just that – complex. A network approach

is used to systematically analyze and visualize the fifteen pairwise relationships included in this study. The dynamic relationships of key variables are then examined in closer detail.

Visualization of the full network is used to obtain a consistent, comparable and informative visual representation of all of the pairwise relationships in the complex system (Figures 3.6 and 3.7). Each variable is represented by a node and placed evenly in a circle. The colors of the nodes indicate the type of variable (demographic, migration, labour, housing). An edge between two nodes was drawn for every statistically significant relationship (calculated using the cross-correlation function). The number in brackets next to the variable name denotes how many edges stem from that particular variable. The color of the edge depicts whether the relationship is positive (black) or negative (red). The temporal aspect of the relationship is represented by the direction of an edge's arrow (indicating which variable preceded the other). Due to the number of edges, the time lag associated with each relationship is not visually represented; therefore a second visualization approach examining specific nodes in closer detail was necessary.

The second visualization approach focuses on the unemployment, immigration, interprovincial, and intraprovincial migration variables (Figures 3.8-3.11). These visualizations depict the dynamic temporal relationships between variables. Each visual representation is focused on one of the four aforementioned key variables. The variables that precede a change in the key variable are indicated on the left hand side with arrows pointing in and variables that follow a change in the key variable are indicated on the right hand side with arrows pointing away from the center. The length of arrow is proportionate to the length of the time lag (also indicated above the arrow) between the processes. Negative relationships are depicted with dashed red lines and positive ones with solid black.

### **3.3 Case studies**

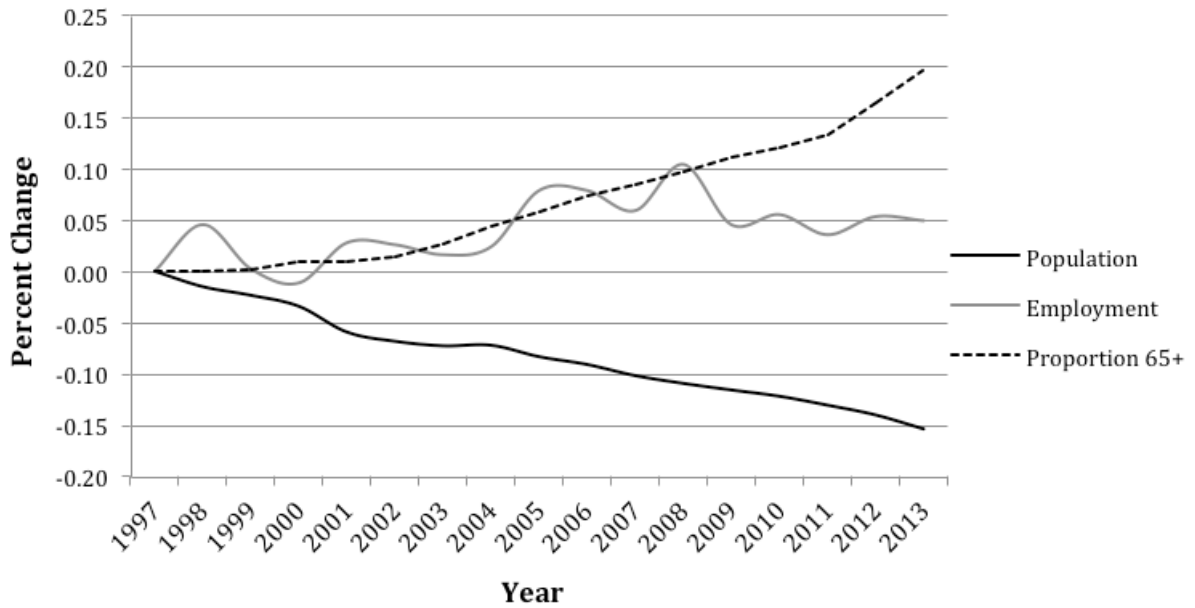
Two Canadian municipalities are the geographic focus of the study: Cape Breton Regional Municipality (CBRM), Nova Scotia and Chatham-Kent, Ontario. Both municipalities have populations of roughly 100,000 and a land area of approximately 2,500 square kilometers. Furthermore, CBRM and Chatham-Kent are both single-tier regional governments with one central urban community (Sydney and Chatham, respectfully) and a



number of smaller urban and rural centers. Both cities have traditionally relied upon industrial-based economies and have witnessed declines in employment and population. However, while CBRM's economy and population have been steadily declining for decades, it is a relatively recent phenomenon in Chatham-Kent. These cities represent two Canadian shrinking city trends: long-term shrinkage in a peripheral resource-based economy and emergent-shrinkage in a central manufacturing-based economy.

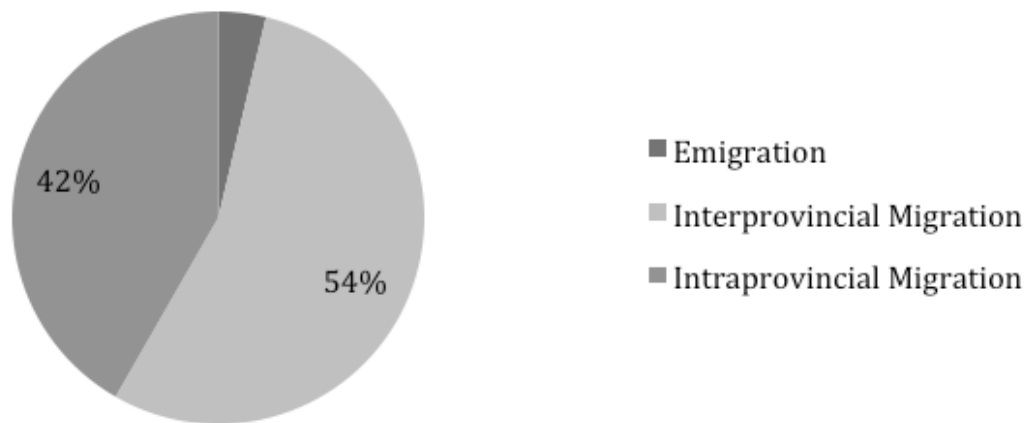
### ***3.3.1 Cape Breton Regional Municipality***

Traditionally CBRM's economy has been based on coal and steel. For the first part of the 20<sup>th</sup> century CBRM grew rapidly, from a population of nearly 50,000 in 1901 to a peak population of almost 132,000 in 1961 (Statistics Canada, 2014). This was largely due to the growth of the Dominion Steel and Coal Corporation, which was backed and run by American and British investors. However, coal production peaked in 1913 and although mining employment continued to grow until the 1950s, by 1965 it had dropped from approximately 10,000 to 4,500 as more than 40 mines closed (Mason, 1991). The shift to other types of fuel, more lucrative government subsidies and the increasing difficulty accessing coal all contributed to the industry's decline. In 1965, Dominion withdrew and the federal government (DEVCO) took over operations mandating to phase out mines as replacement jobs could be created in other sectors. Job loss in the mining industry continued with relatively few new jobs created in other industries throughout the following decades despite billions of dollars of government investment (ibid.). In 2001, the closure of the Prince Mine signified the end of an industry that had been the identity of the city for almost 200 years (Wray & Stephenson, 2012).



**Figure 3.2: CBRM trends in population, employment and proportion of population over 65 years old**  
 (Source: Statistics Canada)

Population in CBRM has been steadily declining for decades. Between 1991 and 2006, the city lost almost 40% of the population aged between 20 and 34 (Statistics Canada, 2012). And between 1997 and 2013 CBRM lost 15% of its population and over 20% of those who remain are over 65 years of age (Statistics Canada, 2014). Population loss is often attributed to parallel losses in employment, but as Figure 3.2 demonstrates, the relationship is not straightforward. From 1997 to 2013, the population of CBRM continued to decline, however during that time absolute employment fluctuated considerably despite a continued increase in the proportion of the population over the age of 65 years old.



**Figure 3.3: Migration type contribution to population loss in CBRM**

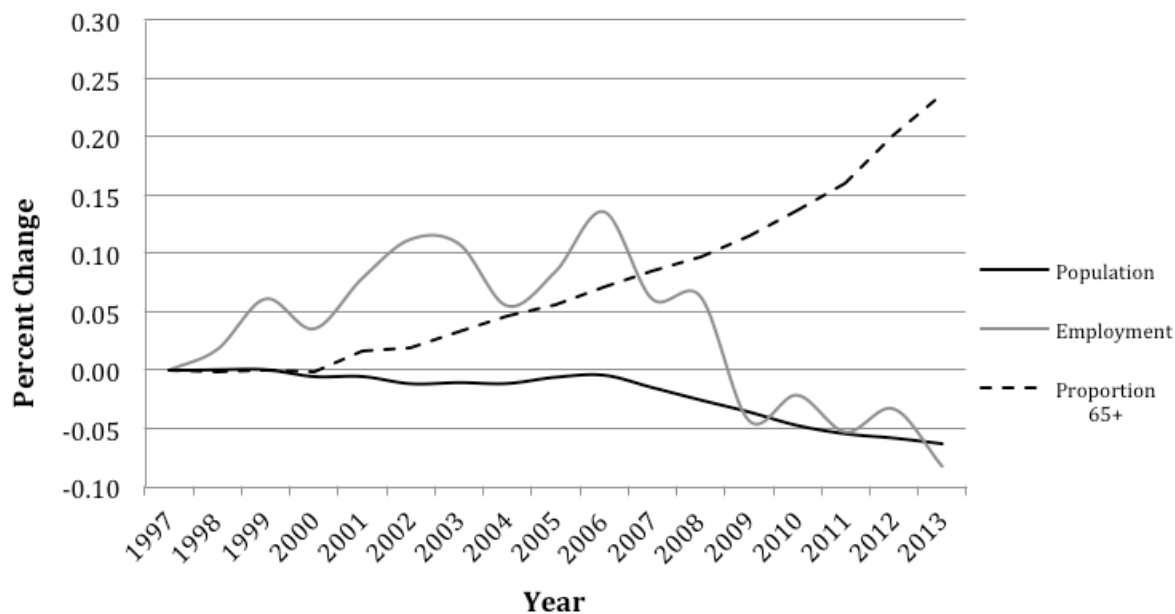
In CBRM, outmigration is almost entirely inter- and intraprovincial (Figure 3.3). It is likely that, within the province, CBRM residents are moving to Halifax – the province’s only large growing population center. Interprovincial migration is likely reflecting the large number of Cape Bretoners who moved to Alberta to work in the oil and gas industry (Wray, 2012).

### ***3.3.2 Chatham-Kent***

Chatham-Kent’s economy has traditionally been based around the automotive and agricultural industries. Heavy truck manufacturing began in 1923 and continued until 2011 when Navistar International – the main local employer in this industry - officially closed the truck plant despite a \$65 million government investment in 2003 (Shreve, 2011). Navistar moved its manufacturing operations to Texas and Mexico in order to take advantage of cheaper labour and better government subsidies. Following Navistar, many other auto-related manufacturing firms have similarly slowed production or closed. This reflects wider shifts in Southwestern Ontario where since 2006 one quarter of manufacturing jobs have been lost following the closure of large plants such as Caterpillar and Kellogg (London, ON).

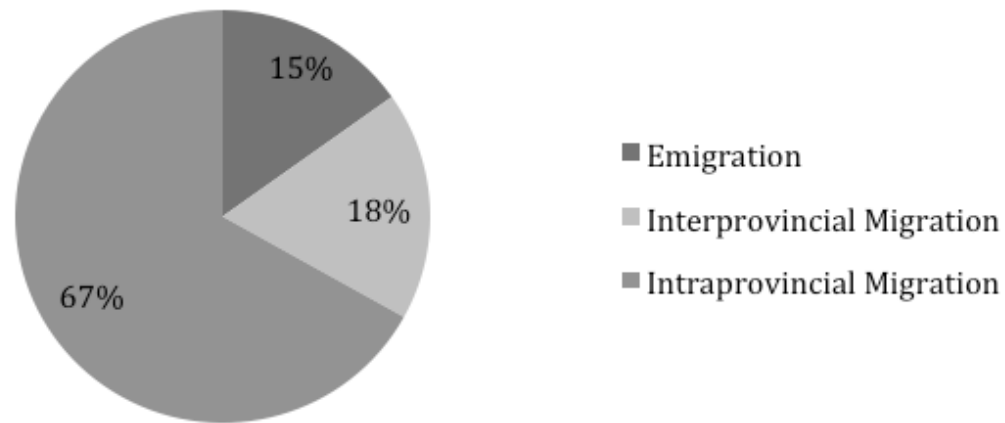
Much of the outer area of Chatham-Kent relies heavily on agricultural industries. Although agricultural firms like Pioneer (seed breeding and biotech) are growing, many are increasingly employing migrant workers and there have been reports of low pay and poor

working conditions (McLaughlin et al., 2014). In recent years, retail employment has grown as many big box stores have been built in the municipality's periphery. Like cities such as Detroit, Chatham-Kent is reliant on mature industries and lacks economic diversity (Jacobs, 2015), however significant population decline only began in the mid-2000s.



**Figure 3.4: Chatham-Kent trends in population, employment and proportion of population over 65 years old (Source: Statistics Canada)**

Figure 3.4 shows that population change in Chatham-Kent remained relatively stagnant until 2006. Since 2006, the city has lost 6% of its population and between 2006 and 2009 alone over 15% of the city's jobs were lost. The unemployment rate peaked in 2009 at 11.5%, but had subsided to 8.4% by 2013 (Statistics Canada, 2013b). The trend in population decline is projected to continue into the foreseeable future (Ontario Ministry of Finance, 2012). Similar to CBRM, it is mostly the younger working-age population who are migrating from Chatham-Kent. As of 2013 almost 20% of the population was over 65 years of age (Statistics Canada, 2014). However, unlike CBRM, trends in population loss are very similar to trends in employment.



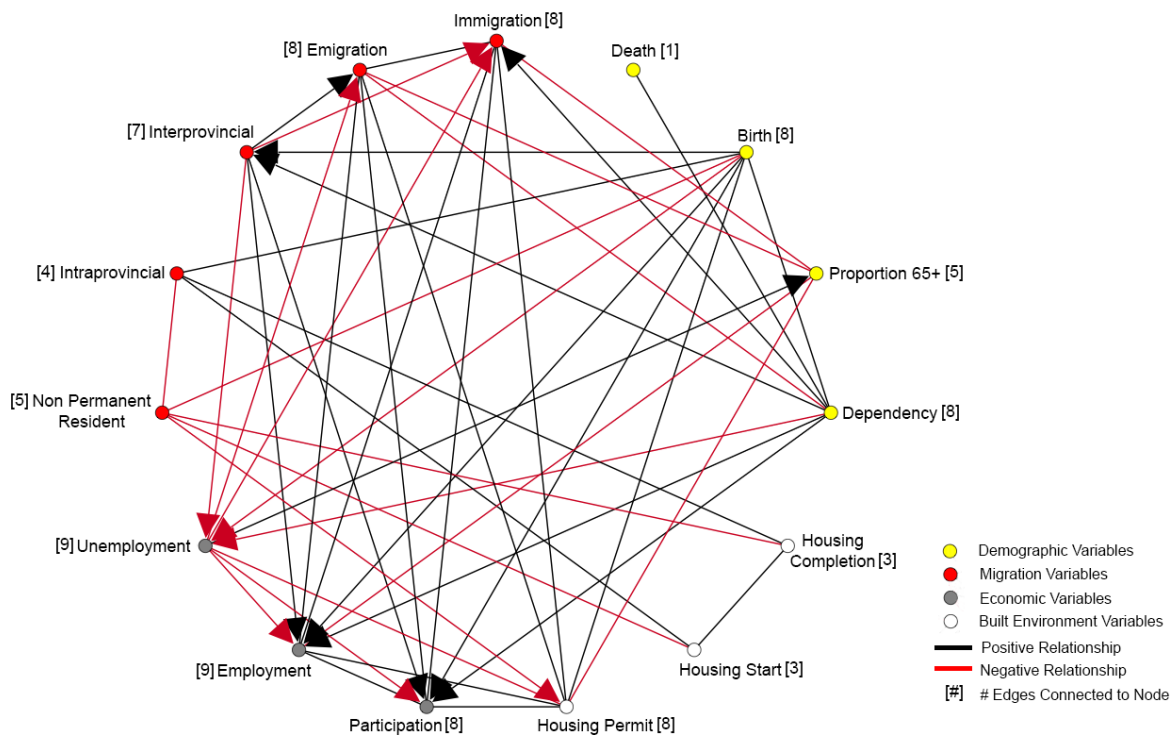
**Figure 3.5: Migration type contribution to population loss in Chatham-Kent**

Intraprovincial migration plays a very large role in Chatham-Kent (Figure 3.5). This is likely due to Chatham-Kent’s proximity to the Greater Toronto Area (GTA) – one of the largest and fastest growing metropolitan regions in North America. Chatham-Kent has a much higher rate of immigration than CBRM, however in recent years the number of immigrants has been subsiding. Within the timeframe of this study, the number of annual immigrants has fallen by 50%. Its proximity to the GTA, where approximately 40% of new immigrants settle (Murdie, 2008), increases its destination profile, however the recent decline of accessible, high-paying manufacturing jobs has likely impacted its ability to attract immigrants (Center for Regional Economic Competitiveness, 2011). The following section broadens the scope of analysis to also include economic, demographic and built environment trends in both cities to provide insight into their shrinkage trajectories.

### **3.4 Results**

Figure 3.6 and 3.7 show the cross-correlation network maps of Chatham-Kent and CBRM respectively. The edges in the map depict the statistically significant relationships between the fifteen demographic, economic, migratory and built environment variables. For the sake of visual simplicity, time lags are not displayed, however, they are discussed in the

analysis. Full correlation tables including the associated lags for each case study are provided in the Appendix F.

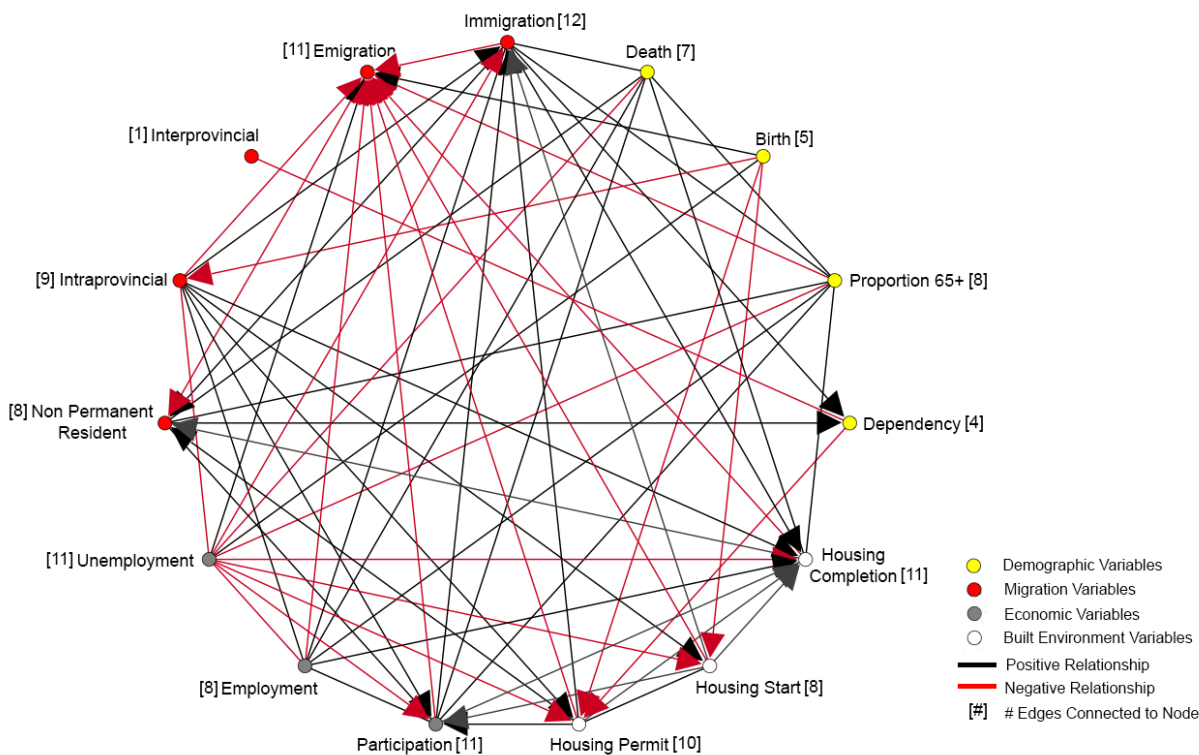


**Figure 3.6: Chatham-Kent cross-correlation network map**

There are 47 edges in the Chatham-Kent network map (Figure 3.6) - each representing a statistically significant cross-correlation relationship. Unemployment and employment are the most connected nodes, each with 9 unique statistically significant relationships. The least connected node is death rate, which has only one relationship with dependency ratio. 60% of the relationships are positive. 57% of the relationships have a lag of 0 years, meaning that they have a two-way, simultaneous interaction.

The CBRM network map (Figure 3.7) displays more circularity and feedback loops than Chatham-Kent. In CBRM, there are 62 edges and therefore increased density and interrelation of variables in the network. Immigration is the most connected node with 12 edges, followed by unemployment, labour participation, emigration and housing completions

each with 11 edges. The least connected node is interprovincial migration rate with only one relationship with dependency ratio. Similar to Chatham-Kent, roughly 60% of the relationships are positive. 39% of the relationships had a lag of 0 years.



**Figure 3.7: CBRM cross-correlation network map**

Migration and unemployment are often cited in both the academic and gray literature as key factors of population change. The migratory analysis above confirmed that immigration and intra- and interprovincial migration are the strongest migratory contributors to population change in the two case study cities. The cross-correlation network maps show that they are also highly connected to other demographic, labour and built environment variables. Looking closer at these components and their relationships within the cross-correlation network allows us to unpack the complexity and gain a better understanding of the processes driving migration and unemployment. Due to the large number of significant relationships in the two cross-correlation networks (109 total), exploring every relationship is

not within the scope of this Chapter. The following subsections will highlight exemplary dynamic relationships and trends in unemployment and migration.

### ***3.4.1 Dynamic trends in unemployment***

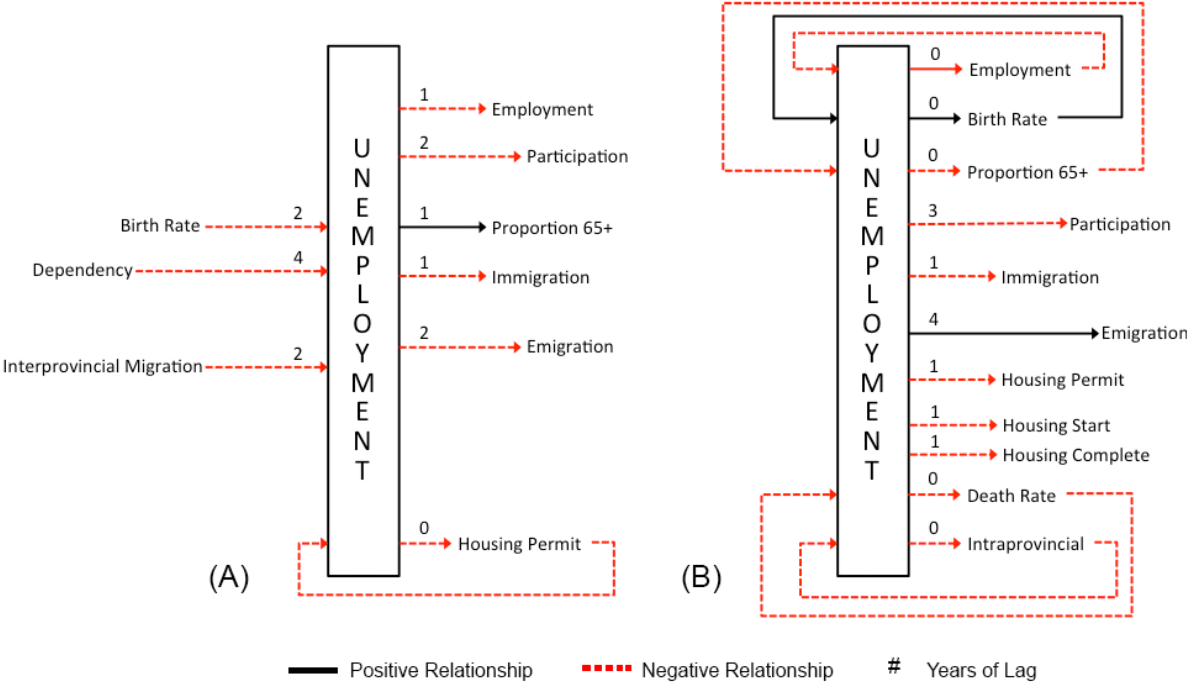
Figure 3.8A shows that in Chatham-Kent a decrease in the interprovincial migration rate is followed two years later by an increase in unemployment. Additionally, as birth rates decrease, unemployment increases, which could be the result of a shifting population structure as employed young adults move to follow better career opportunities. Once unemployment has risen there is a drop in employment and labour participation rates. We also see a reciprocal relationship between unemployment and housing permit rates. As unemployment increases, the number of housing permits decreases, which in turn is followed by a further increase of unemployment. Additionally, as unemployment increases immigration rate declines within one year.

Figure 3.8B illustrates that unemployment in CBRM is highly connected to the other variables in the network. It has 11 connections and five of those are immediate feedback loops. Unemployment increases as intraprovincial migration decreases, which in turn is correlated with even higher unemployment. There are also a number of connections with unemployment and the built environment. As unemployment rises, the number of housing permits, starts and completions falls.

There are significant relationships between unemployment and immigration in both Figure 3.8A and 3.8B. Increased unemployment precedes a decline in immigration. In both Chatham-Kent and CBRM there is a one-year time lag between a change in unemployment and the subsequent change in immigration. It can be hypothesized that an increase in unemployment makes for an unattractive locale for new immigrants. The one-year lag can be attributed to the time-intensive process of immigration. Individuals who have already begun the process may have made commitments that they need to see through, but those just beginning may have more flexibility to react to the change in unemployment. It is interesting that the two municipalities have contrasting relationships between unemployment and emigration. In Chatham-Kent, an increase in unemployment is followed 2 years later by a decrease in emigration and in CBRM an increase in unemployment is followed 4 years later



by an increase in emigration. The positive relationship in CBRM could be due to CBRM’s isolation within the Canadian context. Unless relocating to Halifax, unemployed individuals in CBRM with mobility face a relatively significant move. Moving to Alberta or British Columbia is comparable, distance-wise, with Europe therefore residents of CBRM may be more open to international migration.

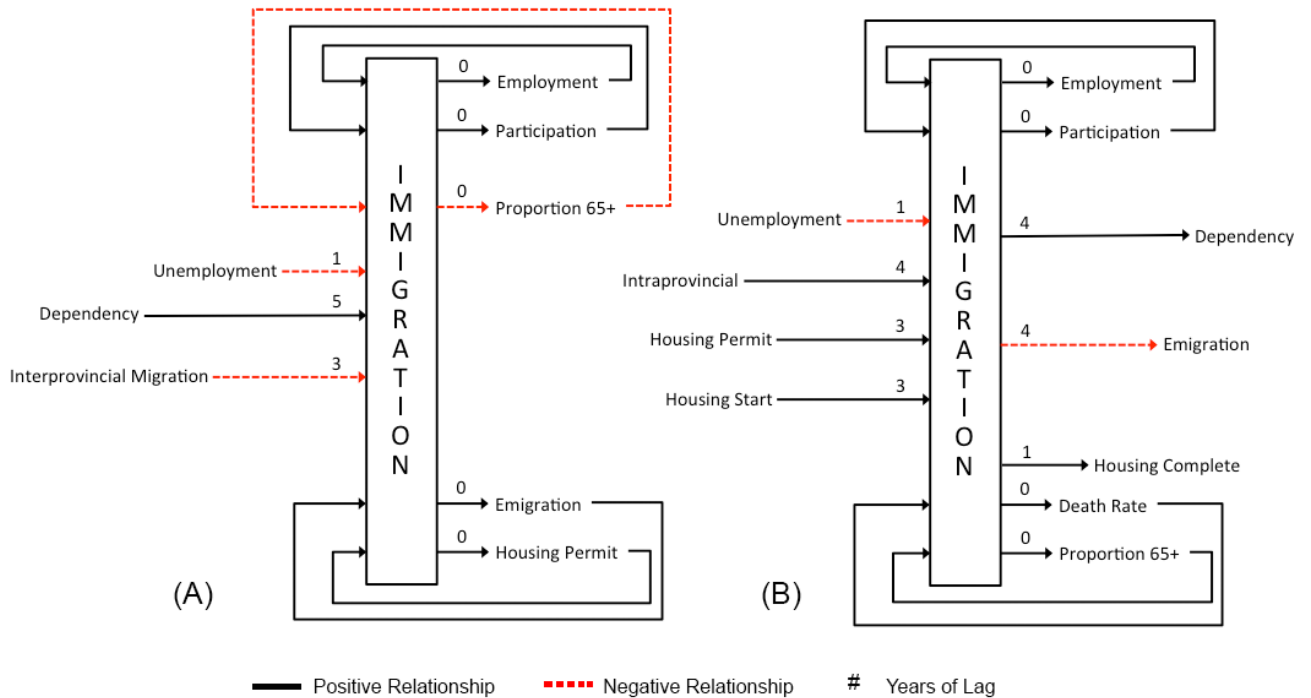


**Figure 3.8: Dynamic relationships of unemployment in (A) Chatham-Kent and (B) CBRM**

Unemployment in both case studies is also firmly related to the built environment. In Chatham-Kent, there is a reciprocal negative relationship between unemployment and housing permits. And in CBRM, there is a negative relationship between unemployment and all three built environment variables (housing permits, starts and completions). As unemployment increases, there is less financial security in the community and consequently, fewer people are in the market to buy homes. Results suggest that a weaker market leads directly to a decrease in housing permits, starts and completions.

### 3.4.2 Dynamic trends in immigration

The relationship between unemployment and immigration is also represented in Figure 3.9A and 3.9B. Additionally, both figures show that immigration has a two-way relationship with employment and labour participation. These relationships strengthen the hypothesis of the importance of employment in the immigration process, as immigration patterns respond to changes in unemployment, employment and labour participation.



**Figure 3.9: Dynamic relationships of immigration in (A) Chatham-Kent and (B) CBRM**

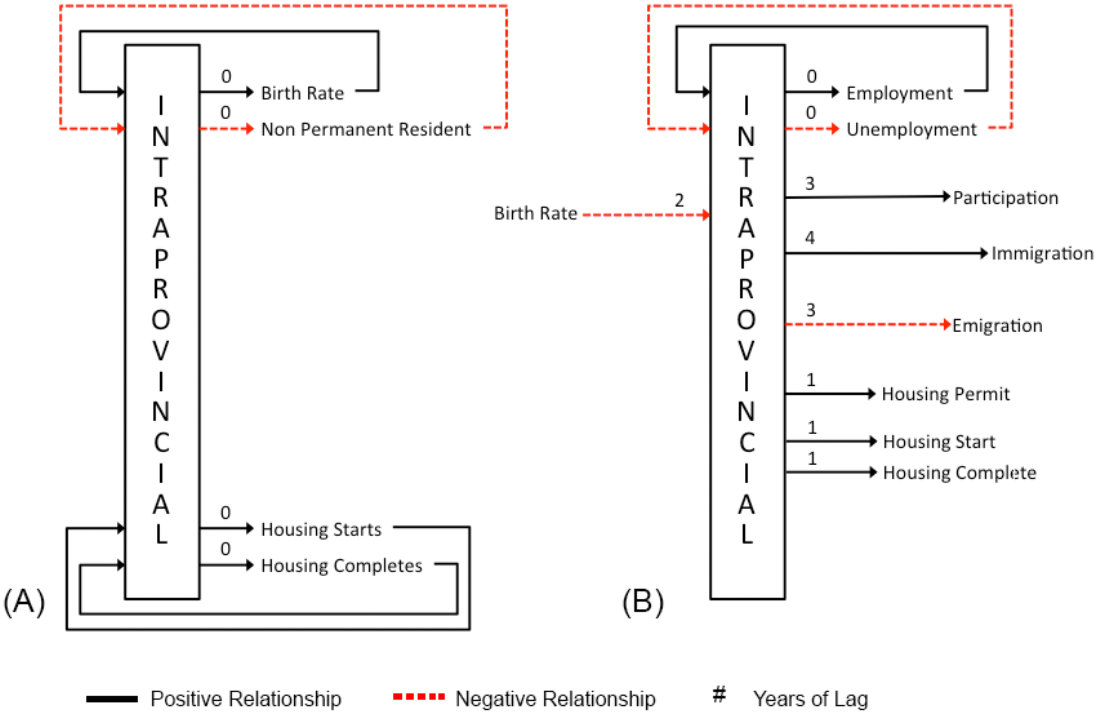
Immigration is also related to dependency in both municipalities. In CBRM a positive change in dependency is followed by a positive change in immigration. However in Chatham-Kent, a positive change in dependency follows a positive change in immigration. This could be related to demographic differences within the immigrant population (number of dependents) or the result of young immigrant couples starting a family once having arrived in Canada.

In Chatham-Kent (Figure 3.9A), immigration also has a two-way positive relationship with housing permits, whereas in CBRM (Figure 3.9B) changes in both housing permits and

starts precede changes in immigration, which are then followed by a change in housing completions. These relationships suggest that the availability of new housing may play a role in immigration settlement patterns. This is especially true in CBRM as an increase in permits and starts is followed 3 years later by an increase in immigration and one year after the change in immigration, new housing is completed.

**3.4.3 Dynamic trends in intraprovincial migration**

A closer inspection of intraprovincial migration (Figure 3.10A) depicts a number of reciprocal relationships. A decrease in intraprovincial migration is followed by lower birth rates, lower housing start and completion rates, and an increase in non-permanent resident rates. The relationship between intraprovincial migration and housing relationships is logical, as a shrinking population has less of a need for more housing. However, this has further reaching implications, as new housing can be an important factor in attracting young, educated families.



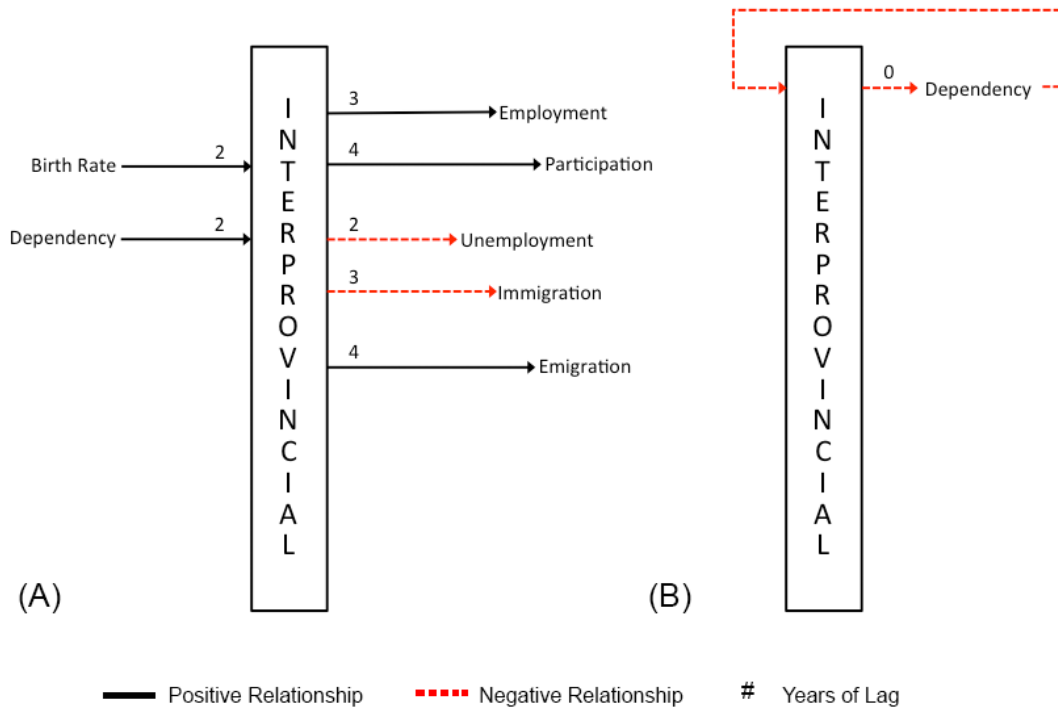
**Figure 3.10: Dynamic relationships of intraprovincial migration in (A) Chatham-Kent and (B) CBRM**

Intraprovincial migration plays a large role in CBRM's population change. The results in Figure 3.10B show that a negative change in intraprovincial migration precedes a rise in unemployment, which precedes further decline in intraprovincial migration. As residents leave, labour participation and immigration also fall. Again, there are a number of connections with the built environment, as a decline in intraprovincial migration precedes a decline in housing permits, starts and completions.

Comparing the two sets of relationships, we see that birth rate has a positive relationship with intraprovincial migration in Chatham-Kent but a negative relationship in CBRM. This could be due to the age of intraprovincial migrants – because of Chatham-Kent's more recent decline they may be losing a higher percentage of younger adults (and as such higher potential birth rates) whereas the long-term decline of CBRM has resulted in less of a recent out pouring of working-aged adults.

#### ***3.4.4 Dynamic trends in interprovincial migration***

Interprovincial migration had fewer relationships than the other migratory variables in both Chatham-Kent and CBRM. However, interprovincial migration rate relationships in Chatham-Kent (Figure 3.11A) once again show the connection between declining population and rising unemployment. Similar to the trend in immigration, in Chatham-Kent (Figure 3.11A) there is a relationship between population change and employment. A decrease in interprovincial migration is followed by a decrease in employment and labour participation and an increase in unemployment. Furthermore, a decline in birth rates, potentially reflecting an older population, precedes a decrease in interprovincial migration.



**Figure 3.11: Dynamic relationships of interprovincial migration in (A) Chatham-Kent and (B) CBRM**

Interprovincial migration (Figure 3.11B) had only one connection, a direct inverse relationship with dependency ratio. As the number of dependents rises, the number of residents leaving for another province grows. It is interesting to note that despite the prominent role of interprovincial migration in CBRM’s population change it had but one connection. This could be due to the high year-to-year fluctuation of interprovincial out migrants, which regularly changes by over 50% whereas intraprovincial migration change, for example, is relatively steady.

### 3.5 Discussion and conclusion

The results of the cross-correlation network analysis in the two case studies demonstrate three outcomes. First, they provide empirical confirmation to Hoekveld’s (2012) conclusion that the processes contributing to urban shrinking are much more complex than the oft relied upon linear narrative assumes. The results from both case studies showed

extensive connectivity between the variables. Many of the variables were strongly interrelated and the networks displayed numerous feedback loops between all four types of variables. These circular trends potentially indicate self-propagating mechanisms within the urban shrinkage process.

Second, the analysis provides empirical confirmation of the individuality of urban shrinkage trajectories. Chatham-Kent and CBRM each had a distinct set of relationships between variables. The two cities are comparable in geographic and population size and in recent years have both experienced symptoms of urban shrinkage. However, it is possible that significant differences in migration trends play an important role in the differentiation of their shrinkage trajectories. Out-migrants of Chatham-Kent are more likely to move within the province of Ontario than outside of it, whereas in CBRM, residents are slightly more likely to leave the province of Nova Scotia altogether. This pattern of migration follows national economic trends, as the lack of size and success of Nova Scotia's economy has compelled many residents to move to more prosperous parts of the country. In Southwestern Ontario, where Chatham-Kent is located, the economy has declined in recent years. Its close proximity to many growing regions in Southern Ontario have allowed for out-migrants of Chatham-Kent to make a less substantial move in order to find adequate employment.

These migratory trends reflect the distinct difference between urban shrinkage within a context of growth and shrinkage within a shrinking region. Not only does the wider spatial context have an impact on the manifestation of migratory, economic and socioeconomic trends, it also impacts the development and implementation of local response strategies. A nearby economic and demographic growth pole can be both a blessing and a curse. Living and trying to compete in the shadow of a large growing city or region can be challenging, however it also provides significant opportunities for regional coordination. Multi-scalar initiatives have been shown to be instrumental in stabilizing urban shrinkage (Rink et al., 2012). Chatham-Kent's location allows residents to commute to a number of employment centers within the Greater Toronto Area and offers an affordable alternative to newly landed immigrants in Toronto. It offers regional economic development and planning opportunities with the Greater Toronto Area, but also with other industrial urban centers such as Sarnia and London.

Last, a number of similarities arose from the analysis of the cross-correlation networks, even though the shrinkage trajectory in each case is clearly unique. Unemployment rates were strongly linked to housing permit rates in both cities. Predictably higher unemployment was correlated with fewer housing permits. The built environment provided additional similarities between the cities' trajectories as intraprovincial migration rates were strongly linked to housing starts and completions. A rise in intraprovincial migration led to more housing starts and subsequent completions. This connection was stronger in Chatham-Kent where a two-way relationship was observed – an increase in housing starts and completions led to increased intraprovincial migration. And in both locations, labour variables (unemployment, employment and labour participation rates) were found to be strongly indicative of immigration trends. Specifically, a decrease in employment and labour participation (with a parallel increase in unemployment) led to a decrease in immigration. This suggests that the perception of poor employment prospects acts as a disincentive for immigrants to choose to live in either of these locations. This is especially pertinent in Chatham-Kent, where immigration has been an important source of population growth in the past.

The links between the labour and migratory variables reflect the impact of globalization in both municipalities and their wider geographic contexts. The economy of Chatham-Kent, and Southwestern Ontario in general, is heavily reliant on mature industries and has declined substantially in recent years. The decision of employers, such as Navistar, to relocate their manufacturing facilities is a direct manifestation of economic globalization. Incentivized by lower wages and better government subsidies, multinational companies are more mobile than in the past. This mobility has shifted the power dynamics in negotiations between private firms and public office, which in turn has impacted the number, and type, of jobs available in many shrinking cities such as Chatham-Kent. As reflected in the cross-correlation results, lower levels of employment make it harder to attract and to keep residents. The impact of globalization is also demonstrated by the increase in migrant labourers working in Chatham-Kent's agricultural industry. The mobility of a global workforce allows farmers to hire international employees (many coming from Mexico and the Caribbean), which also impacts the number and type of jobs available.

The negative impact of globalization in CBRM dates much further. The main industrial activities of CBRM have never been locally owned as international investors founded Dominion Coal and Steel in the early 1900s and following Dominion's withdrawal in 1965 it was managed by the federal government. Mason (1991) argues that this succession of absentee ownership resulted in a very limited local managerial class. During the 1990s the federal and provincial government began to focus investment in CBRM more on local entrepreneurship, however the long-time dominance of external owners had resulted in an absence of entrepreneurial culture and the decline continued (Mason, 1991). Due to the longevity of the decline, the employment based has stabilized, however it is largely dependent on the retail sector. The connection with globalization can be seen further as, until recently, a significant amount of the CBRM labour force migrated to Alberta. Although the last mine was closed in 2001, the identity of CBRM is still intertwined with the resource extraction industry and the impacts of globalization and absentee ownership continue to play a role in the community.

This chapter explored the co-evolution of demographic, migratory, economic and built environment processes in two shrinking municipalities. The goals were to (1) develop a method to analyze and represent numerous complex time series relationships between variables, and (2) to determine the order and influence of the processes contributing to urban shrinkage. In doing so, it advances our understanding of the dynamic processes of urban shrinkage and responds to the call for process-oriented, rather than outcome-oriented, shrinking cities research (Großmann et al., 2013).

The novel approach to disentangling, analyzing and representing the temporal processes of urban change makes a significant methodological contribution to the wider planning literature. The cross-correlation network method introduced in this chapter goes beyond the linear, static approaches and analysis often used to explore the causes and effects of urban phenomena. Considering the explosion in the amount of data readily available to social science researchers and the increased connectivity within and between urban spaces, new process-oriented methods are needed to analyze and visualize the connections and relationships in complex geographical systems. With a better understanding of the interrelated processes of urban evolution, new policies can be explored to target changes and anticipate prospective trends to increase the efficacy of long-term community planning.



## CHAPTER 4

### EXPLORING SHIFTING PERCEPTIONS IN SHRINKING CITIES THROUGH A TRANSFERABILITY FRAMEWORK

In social, economic and urban theory, decline has traditionally been perceived as simply a step in an evolutionary cycle (Hall, 1988; Hoover & Vernon, 1959; McKenzie, 1924; Van den Berg et al., 1982). However, recent academic literature has consistently concluded that the emergent phenomenon of shrinking cities is a lasting symptom of globalization (Audirac et al., 2010; Großmann et al., 2013; Pallagst, 2010; Rieniets, 2006; Rink et al., 2012). There is agreement amongst planning academics and practitioners that planning, as it currently exists, is not equipped to manage shrinkage (Bernt et al., 2014). The literature identifies both cognitive and practical barriers to developing and implementing strategies that respond to the challenges of population loss without relying on the assumption of growth. Cognitively, Hollander et al. (2009) assert that the growth-oriented culture in which planners operate has produced an aversion to the very notion of shrinkage. Therefore a better and more nuanced understanding of local actors and practitioner perception is needed to advance and facilitate the development and application of alternative planning approaches in shrinking cities (Bernt et al., 2014). Pragmatically, the lack of alternative approaches in the planning toolbox is problematic considering the inapplicability of traditional growth strategies in the context of shrinkage (Hollander & Popper, 2007; Wiechmann & Bontje, 2013). Therefore strategies to manage demographic and economic transitions in order to maintain community viability and quality of life are necessary. This chapter advances both the practical and cognitive understanding of urban shrinkage by (1) creating a systematic transferability framework to facilitate the exchange of shrinkage strategies and (2) using the framework to explore how local decision-makers in shrinking cities perceive the applicability of shrinkage strategies.

The literature on shrinkage strategies has begun to gain momentum (Dewar & Thomas, 2013; Ganser & Piro, 2012; Pallagst et al., 2013), and many scholars have called for increased communication, collaboration and exchange between cities, regions and nations

(Großmann et al., 2013, 2008; Hollander et al., 2009; Pallagst, 2010). The transfer of policies, strategies and approaches allows decision-makers to learn from and build upon the successes and failures of other shrinking cities. The transferability process can provide much needed practical guidance to resource-stricken municipal departments and potentially diminish the stigma associated with non growth-oriented strategies. Of course there are a number of factors that decision-makers must consider when faced with the challenges of urban shrinkage. This chapter focuses specifically on the viability of transferring shrinkage strategies in order to ascertain how local perception facilitates or impedes their application (for research regarding agenda setting and the policymaking process see Bernt et al. 2014). The analysis contributes to a more differentiated understanding of the varied landscape of urban shrinkage by examining two comparable but distinctly different shrinking cities.

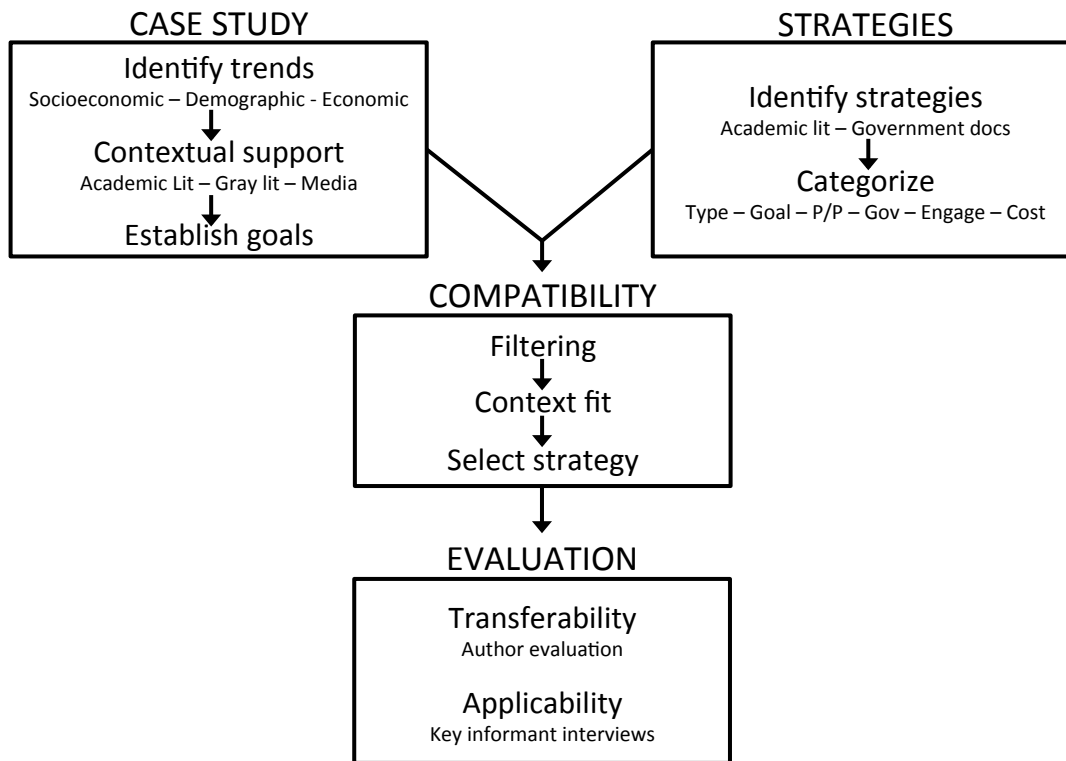
This chapter first presents an iterative framework that guides the context-specific analysis of the transferability of planning strategies in shrinking cities. Second, the framework is applied to the shrinking Canadian municipalities of Chatham-Kent, Ontario and Cape Breton Regional Municipality (CBRM), Nova Scotia. The framework uses the academic literature, government reports and plans and key informant interviews to assess the compatibility, transferability and applicability of a service rightsizing strategy in both communities. Results from the transferability assessment are used to gauge the perception of local decision-makers and identify opportunities and barriers concerning the feasibility of the rightsizing strategy. Finally, commonalities and differences between the two case studies are explored to offer insight to the temporal and spatial influence of urban shrinkage on local perceptions. Although much of the theoretical discussion in this chapter can be applied at a number of scales, the concentration will remain at the municipal level where the challenges of urban shrinkage are most often confronted.

#### **4.1 Transferability framework**

Due to the accelerated mobilization and trans-nationalization of knowledge, policies and strategies, policy transfer and policy learning have become progressively accepted as an instrumental element of the policy-making process (Williams et al., 2014). Dolowitz and Marsh (1996, p. 344) define policy transfer as “a process in which knowledge about policies,

administrative arrangements, institutions, etc. in one time and/or place is used in the development of policies, administrative arrangements and institutions in another time and/or place.” Policy comparisons and transfer can contribute to the advancement and innovation of local policy - improving the quality and rationality of the policy-making process.

Research on policy transfer often focuses on the motivation and need for policy transfer rather than detailing a systematic process of how it should occur (Williams et al., 2014). Building upon Rose (2005) and Williams et al. (2014), this section outlines a framework of specific steps to follow in order to assess the potential transfer of shrinkage strategies from foreign experience into the local context. The objective is not to test the effectiveness of the framework, but rather to consolidate policy transfer and urban shrinkage research to provide a baseline approach to transferring shrinkage strategies. Regardless of whether the policy is adopted or rejected, lessons learned from the process may also impact, or even terminate, current policy. As responses to the challenges of shrinking cities do not always come in the form of official policy, the term “strategy” will be used to describe policies, strategies and approaches that propose active measures to address the economic, social or environmental challenges of shrinking cities. Throughout the chapter “foreign” will be used broadly to describe any strategies, domestic or international, external to the local scale and “target” will be used to describe the municipality in need of intervention. A schematic overview of the framework is depicted in Figure 4.1.



**Figure 4.1: Overview of transferability framework**

The first step in the framework (Case Study) is to establish a thorough understanding of the target community. Socioeconomic, demographic and economic trends should be identified and academic literature, media, grey literature and government reports should be collected and reviewed to provide context and gain insight to the cause and effect of local government and community action. This analysis should establish the need for a new strategy and the creation of a set of specific goals that the incoming strategy would ideally achieve.

In order to potentially transfer strategies to respond to the challenges resulting from urban shrinkage, an inventory of strategies needs to be established. Academic literature pertaining to the subject matter, in this case shrinking cities, should be identified through keyword title and abstract searches. Government documents from potential donor municipalities, regions and counties should also be identified and examined. Once a broad literature list has been created, the articles can be examined for descriptions, examples or explicit mention of strategic responses to urban shrinkage. The resulting strategies are

categorized according to six components: (1) strategy type, (2) strategy goal, (3) funding type, (4) level of governance, (5) level of civic engagement, and (6) cost. See Appendix G for a full description of the strategy types, goals, engagement and cost.

The strategy types, adapted from Hummel (2014), are land banking, revitalization, demolition, consolidation, greening and other. This is not an exhaustive list of possible strategies, but rather a reflection of the academic literature and government documents, which tend to focus on the physical built environment. The second component is strategy goal, which evaluates strategies based on the overarching objective of the intervention in relation to the population loss. Adapted from Hospers (2013), shrinking cities strategies can trivialize shrinkage by not addressing the symptoms, counter shrinkage by attempting to foster growth, accept shrinkage by adopting strategies to mitigate its negative effects or utilize shrinkage to explore unique opportunities associated with depopulation.

The third component examines funding type to determine if shrinking cities strategies are funded publicly, privately or in a public-private partnership. The fourth component examines the level of governance involved in the strategy – intergovernmental, federal, provincial/state, municipal, sub-municipal, multi-level or none. The fifth component uses the summary rungs of Arnstein’s ladder (1969) (citizen control, tokenism or nonparticipation) to assess the level of civic engagement. “Unclear” and “Not Available” are also included as the level of civic engagement can be difficult to evaluate depending on the source. The last component, monetary cost, is particularly difficult to evaluate, therefore fuzzy variables are used to estimate relative cost of different shrinking cities strategies. Although most strategies vary depending on the context and scale, some can be identified as having high (e.g. large infrastructure projects), medium (e.g. demolition projects) or low (e.g. community gardens) costs.

Using the six-component categorization of the strategies, the compatibility step of the framework first filters out strategies that do not match the specific type, funding, governance, cost, goal or engagement needs of the target municipality. Once the strategies have been filtered accordingly, the list of strategies identified from the literature should reflect the need, resources and structure of community. From here a strategy can be selected and adapted to the local context.

Based on Buffet et al. (2011), the last step of the framework adopts four criteria to assess the transferability (magnitude, objective, cost effectiveness and target group characteristics) and five criteria to assess the applicability (political acceptability, social acceptability, stakeholders, institutional infrastructure, and available resources) of the selected strategy. See Appendix G for a full details transferability and applicability evaluation framework. An external reviewer can evaluate the transferability, however the applicability of the strategy to the local context requires local insight. Key informant interviews with local community and government decision-makers can provide the necessary context to determine if the political and social climate of the municipality would be accepting of the selected strategy. Once the transferability and applicability of the selected strategy have been assessed conclusions and recommendations can be made regarding the feasibility of transferring the selected strategy to the target municipality.

## **4.2 Framework application**

In this section, the transferability framework is applied to two distinct shrinking city case studies. Although one has a relatively recent shrinkage history and the other has been shrinking for decades, they share the challenges and needs of underfunded, overstretched, large amalgamated municipalities. The compatibility, transferability and applicability of a single strategy is examined in both case studies using secondary (literature, reports, census data) and primary (key informant interviews) data sources.

### ***4.2.1 Case studies***

In order to gain a more differentiated understanding of the viability of shrinkage strategies, two similarly sized but distinctly different Canadian case studies were examined. The population and geographic size, governance structure, location and duration of shrinkage of the 39 Canadian CAs that have experienced population decline in at least two of the last three census periods were compared. Chatham-Kent, ON and Cape Breton Regional Municipality (CBRM), NS were identified as the most comparable but markedly different shrinking municipalities. Both are single-tier regional governments, have populations of

approximately 100,000 and cover roughly 2,500 square kilometers and have experienced losses in population and employment as their industrial-based economies have declined. However, CBRM is located on the eastern coast of the country far from the national economic engines and has been shrinking for approximately six decades, whereas Chatham-Kent is centrally located in Southern Ontario and has only been shrinking since 2006.

### *Chatham-Kent, ON*

Population change in Chatham-Kent had already been stagnant prior to the amalgamation in 1998. No-growth and slow growth patterns persisted until 2006, however the population has steadily declined since – losing over 6500 residents by 2013 (Statistics Canada, 2014). Over the course of the same time period employment fluctuated, but generally grew, until 2006 when it also began to decline. Between 2006 and 2013 approximately 20% of the city’s jobs were lost (Statistics Canada, 2013b). An aging population compounded population and employment trends – the proportion of residents aged 65 and over has grown every single year since amalgamation and as of 2013 they represent almost 20% of the population (Statistics Canada, 2014). Furthermore, the number of annual immigrants has fallen by 50% since amalgamation, despite the city’s proximity to the Greater Toronto Area, which is home to almost 40% of Canadian immigrants (Statistics Canada, 2013a).

Due to the municipality’s geographic size and shrinking population, the cost of providing services has risen while the condition of existing infrastructure has worsened. Chatham-Kent’s Asset Management Plan (Municipality of Chatham-Kent, 2014) identified several current and impending service challenges. The Plan concluded that in order to fully fund and maintain services the municipality would need to reduce costs, and raise taxes and service rates. Sanitary and water rates would need to increase by over 50% each. Only a significant revenue increase or cost saving and divestment measures to eliminate the increasing infrastructure deficits could resolve the severe lack of funding and increasing demand for services (Municipality of Chatham-Kent, 2014). Yet the new Official Plan makes no mention of divestment or consolidation of services (Municipality of Chatham-Kent, 2015). Despite recent population and employment trends and the results of the Asset Management Plan, the Municipality plans for modest growth in multiple urban centers. Not

only is there no discussion of consolidation, the Municipality plans to expand housing support services in both urban and rural areas to assist the municipality's aging population (Municipality of Chatham-Kent, 2015).

*Cape Breton Regional Municipality, NS*

CBRM's population has been declining since 1961. The municipality has lost over 20,000 residents since amalgamation in 1995 (Statistics Canada, 2014). The proportion of the population age 65 and over has increased every single year since at least 1986 (Statistics Canada, 2014). Unlike Chatham-Kent, population trends are not clearly reflected by employment. Since amalgamation, absolute employment has remained relatively stagnant – meaning that the unemployment rate has actually decreased (Statistics Canada, 2013b). However, unemployment rates in CBRM are much higher than both Chatham-Kent and the national average. In fact, in all but two years between amalgamation in 1995 and 2013 the unemployment rate in CBRM has been more than double that of the national average.

The Municipal Planning Strategy adopted in 2004 (and amended in 2013) recognized that the CBRM was “evolving into a very inefficient landscape in which to provide municipal services” (Cape Breton Regional Municipality, 2013, p. 4.30). The Strategy (p. 8.1) states that there are “myriad examples where the existing infrastructure is woefully incapable of providing even an adequate level of service.” The coupling of a population that is both shrinking and spatially dispersing makes service provision especially difficult. The Municipality concluded that they could not continue to apply urban service solutions to rural servicing challenges and outlined a plan to establish service area boundary limits to minimize prohibitive capital and maintenance costs. However, a clear service boundary has yet to be established.

In 2013, CBRM Mayor Cecil Clarke appointed a citizen's task force to review and make recommendations for the organization and operation of the Municipality. Made up of local professionals and academics, the task force found that the Municipality was committed to the ineffective status quo and reluctant to consider major changes (Cape Breton Regional Municipality Task Force, 2013). The task force concluded that the Municipality considered itself to be operating in an efficient manner and that its financial issues were simply the result of a revenue problem. The task force disagreed and recommended that to offset expenditures



the Municipality needed to confront its demographic reality with significant reorganization including the centralization of services.

Demographic and document analysis clearly show that both CBRM and Chatham-Kent lack fiscal health. Without major changes, service expenditures in both municipalities will increase as their populations continue to age. Therefore both municipalities must reduce expenditures considerably and adapt services for an aging population.

#### ***4.2.2 Compatibility***

A thorough literature review was conducted to identify planning and economic development strategies for shrinking cities (additional detail on the identification process as well as the full list of categorized strategy discussions can be found in Appendix H). Three approaches were used to find articles potentially containing strategies: (1) keyword searches (shrinking city, urban shrinkage) using research databases (Web of Science, Google Scholar, Scopus), (2) “snowballing” (exploring references and references of references), and (3) document search on municipal websites of shrinking cities.

Specific shrinking cities response strategies were identified through a methodical examination of the articles returned in the literature review. The title and abstract of the articles were read and if either explicitly or implicitly referred to shrinking response strategies, the article in its entirety was examined to locate strategy descriptions. Also, if the title and abstract review was inconclusive, the entire article was read. Although time-consuming, this approach was preferable to a keyword search as it allowed for the detection of subtler, implicit descriptions of urban shrinkage response strategies within the content of each article. It is important to note that the catalog of identified strategies is not exhaustive as the search was limited to English-language articles and reports. Therefore some articles and strategies may possibly have been overlooked.

184 discussions of strategies (not mutually exclusive) for shrinking cities were identified and categorized according to the strategy section of the transferability framework. 65 different case study locations were discussed in the identified articles. In order to match the mutual priorities of the two case studies, the strategies were filtered to include only municipal-level public strategies with low or varying cost that accepted or utilized shrinkage.

Of the 27 strategy discussions returned from the filtering process, revitalization and consolidation strategies were most prevalent. Although revitalization through brownfield development and temporary use of vacant land could be beneficial in Chatham-Kent and CBRM, they do not match the priority of achieving fiscal health outlined in the Case Study section. Consolidation strategies to rightsize infrastructure, services and municipal boundaries are more likely to help reduce costs and achieve fiscal health. Hummel (2014) describes rightsizing as a city's attempt to balance their built environment with their population by engaging in a process to match available resources with current demand without waste. The rightsizing experiences of Youngstown, Detroit and Flint were used to create a rightsizing strategy for Chatham-Kent and CBRM.

Chatham-Kent and CBRM have never boasted large enough urban populations to fill their municipal boundaries. The oversized footprint of both municipalities is partially due to shrinkage, but is also the result of significant amalgamation. Consequently the outlying rural areas of the municipalities are less dependent on urban services than depopulated areas of the American cities cited above. Because both Chatham-Kent and CBRM recently went through costly and tumultuous amalgamation processes, it is unlikely that the physical consolidation of the municipal boundary and displacement of citizens would be politically or socially acceptable. However, many of the principles from the rightsizing literature can be amended to match the needs of Chatham-Kent and CBRM.

Both municipalities have excess, underused and deteriorating infrastructure and are providing urban services to rural communities. Moreover both municipalities still carry significant infrastructural and service redundancies resulting from amalgamation and a subsequent reluctance to centralize. The proposed strategy would systematically rightsize municipal services and infrastructure, which would decrease public spending while providing improved and cost-effective services to a consolidated area. The service rightsizing strategy would include a combination of: (1) consolidation of water and sewer services, (2) consolidation of infrastructure through closure of roads, bridges and culverts, (3) centralization of public amenities through closure of facilities such as library and recreation facilities, and (4) consolidation of public transit service. The transferability and applicability of the service rightsizing strategy is evaluated below as an overarching concept that encompasses the four specific strategies.

### ***4.2.3 Transferability***

The evaluation of the transferability from donor to target context examines the magnitude, objective and cost-effectiveness of the strategy. Rightsizing discussions in the donor settings of Detroit, Youngstown and Flint are largely focused on the physical consolidation of the municipal footprint along with the rightsizing of infrastructure and services. The strategy has been tailored to match the context of the two case studies. Although the magnitude of population loss in the American rustbelt cities is much more severe than in Chatham-Kent or CBRM, the strategy has been adapted to appropriately address the local needs and prevalence of the target municipalities.

The overarching objective of the strategy is consistent in the donor and target settings: to minimize expenditures and increase the quality of service in densely populated areas. The strategy is low-cost and has the same geographic “reach” in both donor and target settings – impacting entire municipalities. Although there are distinct demographic differences between the donor and target municipalities, they have similar industrial and manufacturing-based economies and comparable socioeconomic profiles. Historic racial tensions in the American context affected implementation, especially considering the displacement, but would not be expected to be an issue for implementation in the Canadian case studies.

From the authors’ evaluation, a service rightsizing strategy based on the rightsizing strategies of the American rustbelt is theoretically transferable to Chatham-Kent and CBRM. All six key informants interviewed in the two Canadian case studies also supported this conclusion.

### ***4.2.4 Applicability***

Following the transferability framework, the local applicability of the selected strategy is assessed through key informant interviews. Three semi-structured interviews were conducted with key informants from planning, economic development and social housing departments in both Chatham-Kent, ON and CBRM, NS. In each case study a senior municipal employee from the planning and economic development departments were interviewed. Additionally, interviews with a senior municipal employee from the social housing department in Chatham-Kent and a senior employee from a social housing initiative

in CBRM were conducted. The objective of the interviews was to acquire local knowledge to establish whether the intervention could be adopted in the current political, economic and social climate. The five components of the applicability framework were discussed with each informant in each case study (see Appendix I for full interview guide). The conclusion of each interviewee on each component is summarized in Table 4.1.

**Table 4.1: Summary of key informant assessment (“✓” denotes that the strategy was considered compatible, “X” denotes that it was incompatible and “-“ that no conclusive statement was made)**

| Informant                    | Chatham-Kent |                      |                | CBRM     |                      |                |
|------------------------------|--------------|----------------------|----------------|----------|----------------------|----------------|
|                              | Planning     | Economic Development | Social Housing | Planning | Economic Development | Social Housing |
| Political Acceptability      | ✓            | ✓                    | X              | ✓        | ✓                    | ✓              |
| Social Acceptability         | ✓            | ✓                    | X              | X        | X                    | ✓              |
| Stakeholders                 | ✓            | X                    | X              | X        | X                    | ✓              |
| Existing Institutional       | ✓            | ✓                    | ✓              | X        | X                    | -              |
| Available Resources          | ✓            | ✓                    | -              | X        | ✓                    | ✓              |
| <b>Overall Applicability</b> | X            | ✓                    | X              | X        | X                    | X              |

#### 4.2.4.1 Political acceptability

The planning and economic development informants in Chatham-Kent both felt that a service rightsizing strategy would generally match political priorities and be politically acceptable. However, they both noted that representatives have been unwilling to concede to consolidation in their own wards despite a general agreement to increase the efficiency of municipal services. The social housing informant felt that the politicians’ pragmatic reluctance to consolidation overshadowed their general acceptability. The likelihood of not being re-elected was considered to be simply too high in the current ward system.

All three informants in CBRM stated that a service rightsizing strategy was in line with political priorities. According to the social housing informant:

“... a good percentage of the councilors do have a lot of trust and faith in the mayor so I think that if this was a direction that he and his administrative staff wanted to pursue, I

think he would have the majority of support from the councilors” (CBRM social housing informant).

The planning informant in CBRM also highlighted the mayor’s influence - “when the CAO of your corporation [the mayor] is a chartered accountant, there’s a bottom line, right?” The economic development informant in CBRM believed that “the provincial government and administrators appear to be very much in support of rightsizing communities and regions that are in decline.” Although there may be political acceptability, the economic development informant added “there is opposition locally to such decisions because people understand the profound impacts that rightsizing will have and that decline tends to beget further decline.”

#### *4.2.4.2 Social acceptability*

The social housing informant in Chatham-Kent also believed that “many vocal people oppose cuts to services to their area”, which would render any service rightsizing strategies socially unacceptable. Although the planning informant recognized that losing certain “traditional services” might cause an issue, “generally the public... would be supportive if it meant a better financial position for the municipality.” The economic development informant believed that as service rightsizing will “happen over time by necessity”, social acceptability would continue to increase over time as the older generation passes while “the new generation really won’t appreciate the argument having not lived through it.”

The social housing informant in CBRM thought that a service rightsizing strategy would be socially acceptable if the Municipality engaged in a transparent meaningful dialogue with the community members “in a way that felt supportive and people felt like they were heard and seen.” In contrast, the planning informant in CBRM believed that “as a concept they [the public] would laud it, but when they would see how it personally affects them they wouldn’t.” The economic development informant advocated that a service rightsizing strategy would be “beyond anything that would be acceptable to citizens.”

#### *4.2.4.3 Stakeholders*

The economic development informant in Chatham-Kent believed that service rightsizing strategies would be “resisted by any group affected”, which would inhibit the intervention as “council tends to cave generally to the group concerns.” The social housing informant felt that rightsizing would intensify the already existing rural-urban divide and, as such, be resisted by stakeholder groups outside of the urban center. However, the planning informant believed that stakeholders could be supportive if it could better the financial position of the Municipality.

The planning and economic development informants in CBRM highlighted probable conflicts with developer, university union, parents’ organizations and teachers’ associations depending on the type of service rightsizing. However, the social housing informant did not think that stakeholder conflict would be significant.

#### *4.2.4.4 Existing institutional infrastructure*

All three informants in Chatham-Kent felt that there were no existing institutional infrastructure barriers impeding the adoption of a service rightsizing strategy. All three emphasized the fact that the idea of infrastructure and service consolidation has been a key part of the institutional framework since amalgamation in 1998. The need to cut, re-locate and combine services is well established.

According to both the planning and economic development informants in CBRM, a service rightsizing strategy would contradict existing policies and actions - pointing to recent large infrastructure investments. The planning informant explained how the Municipality had recently constructed new wastewater and sewer treatment plants and distribution systems and that further expansion is anticipated. The economic development informant noted the conflict between infrastructure expansion and population shrinkage:

“On the one hand CBRM is being encouraged [by federal and provincial governments] to spend heavily on new infrastructure that is obsolete once it is constructed due to the population decline and on the other CBRM is being encouraged to rightsize in all areas of its operation” (CBRM economic development informant).

#### *4.2.4.5 Available resources*

In Chatham-Kent, both the planning and economic development informants felt that the Municipality had adequate resources to adopt a service rightsizing strategy. In CBRM, the social housing and economic development informants also believed that the Municipality had adequate resources, however the planning informant felt that it would be difficult to implement without higher level government enforcement.

#### *4.2.4.6 Overall applicability*

Whereas the economic development informant in Chatham-Kent recognized consolidation of infrastructure as a necessity, the social housing informant ultimately felt it was not an appropriate strategy moving forward. The planning informant felt that political restructuring would be required before the strategy could be adopted.

The planning informant in CBRM also pointed to governance issues. The informant felt that cooperation and incentive for rightsizing from the federal and provincial governments would be necessary for the adoption of a service rightsizing strategy. The economic development informant did not feel that the strategy was applicable in CBRM:

“...the biggest issue for me...is that at that point you've kind of given up on stabilizing and growing your economy. I think it's a huge signal to everybody that you're planning retreat. You're trying to plan decline and I think that's a fool's errand myself because I just think that's - I think it's ridiculous” (CBRM economic development informant).

And although the social housing informant had stated that social acceptability could be attained for local action, it was felt that the unequal distribution of provincial funds would prove to be a significant barrier against the applicability of adopting a service rightsizing strategy.

Ultimately, all three key informants from CBRM deemed the service rightsizing strategy to be infeasible, despite being theoretically transferable. In Chatham-Kent, the planning and social housing informants also felt the strategy would not be feasible in their

community, however, the economic development informant thought that it was and that “consolidation of infrastructure is kind of a mandatory thing we have to do.”

## **4.4 Discussion**

The service rightsizing strategy was considered to match an existing municipal need and deemed theoretically transferable by the author and all six key informants. However, the three informants in CBRM and two of three in Chatham-Kent felt it was not currently applicable. The informants’ conclusions from the two municipalities may have been generally consistent, but it can be argued that they stemmed from considerably different perspectives.

To informants in Chatham-Kent, it seemed service rightsizing was an extension of amalgamation and a necessity for moving forward. There was little negativity connected with the concept, as it was generally regarded as a means to centralization and ultimately growth, rather than adaptation to shrinkage. Leftover infrastructure, overstretched services and outmoded governance structures were all seen to be enduring symptoms of amalgamation that would eventually disappear by necessity over time. In CBRM there was a reluctance to change. Although informants in CBRM recognized the municipality’s inefficiencies, they seemed to believe that service rightsizing might only further accelerate decline. Generally, informants in Chatham-Kent saw inefficient, excess infrastructure and services as a hindrance to growth, whereas in CBRM the informants saw them as manifestations of population loss and economic decline. This section first explores the role of governance in impeding the perceived applicability of the service rightsizing strategy and then discusses how time and geography have led to the contrast in perspective between the two municipalities.

### ***4.4.1 Governance***

The strained relationship between local and higher levels of government was a recurring theme and point of contention in the CBRM interviews. Wray and Stephenson (2012) argue that the withdrawal of federal and provincial funding for resource-based



industries and subsequent failure to support “losing” communities in CBRM produced conditions of immiseration. The planning informant felt that the provincial and federal governments should provide incentive for the municipality to consolidate services. And according to the social housing informant the CBRM did not receive appropriate funding from the provincial and federal government. This cynicism of government has manifested in a reluctance to consolidate services or infrastructure due to fear that the savings will not be returned.

The Chatham-Kent informants recognized the potential for a service rightsizing strategy to advance the transition, but also highlighted governance barriers. Unlike CBRM, the governmental barriers were local as opposed to provincial or federal. The planning informant felt that the service rightsizing strategy was politically and socially acceptable, had no conflict with local stakeholders or existing institutional infrastructure and that the municipality had the available resources to implement it. However, the informant ultimately decided that the strategy was not applicable due to the current governance structure. Although the informant felt that the strategy was generally in line with political priorities, changes to the electoral wards would be needed to successfully implement the strategy. The amalgamation, forced by the Province of Ontario in 1998, was clearly still a contentious and frustrating issue. The economic development informant noted the enduring impact of amalgamation, “our council is populated by many councilors that came from those areas so they'll never get over it until they leave. It's a shame because it kind of holds progress back.”

Governance structures and elected officials from the pre-amalgamation era obstructing progress was a recurring theme in the interviews. This is an issue held by the wider community as well, as evidenced by the current efforts to revisit ward boundaries in the municipality (Robinet, 2015). Although the social housing informant did recognize the efforts of councilors to protect their communities and neighborhoods within Chatham-Kent, they were generally seen as a hindrance to progress and growth. And even though the planning informant and social housing informant did not think that a service rightsizing strategy is currently applicable, they both did feel it was, to some extent, inevitable.

#### **4.4.2 Time**

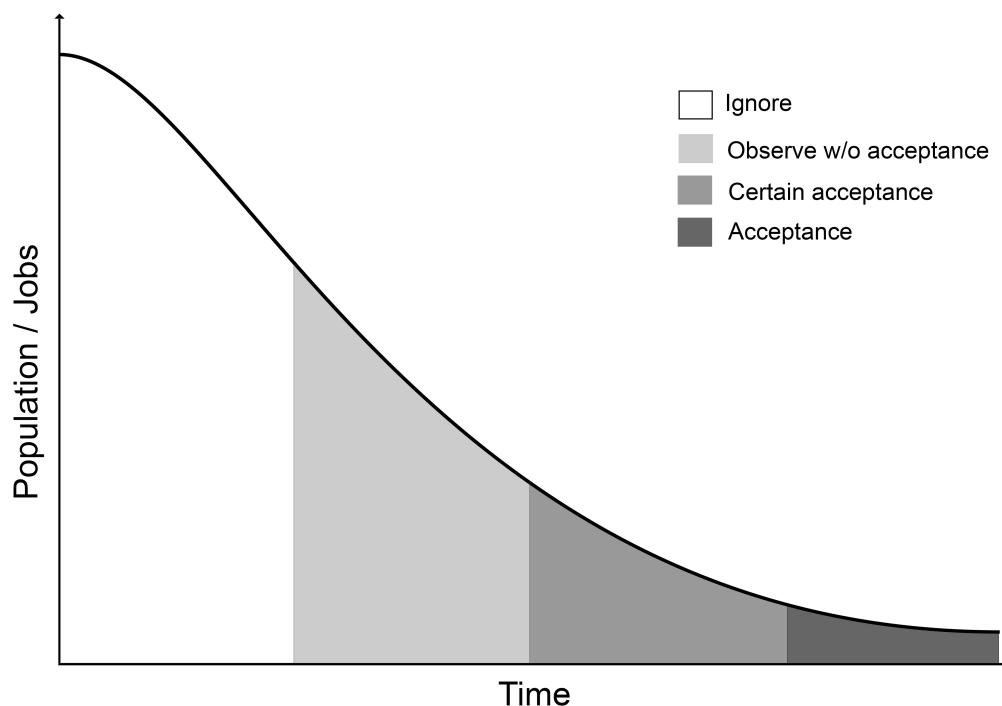
Shrinkage has been present in CBRM for six decades. Two generations of citizens have been born and raised surrounded by industrial decline, out migration and, in many ways, defeat. Closures in the mining, steel and fishing industries have had led to poor social cohesion, high poverty rates and widespread health issues (Wray, 2012). Due to this long history of shrinkage, individual and collective confidence has waned and, as a result, decision-makers view change through a lens of decline (Wray & Stephenson, 2012). There is little historic precedent demonstrating reward for consolidation in CBRM, which has contributed to its negative association and the general reluctance to contract services. The economic development informant likened rightsizing strategies to “almost communist-like control in a democratic country.”

In contrast, Chatham-Kent has only recently begun to shrink. Despite projections indicating continued population loss and aging, the brevity of the municipality’s decline has allowed considerable optimism to remain. All three informants were aware of the demographic and economic decline, but generally saw it as a temporary stage of economic restructuring and as a time to shift to new economic opportunities.

The contrast in opinions between informants in Chatham-Kent and CBRM supports the notion that perceptions of shrinkage change over prolonged periods of population loss and economic decline. Farke (2005) categorizes changes in shrinkage perception into four phases: (1) ignoring, where shrinkage is perceived as a temporary transition, (2) observation without acceptance, where shrinkage is recognized but not accepted, (3) certain acceptance, where top-down initiatives are considered to manage decline, and (4) acceptance, where conventional growth strategies are no longer implemented.

Figure 4.2 depicts changes in local perception over time in relation to the progression of urban shrinkage. Together Farke’s theory, evidence from the two case studies examined in this chapter and the wider shrinking cities literature indicate that shrinkage perception is tied to both principal characteristics of urban shrinkage – population loss and economic restructuring. Specifically, the shrinkage curve in Figure 2 can be seen as a representation of deindustrialization and the changing socioeconomic makeup of the population. It is important to note that the employment and population paths described are not an inevitable result of deindustrialization or population loss. The shape of the curves and the duration of the

processes will be unique to the local context contingent on a wide range of contributing factors.



**Figure 4.2: Temporal relationship of shrinkage and local perception**

If we consider the y-axis to be absolute employment in a region largely dependent on the industrial sector, then time = 0 would mark the onset of deindustrialization. Following Farke (2005), the employment curve first passes through the phase of ignoring. If employment continues to drop, decision-makers are forced to take notice and the perception shifts to observation without acceptance. But if employment losses decrease and deindustrialization leads to the tertiarization of the job market, the perception of shrinkage moves to certain acceptance. And finally if employment stabilizes (with a lower median income), decision-makers may feel that they have exhausted alternatives and therefore are compelled to accept shrinkage.

If we consider the y-axis to be population, a similar evolution may take place as young, educated and mobile citizens move from the city. If the population continues to

decline, the proportion of older and vulnerable citizens increases causing a growing gap between tax revenue and service expenditures. If eventually population loss begins to stabilize, as only those who will not or cannot leave remain, decision-makers may feel that they have no other recourse but to accept shrinkage and adopt strategies representing their demographic reality.

The ongoing deindustrialization process in Chatham-Kent is relatively new and, as such, shrinkage has not been accepted. However, the employment and population loss has been significant enough for decision-makers to officially recognize shrinkage (observation without acceptance). The stabilization of employment in CBRM indicates the tertiarization of the job market and it is clear that the informants have a certain acceptance of shrinkage. Considering the decades of CBRM's economic and demographic decline, it is surprising that shrinkage has yet to be fully accepted. Although further empirical research is required, the following subsection speculates that perhaps geography, as well as time, contributes to the perception of shrinkage, and accordingly, the perceived applicability of shrinkage strategies.

#### ***4.4.3 Geography***

Chatham-Kent is located in southwestern Ontario. Although the surrounding region has also experienced shrinkage, its proximity to the United States, the Greater Toronto Area and the Greater Golden Horseshoe cannot be underestimated. Not only does Chatham-Kent benefit from the economic power of the GTA and trade routes to the US, but also from the influx of immigrants to the nearby area.

In contrast, the CBRM's misgivings regarding the effectiveness government and reluctance for change can be seen to stem from its relative isolation. Wray (2012) concluded that the economic and social effects of deindustrialization in Cape Breton have been seriously exasperated by its geographic isolation. CBRM is located on the eastern edge of Canada, far from the economic power of southern Ontario, the oil and gas of Alberta and Pacific Rim trade of Vancouver. Furthermore, within the province CBRM located relatively far from the provincial capital of Halifax (approximately 410 km), adding to the feeling of isolation and distance from higher levels of government. Without any nearby economic centers, the municipality has to rely on its own economic power to sustain the entire region. The

geographic isolation of CBRM makes retaining young educated citizens difficult and attracting migrants even more so.

Perhaps in addition to the duration of shrinkage, geography or distance also contribute to the perception of shrinkage and therefore the type and willingness of local action. Research on agglomeration economics has established the increased importance of proximity in the modern economy (Glaeser, 2011a). Through their examination of the relationship between information technology, distance and innovation, Glaeser and Ponzetto (2007) concluded that the “death of distance” strengthened centers of innovation (such as New York) and hindered industrial and manufacturing cities (such as Detroit). Despite improved communication technology, physical isolation has become an increasing economic burden. Furthermore, Bernt (2009) argues that the lack of resources in shrinking cities have impeded their ability to shift from managerialism to entrepreneurialism, inherently making shrinking cities relatively risk averse.

Considering the importance of cooperation and communication between multiple levels of government in stabilizing urban shrinkage (Rink et al., 2012), increased distance between local decision-makers and their higher-level counterparts could weaken perceived and real relationships. Together distance from economic and governmental centers could cause peripheral shrinking cities, such as CBRM, to perceive themselves to be economically self-dependent and underrepresented by higher levels of government leading to a reluctance to fully accept shrinkage or adopt new strategies. Empirical research examining the relationship between geographic isolation of shrinking cities and the wariness of higher-level government and a reluctance initiate municipal change would provide important insight to the conceptualization of peripheral shrinking cities and practical approaches to their challenges.

## **4.5 Conclusion**

The deficiency of alternative approaches in the planning toolbox (Hollander & Popper, 2007) combined with the stigma of shrinkage within the growth-oriented culture of planning (Hollander et al., 2009) has limited the ability of local planners and decision-makers to effectively manage population loss and economic decline (Bernt et al., 2014). This chapter

contributes to the conceptual understanding and practical advancement of urban shrinkage by (1) creating a systematic transferability framework to facilitate the exchange of shrinkage strategies, (2) identifying context-specific opportunities and barriers to the transferability of shrinkage strategies in Chatham-Kent and CBRM, and (3) exploring the relationship between perceptions of urban shrinkage, time and space.

Municipal amalgamations and shrinking populations have left both Chatham-Kent and CBRM with excess infrastructure and overstretched services. Using the transferability framework, a service rightsizing strategy was considered to be a compatible approach to regaining fiscal health by minimizing municipal expenditures and augmenting quality of service in the urban core. Although the strategy was deemed to be theoretically transferable by the author and all six key informants, five of six informants did not feel it was applicable in the current context of their municipalities. Governance issues were the principal barrier in both municipalities as an outmoded ward system within the local government of Chatham-Kent and disenchantment with the role of federal and provincial government in CBRM were considered to be impeding consolidation.

Furthermore, this chapter postulates that the reluctance to adopt a service rightsizing strategy stemmed from different outlooks in the two municipalities. Shrinkage in Chatham-Kent is a relatively new phenomenon and, as such, appears to be viewed as a temporary stage in the growth cycle despite continued decline. This can be categorized as “observation without acceptance” in Farke’s (2005) phases of shrinkage perception. Informants saw service rightsizing as a necessary pre-cursor to growth, but that current municipal governance structure would impede any useful progress. In contrast, CBRM has been shrinking for six decades, which has resulted in a distrust of government action and a reluctance to change. Service rightsizing was associated with defeat and a disbelief that it could result in positive change. The perception of shrinkage in CBRM can be classified as phase three “certain acceptance.”

From the demographic and employment trends in the two case studies, this chapter theorizes that changes in perception of shrinkage are closely tied to the stages of deindustrialization and changes to the makeup of the population. In both cases, a propensity to “ignore” and “observe without acceptance” last until population or employment decline begins to stabilize due to the exodus of mobile citizens or the tertiarization of the job market.

The longevity of population decline and economic restructuring influences the stage of deindustrialization and migration, and therefore plays a vital role in the local perception of, and subsequent action in response to, urban shrinkage. Such perceptions could result in the adoption of overly optimistic growth strategies in newly shrinking areas or, coupled with geographic isolation, the reluctance to change the status quo in long-term shrinkage areas.

The potential for either of these responses demonstrates the value of a structured strategy transferability framework. By expanding their strategy options, local decision-makers can learn from the experiences, and perceptions, of similar municipalities. Through the creation of the shrinking city transferability framework, this chapter takes a step towards addressing the established need for increased communication within the field of shrinking cities. Policies, strategies and approaches are being crafted at the local, regional and even federal level, but often remain isolated due to the inherent context dependence. This chapter adapts and synthesizes research from a variety of authors and fields in order to produce a systematic, iterative approach to strategy transfer. From the transferability framework, conclusions and recommendations can be made regarding the compatibility, transferability, applicability and overall feasibility of shrinkage strategies.

The successes and failures of decision-makers in other cities provide a wealth of knowledge. With a declining population and overstretched services, shrinking cities do not necessarily have the fiscal, human or knowledge resources to develop appropriate, feasible or applicable new policy. The lack of tools and strategies available to planners in shrinking cities can perpetuate uninformed perceptions of shrinkage and lead to continued dependence on standard growth-focused approaches. This chapter acknowledges this deficiency and begins an important discussion by examining the perceptions of shrinkage and presenting the transferability framework. Strategy transfer research has significant potential to advance the academic discourse and impact and empower practitioners in shrinking cities by developing non-growth oriented planning practice. Additional research from both academics and professional planning societies is needed to better understand the lack of tools available to planners in shrinking cities and to develop shrinkage policies and the communication strategies required to disseminate strategies to practitioners.

## CHAPTER 5

### CONCLUSION

The overarching objective of this dissertation was to advance our understanding of the evolution of urban shrinkage as a process of urban change, and to examine the opportunities and barriers that exist when planning in shrinking cities. In the introductory chapter of this dissertation I outlined three research objectives crafted to respond to identified gaps in the literature and advance our understanding of the plurality, complexity and perception of urban shrinkage. Using a case study approach and mixed-methods quantitative/qualitative development research design, the sequential phases of my research examined the development of urban shrinkage as a manifestation of three complementary forces: (1) external (regional, federal and global) shifts, (2) local changes and (3) governance interventions. Considering these three interconnected forces allowed this research to advance a more robust, multi-faceted understanding of urban shrinkage and the opportunities and barriers to planning in shrinking cities.

In this concluding chapter, I draw from the results and conclusions in the three preceding manuscript chapters to respond to each of the research objectives, and to highlight the originality of this work and its contribution to knowledge. Furthermore, I demonstrate how the overarching research design (see Figure 1.6) addresses the three main research objectives, which are to:

- 1) Establish and advance current thinking about how shrinking cities are perceived, defined, categorized and to analyze the Canadian urban landscape on this basis;
- 2) Develop and apply an approach to analyze the complex evolution of processes linked to urban change; and
- 3) Review strategies available to decision-makers in shrinking cities and explore the transferability of strategies between shrinking cities.

Structurally, this chapter focuses first on addressing the respective research objectives, provides a summary of the key findings and then I draw from the results of this



dissertation and the wider literature to offer broad practical recommendations to planners and policymakers and to propose specific directions for future academic research. Lastly I revisit the overarching objectives of this dissertation and highlight the contributions to theory and practice.

## **5.1 The plurality of urban shrinkage**

In addressing this dissertations' first research objective, I explored the complexity and diversity of the processes contributing to and stemming from urban shrinkage as well as the local perceptions of decision-makers. Incorporating the three forces of external shifts, local changes and governance interventions, the results from this dissertation demonstrate the plurality of shrinkage experiences while highlighting commonalities between distinct urban shrinkage trajectories.

### ***5.1.1 A global phenomenon***

Since the onset of urbanization, cities have grown and shrunk, prospered and declined. In Chapter 2 I argue that although the processes of urban change are not new in of themselves, modern shrinkage is a distinct permutation of this age-old phenomenon. During the Fordist industrialization era, urban sociologists and economic cycle theorists concluded that urban change could be viewed as a natural cyclical process of expansion, stagnation and decline. At the time, this may have been true as cyclical patterns of boom and bust were the result of relatively autonomous local economies. However, globalization has altered the spatial scale at which economic and social changes occur and their manifestation at the local level. The international synchronization of economic cycles and the increased speed and reach of media and migration have deteriorated the autonomy of local economies and, consequently, shrinking cities can be viewed as a node of decreasing importance within a much larger constantly shifting system. The findings of this dissertation confirm that cycles of boom and bust are no longer necessarily played out within the city or even economic

region. Therefore it follows that contemporary urban shrinkage is no longer considered a temporary stage of a cyclical process, but an enduring spatial symptom of globalization.

### ***5.1.2 The diversity of local trajectories***

It is clear from the many shrinking city case studies published in the past decade that urban shrinkage is an inherently context-dependent and complex phenomenon, yet little research has concentrated on either the plurality or complexity of shrinkage experiences (Großmann et al., 2013). Even though urban shrinkage is consistently defined in the academic literature as both a demographic and economic process, typologies created to classify and compare the trajectory of shrinking cities concentrate solely on population change (Martinez-Fernandez et al., 2015; Turok & Mykhnenko, 2007; Wiechmann & Wolf, 2013). By doing so they fail to capture the minimum requirements of the phenomenon and miss an opportunity to advance our understanding of the diversity of shrinkage experiences.

In Chapter 2 I explore the trajectories of economic and demographic processes of urban shrinkage by presenting a two-dimensional shrinkage trajectory typology as a baseline approach to discussing, depicting and classifying shrinking cities. By exploring both the demographic and economic trends it is possible to evaluate the connection, or lack of connection, between economic and demographic change. The diversity of economic and demographic trajectory combinations was demonstrated through the examination of the twenty largest American cities to lose population between 1980 and 1990. Fifteen of the cities experienced overall population decline while income simultaneously grew. And three cities (Baltimore, St. Louis and New Orleans) lost population and gained income in every decade of the analysis. These exploratory results show the diversity of shrinkage experiences and the need for further empirical analysis to examine the regional context, explore different economic indicators and differentiate between natural and migratory demographic processes. These findings make an important contribution to the academic literature by demonstrating that classifications and comparisons based solely on population change do not capture the very essence of urban shrinkage and risk undermining and misinforming potential alternate planning and policy options.

Chapter 3 builds directly on these findings by focusing explicitly on the dynamic complexity of the processes contributing to and resulting from urban shrinkage. Along with the propensity for urban shrinkage research to rely on population change as the sole causal process, Hoekveld (2012) contends that much of the literature relies upon an oversimplified linear narrative of the urban shrinkage process. The cross-correlation network analysis in Chapter 3 provides empirical confirmation of the complexity of the urban shrinkage process and is the first study to demonstrate the extensive connectivity between economic, demographic, migratory and built environment variables in shrinking systems. Both case studies (Chatham-Kent, ON and CBRM, NS) revealed strong interrelation and numerous feedback loops between variables. The circular trends identified indicate the possibility of self-propagating mechanisms within the shrinkage process and highlight a rich area of potential future research (see Section 5.5.2).

The cross-correlation network analysis also confirmed the individuality of the shrinkage trajectories. Each case study had a distinct set of relationships between variables. Notably different migratory trends reflect the distinction between shrinkage within a context of growth and that within a context of decline. The propensity of Chatham-Kent residents to move within the province, whereas CBRM residents were more likely to move outside the province, supports the notion that migration follows national economic trends. The lack of size and success of Nova Scotia's economy has compelled residents to move to more prosperous parts of the country, whereas Chatham-Kent's proximity to the many growing regions in Southern Ontario offers significant regional planning and economic development opportunities not available to CBRM.

However, there were also similarities between the cities' trajectories that potentially provide insight to the Canadian shrinkage process. Relationships between the built environment and economic and migratory variables were found in both cases. Unemployment rates had an inverse relationship with housing permits and intraprovincial migration rates were strongly linked to housing starts and completions. In Chatham-Kent, the latter relationship was reciprocal, therefore it can be argued that as unemployment rises (and negatively impacts the housing industry) fewer intraprovincial migrants will move to the city. In both Chatham-Kent and CBRM labour variables were found to be indicative of immigration trends. A decrease in employment and labour participation led to a decrease in

immigration, suggesting that the perception of poor employment prospects acts as a disincentive for immigrants.

### ***5.1.3 Governance perception***

The trajectory analysis of Chapter 3 advances our understanding of the order and influence of processes contributing to urban shrinkage, however, it cannot capture how local decision-makers perceive and respond to the subsequent challenges. Chapter 4 provides important qualitative context to the quantitative analysis of Chapters 2 and 3 and further demonstrates the varied landscape of urban shrinkage experiences.

Chapter 4 details how municipal amalgamations and shrinking populations have left both Chatham-Kent and CBRM with excess infrastructure and overstretched services. Both Municipalities' have recognized the need to consolidate infrastructure and services in order to maintain an adequate level of service provision. Through data and content analysis as well as key informant interviews, I explored the compatibility, transferability and applicability of service rightsizing strategies in Chatham-Kent and CBRM. Key informants in both municipalities agreed that a service rightsizing strategy, minimizing municipal expenditures and augmenting quality of service in the urban core, would be an appropriate approach to regaining fiscal health. However, five of the six informants did not feel that such a strategy was applicable in the current context of their municipalities – all citing degrees of governance challenges as the primary barrier. Despite similar conclusions, further analysis concluded that the reluctance to adopt a service rightsizing strategy stemmed from different outlooks in the two municipalities. Shrinkage in Chatham-Kent is a relatively recent phenomenon and was viewed by informants as a temporary stage in the growth cycle. Service rightsizing was seen as a necessary pre-cursor to growth but that current municipal governance structure would impede progress towards implementation. In contrast, CBRM has a long history of shrinkage that is generally expected to continue. The service rightsizing strategy was associated with defeat and a disbelief that it could result in positive change.

Key informant insight collected in both Chatham-Kent and CBRM demonstrate the difficulty, or at least the perceived difficulty, in implementing non-growth strategies. The key informants play central roles in the urban development of their communities but are still

subject to the challenges of democracy. Molotch (1976) argued that the very essence of a city was its operation as a growth machine and that the media has given legitimacy to growth agendas. As result, the growth agenda has become part of broader cultural views and is deeply intertwined with politics, planning and economic development. The broader cultural view emphasizing growth is reflected in the discrepancy observed in the key informants' conclusions regarding theoretical and practical application. All five key informants who concluded that the service rightsizing strategy was theoretically applicable but not practically so explained the divergence by pointing to barriers outside of their control (provincial funding, ward boundaries, etc.). These explanations can be seen as realism in the face of a growth-oriented political culture or as circumventions sidestepping a divisive and potentially contentious issue. Either way it is clear that there are significant barriers limiting the practical applicability of non-growth strategies. Recommendations by employees in municipal planning, economic development and social housing departments are ultimately subject to political approval and therefore there is a potential gap between theoretical and practical application. The discrepancy between theoretical and "on the ground" implementation exists throughout planning, but due to the broader cultural views on growth and decline it may be especially pronounced in shrinking cities.

From the demographic and employment trends in the two case studies, Chapter 4 theorizes that changes in perception of shrinkage are closely tied to the stages of deindustrialization and changes to the makeup of the population. A propensity for local decision-makers to "ignore" and "observe without acceptance" persists until population or employment decline begins to stabilize due to the exodus of mobile citizens or the tertiarization of the job market. The longevity of population decline and economic restructuring influences the development of deindustrialization and migratory trends, and therefore plays a vital role in the local perception of, and subsequent action in response to, urban shrinkage. As was established in Chapters 2 and 3, urban shrinkage experiences are complex and diverse; therefore the development of local perceptions, deindustrialization and demographic shifts will be unique in every location. However, Chapter 4 concludes that time and space influence local perceptions of shrinkage and that these perceptions could result in the adoption of overly optimistic growth strategies in newly shrinking areas or, coupled with geographic isolation, the reluctance to change the status quo in long-term shrinkage areas.

## 5.2 Building blocks

The second research objective of this dissertation was to develop and apply an approach to analyze the evolution of processes linked to urban change. I addressed this objective by developing a novel theoretical framework and methodological approach in Chapters 2 and 3 respectively. The interdisciplinary nature of planning research allowed me to draw upon systems science, economics and demography to advance shrinking city research and make a significant methodological contribution to the wider planning literature.

The two-dimensional trajectory typology in Chapter 2 provides a framework to capture both principal causal processes of urban shrinkage – population and economic change. The inclusion of the latter process marks an important distinction from other shrinkage trajectory typologies and advances a more nuanced understanding of the shrinkage phenomenon. Incorporating both demographic and economic change into the typology facilitates the evaluation of the connection between the two processes. This two-dimensional perspective is imperative as the role of population growth as a prerequisite for a prosperous city with a high quality of life continues to be questioned (Wiechmann & Pallagst, 2012). As the typology presented in Chapter 2 offers a better representation of the shrinkage process, it also provides a more useful framework for city comparison and an improved baseline for planning and policy decisions. Examining how economic and demographic changes ebb and flow over time in relation to one another is crucial in order to better understand the trajectory of an individual city or the phenomenon of urban shrinkage as a whole.

Chapter 3's novel approach to disentangling, analyzing and representing temporal processes makes a significant contribution not only to the shrinking cities and wider urban planning literature, but also to any research examining the interactions of complex processes. Cross-correlation network analysis allows for a more dynamic analysis of the causes and effects of urban phenomena. To my knowledge, at the time of writing the methodological approach was the first of its kind in the shrinking cities and, quite possibly, the urban planning literature. Considering the globalized, connected nature of urban spaces, this method contributes to the need for process-oriented research to analyze and visualize the connections and relationships in complex geographical systems. This analysis can, in turn, provide important insight allowing policy to target and anticipate prospective trends. This is

especially pertinent for shrinking cities since, as a relatively new field of research, there is a significant gap in our understanding of how shrinkage processes evolve and how they differ from growth.

### **5.3 Strategies and transferability**

The deficiency of alternative approaches in the planning toolbox has limited the ability of local planners and decision-makers to effectively manage population loss and economic decline (Bernt et al., 2014). By addressing the third research objective of this dissertation - review strategies available to decision-makers in shrinking cities and explore the transferability of strategies between cities - important practical and methodological steps were taken to inform and equip planners and planning academics.

The transferability framework presented in Chapter 4 provides a systematic approach to learn from successes and failures in shrinking cities. Due to the accelerated mobilization and trans-nationalization of knowledge, policies and strategies, policy transfer and policy learning have become progressively accepted as an instrumental element of the policy-making process. The potential to transfer policies and strategies present an important opportunity for shrinking cities who, due to declining population and overstretched services, do not necessarily have the fiscal, human or knowledge resources to develop appropriate, feasible or applicable new policies. When working in isolation, the lack of strategies available to planners in shrinking cities can perpetuate uninformed perceptions of shrinkage and lead to continued dependence on traditional growth-focused approaches. However, through the incorporation of strategy transfer and learning between shrinking cities, planners and decision-makers can learn from and build upon successes and failures in other cities.

Adapted from the policy transfer literature, the shrinkage specific transferability framework provides step-by-step guidance to assess the compatibility, transferability and applicability of shrinkage strategies. This included (1) examining socioeconomic, demographic and economic trends and reviewing various literature and reports to establish a local need for a new strategy and the creation of a set of specific goals that the incoming strategy would ideally achieve, (2) the creation and classification of an inventory of strategies, (3) filtering strategies that do not match the specific type, funding, governance,

cost, goal of engagement needs to the municipality, and (4) evaluating the four criteria to assess the transferability (magnitude, objective, cost effectiveness and target group characteristics) and five criteria to assess the applicability (political acceptability, social acceptability, stakeholders, institutional infrastructure, and available resources) of the selected strategy. Using a combination of external reviewer expertise and key informant interviews, the transferability and applicability of the strategy can be assessed and a conclusion and recommendations can be made regarding the feasibility of transferring the select strategy. The framework not only presents a baseline from which it can be further developed, but also starts an important discussion of how to best inform and prepare local actors in shrinking cities.

In the application of the framework (Chapter 4), a thorough literature review was conducted to identify planning and economic development strategies for shrinking cities. The methodical examination of articles returned 184 discussions of strategies for shrinking cities (not mutually exclusive), which were subsequently categorized according to the transferability framework. 65 different case study locations were discussed in the identified articles. The full list of strategy discussions is catalogued in Appendix H, providing a rich resource for practitioners and academics alike.

## **5.4 Summary of key findings**

The key findings of this dissertation are summarized below. Methodological and conceptual framework contributions (discussed in Sections 5.2 and 5.3) are not included in the summary.

- Despite urban shrinkage being consistently defined in the academic literature as both a demographic and economic process, typologies created to classify and compare the trajectory of shrinking cities concentrate solely on population change.
- The economic and demographic trajectories of shrinking cities are extremely diverse and rarely run in parallel.



- Classifications and comparisons based solely on population change do not capture the very essence of urban shrinkage and risk undermining and misinforming potential alternate planning and policy options.
- Urban shrinkage is a complex process and contributing economic, demographic, migratory and built environment variables are extremely interconnected.
- Shrinking cities have unique shrinkage trajectories, however cities' trajectories may have similarities that can provide insight to the shrinkage process.
- A service rightsizing strategy is an appropriate approach to regaining fiscal health in shrinking cities, however, it may not be applicable due to governance barriers.
- Time and space influence local perceptions of shrinkage. These perceptions could result in the adoption of overly optimistic growth strategies in newly shrinking areas or, coupled with geographic isolation, the reluctance to change the status quo in long-term shrinkage areas.

## **5.5 Recommendations**

Through the conceptual exploration of urban change to the transferability of shrinkage strategies, this dissertation explored and shed light on the development and diversity of urban shrinkage. But what does it all mean for practitioners and residents in shrinking cities? Reflecting on the original and substantive findings of this dissertation, I offer two broad recommendations for key decision makers in shrinking cities: “act small and think big”.

### ***5.5.1 Act small***

Globalization has shifted the scale of economic and social change and, as a result, cyclical economic changes of boom and bust no longer necessarily dictate the evolution of neighbourhoods or cities (Backhaus, 1999; Bontje, 2004; Martinez-Fernandez, Audirac, et al., 2012). Urban shrinkage, once thought to be a temporary stage of growth and decline, is now considered to be a permanent spatial symptom of globalization (Martinez-Fernandez, Audirac, et al., 2012). Considering the potential permanence of urban shrinkage, it is important that planners and decision-makers in shrinking cities expand the scope of local strategies to include the possibility of planned shrinkage. In order to maintain fiscal health decision-makers need to face the demographic reality of a shrinking city and respond accordingly. Strategies to consolidate services, infrastructure and maybe even civic boundaries need to be, at the very least, part of the discussion.

This call to “act small” echoes the many scholars who have called for the “acceptance of shrinkage” and for a paradigm shift away from growth-focused planning in shrinking cities (Audirac et al., 2010; Blanco et al., 2009; Hollander et al., 2009; Hummel, 2014; Pallagst, 2010). Chasing growth and attempting to service an area for a long-gone population only exhausts already dwindling funds and often does little for the current residents. That being said there is a long history of ill-conceived top-down initiatives to stymie urban decline, including the closing of mining towns in the UK prior to World War II and triage planning in New York City in the 1960s (see Hollander (2011), Pattison (2004) and Sites (2003) for more detail). Schatz’s (2010) “good planning principles in shrinking cities” and Hollander and Németh’s (2011) smart decline theory both acknowledge these missteps and advise bottom-up strategies with a focus on equity and social justice. My call to “act small” recommends that decision-makers in shrinking cities start by being transparent about the trends in their city and incorporate the possibility of non-growth oriented planning strategies. Taking small steps, incorporating incremental planning and economic development strategies and embracing participatory planning may help avoid rash, imprudent and expensive missteps while cultivating a more engaged and fiscally healthy, albeit smaller, city.

### **5.5.2 Think big**

Being realistic and open to the possibility of adapting to a smaller population does not mean “giving up.” Since research has shown that many economic, demographic and social changes occur at a spatial scale above the city, shrinking cities need to recognize their relative lack of control over external forces and begin to view themselves as part of a larger system. Chapter 2 demonstrated the diversity of shrinkage experiences and the independence of economic and population trajectories. Fifteen of the twenty cities examined lost population while income increased, however it is important to note that the majority of the cities reside within a wider context of metropolitan growth. By focusing less on regaining population and more on regional strategies, shrinking cities raise their own interests to a higher spatial scale – one that may be more able to influence and adapt to wider trends – “thinking big”.

The importance of multi-level government action has been identified as a key factor to the stabilization of shrinkage (Rink et al., 2012). The results from Chapters 3 and 4 highlight how more (and better) communication and cooperation between governments at various levels could aid both Chatham-Kent and CBRM. Chatham-Kent’s location in Southern Ontario and proximity to the Greater Toronto Area (a major economic center and entry point for the majority of immigrants) provides a wealth of opportunity for region-wide immigration and economic strategies. However without collaborative efforts, the draw and size of the Greater Toronto Area can make it an insurmountable competitor rather than ally. If Chatham-Kent approached decision-makers in the Greater Toronto Area as part of a united economic region (together with other similar manufacturing-based cities such as London and Sarnia), rather than as a single shrinking city, together they would bring a stronger voice and more options for coordinated strategies.

CBRM’s storied history with both provincial and federal governments is an active barrier to not only higher-level cooperation, but local action as well. Chapter 4 detailed the reluctance of municipal officials to act without, or in spite of, support from the provincial or federal government. As an isolated “poor municipality with its hand out to a poor province” (CBRM planning informant) CBRM is in a particularly difficult position that, regardless of affronts due to poor real or perceived relationships with other levels of government, is in need of assistance. Improved cooperation and communication is needed from both sides as

decades of tension have only widened the chasm between the parties (Wray & Stephenson, 2012). Counterintuitive policies, such as expanding wastewater treatment while entreating the consolidation of services, further limit the ability of the municipality to operate with any semblance of efficiency. Support from state, federal and intergovernmental agencies has been crucial to the stabilization of relatively isolated shrinking cities in eastern Germany (Rink et al., 2012) and similarly, cohesive multi-level strategies are needed to curb spiraling inefficiencies and augment quality of life in CBRM.

## **5.6 Future research**

Despite the recent growth in the shrinking cities literature, there remain many areas in need of additional research. In this section I propose five specific directions for future research that stem directly from my dissertation.

### ***5.6.1 Trajectory typology***

The two-dimensional trajectory typology presented in Chapter 2 provides an important reconceptualization of the trajectories of shrinking cities. By incorporating both the population and economic components of urban shrinkage, the typology demonstrates the diversity of shrinkage experiences and provides an opportunity to shift the preconceived notion that a shrinking city can only be prosperous through demographic growth. The exploratory study conducted in Chapter 2 provides an excellent baseline for further analysis using more refined variables to better capture the processes of economic and demographic change.

Expanding the scope of the economic variable to include a more robust set of indicators could help capture structural changes in the local and regional economy. By investigating not only median income per capita, but also including changes in cost of living, employment trends at multiple spatial scales and GDP per economic sector would provide crucial insight to the economic and quality of life changes occurring in the city. The inclusion

of indicators to distinguish between changes in demographic and migratory factors would provide valuable insight to planners and decision-makers.

Furthermore, simultaneous investigation at both the local and regional scales would provide crucial context to the trends of growth and decline. As noted throughout this dissertation, the implications and opportunities stemming from shrinkage within a wider context of shrinkage are significantly different than those within a context of growth. A better understanding of how trajectories develop with regards to the larger regional area is vital to advancing our understanding of the plurality of urban shrinkage. Along with the analysis of various spatial scales, examining shrinkage at different temporal scales to capture the commonalities and singularities between short and long-term shrinkage could provide important insight to researchers and practitioners.

### ***5.6.2 Lag network***

Cross-correlation network analysis, detailed in Chapter 3, is a novel approach to disentangling the complex processes of urban change. The method allows us to better represent and understand the order and influence of a multitude of factors contributing to urban shrinkage within a complex system. Further research focusing primarily on the time lags between significant changes in variables could provide important insight to the evolution of urban shrinkage, which in turn could help inform decision-makers to develop more targeted and knowledgeable policy. This analysis could be particularly useful if the temporal period studied included a significant shock event (such as the closure of a large manufacturing plant or a large investment in infrastructure) so that the order and influence of the wider impact (or lack of impact) could be measured. This could help identify self-propagating mechanisms and key relationships in the urban shrinkage process.

### ***5.6.3 Global scope***

Future research in both the trajectory typology and lag network could significantly advance our general understanding of shrinkage by investigating cases at the global scale. By

widening the spatial scope to include a range of global shrinking cities in the analysis, both the trajectory typology and lag network could uncover important trends of globalized shrinkage. The shrinking cities literature contains transnational comparisons (e.g. Pallagst et al., 2013) but remains mostly fragmented by national boundaries. A truly global study that highlighted similarities and differences in the development of shrinkage would provide a much-needed basis for the international understanding of the phenomenon. Clearly there would be significant barriers concerning data, governance structures and the like, but the potential impact of a global study on both practice and academia is significant.

#### ***5.6.4 Transferability framework***

Despite calls for more transnational communication (Großmann et al., 2013), no operationalized tools or frameworks specific to transferring shrinking cities strategies had been developed. Therefore the transferability framework applied in Chapter 4 was created. Within the context of this research, the framework was used principally as a methodological tool as a systematic way to capture the perspectives of local decision-makers concerning shrinkage strategies. However, the framework itself has potential to be an impactful tool for researchers and local practitioners. The transferability framework presented in this dissertation offers a basis for further study - expanding, refining and testing the tool to develop strategies and to open a dialogue between shrinking cities and to help bridge the gap between practice and academia.

### **5.7 Epilogue**

At the beginning of this dissertation I emphasized the fluidity of population change and the dramatic nature in which populations can shift over relatively short time frames. Throughout the dissertation I have reiterated the influence of globalization and the interconnectivity of modern society, which I, and others (Castells, 2004; Martinez-Fernandez, Audirac, et al., 2012), argue has led to an uneven flow of capital and information between cities. This uneven flow has allowed economic and demographic trends to self-perpetuate resulting in dynamic, and sometimes extreme, pockets of growth and decline. In

this final section, I revisit the motivation for this research and highlight its contributions to theory and practice.

### **5.7.1 Theory**

Despite the relatively large increase in shrinking cities research in the past decade, many scholars maintain that the growth focus of the academic literature has resulted in an underdeveloped understanding of the urban shrinkage processes. In their review of the research agenda, Großmann et al. (2013) contend that the shrinking cities literature lacks explanatory heuristics that go beyond causality and that complex and non-linear explanations and interpretations of the urban shrinkage phenomenon are needed. They call for research to explore the plurality of shrinking cities and for a shift in focus from causes to the context and dynamics of shrinkage.

The methodological approaches, findings and conclusions developed in this dissertation contribute directly to the gaps identified by Großmann et al. (2013). Considering the wide range of shrinkage experiences and geographic contexts, a common platform to classify and compare shrinking cities is essential. However, classifications based solely on population change do not capture the very essence of urban shrinkage and risk undermining and misinforming potential planning and policy options. Furthermore, they impede cross-national comparisons and by doing so hinder the development of a more unified, global shrinking cities discourse. The two-dimensional trajectory typology developed in Chapter 2 captures both key causal processes of urban shrinkage and incorporates the full range of the urban change spectrum from shrinkage to growth allowing for the possibility of recovery and resilience.

Chapter 3 delves even further into the dynamics and complexity of urban shrinkage processes by exploring the relationships between 15, often interdependent, variables contributing to population loss. The cross-correlation network analysis approach developed in this chapter has a wide range of potential applications, however it principally developed to demonstrate the complexity and diversity of urban shrinkage. Applying the approach to two shrinking Canadian municipalities confirmed the complexity and uniqueness of shrinkage trajectories. Furthermore, the results provided empirical validation of the link between migration, employment and the built environment. The experience analyzing the complex

networks also highlighted the barriers and difficulties in working with complex, dynamic systems. A clear narrative of the shrinkage experience in the two municipalities was difficult to establish due to the quantity of data, significant relationships and extensively connected network. In future research, the inclusion of a large number of case study communities would diminish the reliance on correlations and allow for stronger statistically based conclusions.

The complexity and plurality of urban shrinkage is not only due to the quantifiable contributing variables explored in Chapters 2 and 3. A wide range of actors (practitioners, community leaders, stakeholders, etc.) also play crucially important roles in shaping and guiding the development of both shrinking and growing cities. However, Bernt et al. (2014) claim that there is agreement amongst planning academics and practitioners that planning, as it currently exists, is not equipped to manage shrinkage. Bernt et al. (2014) further contend that a better and more nuanced understanding of local actors and practitioners is needed to advance and facilitate the development and application of alternative planning approaches in shrinking cities. Chapter 4 of this dissertation contributes to our understanding of the mentality motivating the direction and objectives of local decision-makers by exploring the perceptions of local planners, economic developers and social housing employees to shrinkage strategies. From the results from the application of the shrinking strategy transferability framework and the insights from key informant interviews, I hypothesize that time and space have a direct influence on local perceptions of shrinkage. More specifically, that these perceptions can result in the adoption of overly optimistic growth strategies in newly shrinking areas, or, coupled with geographic isolation, the reluctance to change the status quo in long-term shrinkage areas. Beyond the theoretical contribution, these findings inform decision-makers in the case study communities, as well as the planning practice at large.

### **5.7.2 Practice**

As mentioned a number of times in this dissertation, many shrinking cities scholars have called for a shift away from growth-focused planning in shrinking cities (Audirac et al., 2010; Blanco et al., 2009; Hollander et al., 2009; Hummel, 2014; Pallagst, 2010). The rationale motivating this call is that cities can offer a high quality of life and even prosper economically without a growing population. However, much of this discussion also revolves



around the stigma of shrinkage and the reluctance of decision-makers to accept it. Molotch (1976) famously argued that the very essence of a city's operation is its function as a "growth machine" and that the media has given growth agendas legitimacy. The proliferation of growth machine politics has extended to broader cultural views, especially in North America. MacLeod (2011) argues that there has been a shift in the expectation of local city government from acting in a managerial role to an entrepreneurial one and with it, less room for failure. Generally speaking, the goal of an entrepreneur is to get a return on an investment and modern cities are also being held similarly accountable.

The findings in Chapter 4 of this dissertation regarding the reluctance to accept shrinkage reflect the stigma of shrinkage and the growth expectation of the public. The gap observed between the theoretical and practical applicability of a shrinkage strategy in both case study municipalities demonstrates the willful blindness of decision-makers in shrinking cities. Pervasive emotional and cognitive mechanisms influence the distinction between what decision-makers know and what they are willing to act upon. As economist E.F. Schumacher famously said, "everything can be seen directly except the eye through which we see."

Urban shrinkage and the associated challenges and opportunities need to become part of the wider planning and economic development dialogue. Without discussion, debate and acknowledgement in the practice and academic community, the stigma will remain. Rink et al. (2012) have shown that multi-level government communication and cooperation is a key factor in the stabilization of shrinkage. Unfortunately, the findings from the key informant interviews highlighted multi-level government communication as one of the primary barriers to action in both case study municipalities. Professional practice organizations such as the Canadian Institute of Planners (and its provincial counterparts) can play an important role in building a platform for discussion. And post-secondary planning education programs across North America can begin offering courses to help prepare future planners in both shrinking and growing cities to better understand the physical, social, economic and environmental challenges of urban shrinkage. As evidenced in Chapter 1, urban shrinkage is predominantly not part of North American university planning curriculums despite significant demographic analysis demonstrating that it is a major trend in the United States and impacts a significant number of smaller and mid-sized Canadian municipalities. Furthermore, considering the uneven Canadian urban landscape and looming demographic changes expected as a result of

our aging population (highlighted in Chapter 1), urban shrinkage needs to become part of the planning discourse and strategies tailored to managing shrinkage and engaging the public in shrinking cities need to be added to the planning toolbox.

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## APPENDIX A: CA AND CMA GROWTH RATES

Table A.1: CA and CMA population change

| Prov | CA/CMA              | 2006-2011 | 2001-2006 | 1996-2001 | 1991-1996 |
|------|---------------------|-----------|-----------|-----------|-----------|
| NL   | St. John's          | 8.80      | 4.70      | -0.70     | 1.30      |
| NL   | Bay Roberts         | 3.50      | -0.20     | -         | -         |
| NL   | Grand Falls-Windsor | 1.20      | 1.60      | -6.90     | -3.20     |
| NL   | Gander              | -         | -         | -6.40     | -0.10     |
| NL   | Corner Brook        | 0.00      | 1.80      | -7.90     | -2.10     |
| NL   | Labrador City       | -         | -         | -8.00     | -8.10     |
| PE   | Charlottetown       | 8.70      | 2.40      | 2.00      | 4.40      |
| PE   | Summerside          | 2.10      | -0.30     | 1.20      | 6.10      |
| NS   | Halifax             | 4.70      | 3.80      | 4.70      | 3.70      |
| NS   | Kentville           | 1.50      | 3.20      | 0.30      | 4.20      |
| NS   | Truro               | 1.80      | 1.80      | 0.40      | 3.30      |
| NS   | New Glasgow         | -1.30     | -1.20     | -3.50     | -1.60     |
| NS   | Cape Breton         | -4.10     | -3.10     | -7.20     | -1.90     |
| NB   | Moncton             | 9.70      | 6.50      | 3.70      | 5.60      |
| NB   | Saint John          | 4.40      | -0.20     | -2.40     | -0.10     |
| NB   | Fredericton         | 9.30      | 5.30      | 3.00      | 5.70      |
| NB   | Bathurst            | -1.80     | -3.40     | -5.80     | -1.20     |
| NB   | Miramichi           | -2.30     | -2.10     | -         | -         |
| NB   | Campbellton         | -0.20     | -5.00     | -3.60     | -1.80     |
| NB   | Edmundston          | -2.50     | -3.30     | -2.00     | 1.90      |
| QC   | Matane              | -1.80     | -1.00     | -5.10     | -2.60     |
| QC   | Rimouski            | 4.10      | 1.70      | -0.90     | 3.00      |
| QC   | RiviÈre-du-Loup     | 5.00      | 5.80      | -0.20     | 3.40      |
| QC   | Baie-Comeau         | -3.00     | -2.00     | -9.00     | -0.90     |
| QC   | Saguenay            | 1.00      | -2.10     | -3.40     | -0.30     |
| QC   | Alma                | 3.60      | -1.00     | -0.80     | 0.60      |
| QC   | Dolbeau-Mistassini  | -1.50     | -2.20     | -2.20     | 1.30      |
| QC   | Sept-CÈles          | 2.40      | 0.70      | -3.80     | 3.00      |
| QC   | QuÈbec              | 6.50      | 4.20      | 1.60      | 4.10      |
| QC   | Saint-Georges       | 5.30      | 5.40      | 5.80      | 5.40      |
| QC   | Thetford Mines      | -0.50     | -2.30     | -5.20     | -2.60     |
| QC   | Sherbrooke          | 5.50      | 6.30      | 2.80      | 4.70      |
| QC   | Cowansville         | 2.50      | 0.90      | -0.20     | 0.50      |
| QC   | Victoriaville       | 7.30      | 4.20      | 2.00      | 5.00      |
| QC   | Trois-RiviÈres      | 4.90      | 2.90      | -1.70     | 2.70      |
| QC   | Shawinigan          | -2.50     | 0.00      | -4.30     | -1.00     |
| QC   | La Tuque            | -         | -2.70     | -6.00     | -2.80     |
| QC   | Drummondville       | 6.70      | 7.30      | 5.10      | 6.30      |
| QC   | Granby              | 8.30      | 8.40      | 2.40      | 3.60      |
| QC   | Saint-Hyacinthe     | 3.30      | 2.90      | -1.00     | 1.40      |
| QC   | Sorel-Tracy         | 2.50      | 1.00      | -4.80     | -1.00     |
| QC   | Joliette            | 8.40      | 9.80      | 4.20      | 2.60      |

|    |                                  |       |       |        |       |
|----|----------------------------------|-------|-------|--------|-------|
| QC | Saint-Jean-sur-Richelieu         | 5.60  | 9.90  | 4.10   | 4.10  |
| QC | Montréal                         | 5.20  | 5.30  | 3.00   | 3.70  |
| QC | Salaberry-de-Valleyfield         | 1.00  | 1.70  | -1.40  | -1.20 |
| QC | Lachute                          | 6.10  | 1.80  | 0.60   | -2.00 |
| QC | Val-d'Or                         | 3.00  | -0.40 | -3.90  | 3.60  |
| QC | Amos                             | -0.50 | -2.10 | -2.90  | -     |
| QC | Rouyn-Noranda                    | 2.80  | 0.80  | -7.10  | 1.30  |
| ON | Cornwall                         | 0.80  | 1.60  | -2.40  | 1.60  |
| ON | Hawkesbury                       | -1.10 | 5.40  | 0.20   | 4.80  |
| ON | Ottawa - Gatineau                | 9.10  | 5.90  | 6.50   | 7.30  |
| ON | Brockville                       | -1.60 | 1.60  | -0.90  | 3.20  |
| ON | Pembroke                         | 3.50  | 4.40  | -4.20  | 3.70  |
| ON | Petawawa                         | 9.10  | 1.80  | -5.90  |       |
| ON | Kingston                         | 4.70  | 3.80  | 1.60   | 5.10  |
| ON | Belleville                       | 1.10  | 4.70  | -0.50  | 0.60  |
| ON | Cobourg                          | 1.70  | 6.00  | 6.10   | 6.30  |
| ON | Port Hope                        | -1.10 | 5.00  | 1.00   | 1.70  |
| ON | Peterborough                     | 2.10  | 5.10  | 2.10   | 2.20  |
| ON | Kawartha Lakes                   | -1.80 | 7.80  | 1.80   | -     |
| ON | Centre Wellington                | 2.50  | 7.40  | -      | -     |
| ON | Oshawa                           | 7.70  | 11.60 | 10.20  | 11.90 |
| ON | Ingersoll                        | 3.30  | 7.10  | -      | -     |
| ON | Toronto                          | 9.20  | 9.20  | 9.80   | 9.40  |
| ON | Hamilton                         | 4.10  | 4.60  | 6.10   | 4.10  |
| ON | St. Catharines - Niagara         | 0.50  | 3.50  | 1.20   | 2.20  |
| ON | Kitchener - Cambridge - Waterloo | 5.70  | 8.90  | 8.20   | 7.40  |
| ON | Brantford                        | 8.70  | 5.50  | 2.00   | 3.20  |
| ON | Woodstock                        | 5.40  | 6.60  | 2.50   | 6.70  |
| ON | Tillsonburg                      | 3.20  | 5.50  | 6.40   | 9.90  |
| ON | Norfolk                          | 1.00  | 2.80  | 0.50   | -     |
| ON | Guelph                           | 5.50  | 8.20  | 10.70  | 7.90  |
| ON | Stratford                        | 1.20  | 2.30  | 2.30   | 4.80  |
| ON | London                           | 3.70  | 5.10  | 3.80   | 4.50  |
| ON | Chatham-Kent                     | -4.20 | 0.80  | -1.80  | -1.10 |
| ON | Leamington                       | 0.00  | 6.40  | 6.80   | 8.90  |
| ON | Windsor                          | -1.30 | 5.00  | 7.30   | 6.30  |
| ON | Sarnia                           | 0.90  | 0.50  | -2.60  | -1.60 |
| ON | Owen Sound                       | -0.50 | 2.10  | -0.20  | 0.10  |
| ON | Collingwood                      | 11.30 | 7.80  | 2.80   | 8.40  |
| ON | Barrie                           | 5.60  | 19.20 | 25.10  | 22.20 |
| ON | Orillia                          | 0.50  | 5.70  | 5.70   | 10.70 |
| ON | Midland                          | 0.00  | 5.10  | 1.20   | 4.80  |
| ON | North Bay                        | 1.00  | 1.80  | -1.70  | -0.70 |
| ON | Greater Sudbury / Grand Sudbury  | 1.60  | 1.70  | -6.00  | 1.80  |
| ON | Elliot Lake                      | -1.70 | -3.40 | -12.00 | -3.60 |
| ON | Temiskaming Shores               | -0.60 | -0.20 | -6.20  | -3.30 |
| ON | Timmins                          | 0.40  | -1.60 | -8.00  | 0.10  |



|    |                      |       |       |       |       |
|----|----------------------|-------|-------|-------|-------|
| ON | Sault Ste. Marie     | -0.40 | 1.50  | -5.60 | -1.60 |
| ON | Thunder Bay          | -1.10 | 0.80  | -3.70 | 0.50  |
| ON | Kenora               | 1.10  | -4.20 | -3.20 | 2.90  |
| MB | Winnipeg             | 5.10  | 2.70  | 0.60  | 1.00  |
| MB | Steinbach            | 22.20 | -     | -     | -     |
| MB | Portage la Prairie   | 2.10  | -0.60 | 1.10  | -2.90 |
| MB | Brandon              | 10.30 | 4.30  | 1.10  | 1.70  |
| MB | Thompson             | -4.50 | 2.50  | -7.80 | -4.00 |
| SK | Regina               | 8.00  | 1.10  | -0.40 | 1.00  |
| SK | Yorkton              | 4.60  | -0.70 | -0.90 | -1.70 |
| SK | Moose Jaw            | 3.20  | -0.50 | -3.80 | -2.00 |
| SK | Swift Current        | 6.10  | 0.00  | 0.50  | -     |
| SK | Saskatoon            | 11.40 | 3.50  | 3.10  | 3.80  |
| SK | North Battleford     | 6.30  | -4.40 | -2.60 | -2.50 |
| SK | Prince Albert        | 4.70  | -1.70 | -0.60 | 1.10  |
| SK | Estevan              | 9.20  | -1.40 | -4.50 | 3.90  |
| AB | Medicine Hat         | 5.80  | 11.50 | 9.10  | 7.40  |
| AB | Brooks               | 4.40  | 3.50  | 15.00 | -     |
| AB | Lethbridge           | 11.30 | 8.90  | 6.90  | 3.40  |
| AB | Okotoks              | 42.90 | 46.70 | -     | -     |
| AB | High River           | 20.60 | -     | -     | -     |
| AB | Calgary              | 12.60 | 13.40 | 15.80 | 9.00  |
| AB | Strathmore           | 19.70 | -     | -     | -     |
| AB | Canmore              | 2.10  | 11.60 | -     | -     |
| AB | Red Deer             | 8.90  | 22.00 | 12.70 | 3.30  |
| AB | Sylvan Lake          | 19.20 | -     | -     | -     |
| AB | Lacombe              | 8.90  | -     | -     | -     |
| AB | Camrose              | 10.60 | 5.00  | 8.20  | 2.30  |
| AB | Edmonton             | 12.10 | 10.40 | 8.70  | 2.60  |
| AB | Lloydminster         | 14.00 | 12.80 | 10.70 | 9.70  |
| AB | Cold Lake            | 15.40 | 4.10  | 2.90  | -     |
| AB | Grande Prairie       | 16.80 | 22.30 | 18.00 | 10.10 |
| AB | Wood Buffalo         | 27.10 | 23.60 | 17.90 | -3.40 |
| AB | Wetaskiwin           | 7.20  | 4.70  | 1.80  | 2.80  |
| BC | Cranbrook            | 3.70  | -0.60 | 0.50  | 10.20 |
| BC | Penticton            | 2.60  | 4.20  | 0.70  | 15.20 |
| BC | Kelowna              | 10.80 | 9.80  | 8.20  | 22.10 |
| BC | Vernon               | 5.70  | 7.50  | 3.70  | 15.00 |
| BC | Salmon Arm           | 9.10  | 5.30  | -     | -     |
| BC | Kamloops             | 6.40  | 4.40  | 1.30  | 14.20 |
| BC | Chilliwack           | 11.90 | 9.30  | 5.30  | 20.50 |
| BC | Abbotsford - Mission | 7.00  | 7.90  | 8.00  | 20.20 |
| BC | Vancouver            | 9.30  | 6.50  | 8.50  | 14.30 |
| BC | Squamish             | 14.60 | 5.70  | 1.40  | -     |
| BC | Victoria             | 4.40  | 5.80  | 2.50  | 5.70  |
| BC | Duncan               | 4.50  | 6.60  | 0.90  | 15.80 |
| BC | Nanaimo              | 6.10  | 7.80  | 3.60  | 16.40 |

|    |                |       |        |        |       |
|----|----------------|-------|--------|--------|-------|
| BC | Parksville     | 4.90  | 9.20   | 7.30   | -     |
| BC | Port Alberni   | 0.50  | 0.00   | -5.60  | 1.10  |
| BC | Courtenay      | 7.50  | 8.90   | 1.60   | 23.30 |
| BC | Campbell River | 4.00  | 4.10   | 0.10   | 14.00 |
| BC | Powell River   | 0.90  | -0.40  | -0.70  | 7.90  |
| BC | Williams Lake  | -1.40 | -5.10  | 0.50   | 11.10 |
| BC | Quesnel        | 5.00  | -8.10  | -2.60  | 8.50  |
| BC | Prince Rupert  | -2.50 | -12.50 | -12.10 | 0.30  |
| BC | Kitimat        | -     | -12.60 | -7.60  | -1.50 |
| BC | Terrace        | 1.00  | -7.00  | -4.60  | 10.80 |
| BC | Prince George  | 1.20  | -2.10  | -3.10  | 7.90  |
| BC | Dawson Creek   | 5.40  | 2.20   | -3.30  | 1.30  |
| BC | Fort St. John  | 4.90  | 9.30   | 6.70   | 6.10  |
| YT | Whitehorse     | 13.70 | 7.00   | -1.80  | 8.60  |
| NT | Yellowknife    | 2.90  | 13.10  | -4.20  | 13.80 |

## APPENDIX B: POPULATION PROJECTIONS

Table B.1: AB, BC and ON municipal projected population change (%), 2036 dependency ratio, dependency ratio change (%), 2036 old-age dependency ratio and old-age dependency ratio change (%)

| Prov | Municipality          | Projected Pop Change | 2036 Dep Ratio | Dep Ratio Change | 2036 Old Dep | Old Dep Change |
|------|-----------------------|----------------------|----------------|------------------|--------------|----------------|
| AB   | Beaumont              | 45.0                 | 47.8           | 10.0             | 10.6         | 61.2           |
| AB   | Grande Prairie        | 48.6                 | 36.1           | 0.5              | 10.8         | 27.7           |
| AB   | Slave Lake            | 25.6                 | 49.5           | 24.7             | 13.3         | 82.3           |
| AB   | Grande Prairie County | 48.6                 | 40.7           | -2.7             | 13.4         | 16.9           |
| AB   | Cold Lake             | 18.8                 | 44.8           | 10.7             | 13.7         | 72.0           |
| AB   | Chestermere           | 50.9                 | 48.8           | 13.4             | 14.6         | 83.6           |
| AB   | Airdrie               | 50.9                 | 51.3           | 16.9             | 16.6         | 92.2           |
| AB   | Wood Buffalo          | 52.8                 | 41.2           | 56.1             | 17.6         | 581.3          |
| AB   | Spruce Grove City     | 45.0                 | 52.4           | 19.1             | 20.8         | 63.2           |
| AB   | Brooks                | 34.6                 | 52.6           | 14.7             | 21.0         | 49.3           |
| AB   | Mackenzie County      | 25.6                 | 90.0           | 21.8             | 21.3         | 79.9           |
| AB   | Okotoks               | 50.9                 | 57.8           | 18.6             | 21.5         | 85.2           |
| AB   | Lethbridge County     | 34.6                 | 63.8           | 11.7             | 22.3         | 46.2           |
| AB   | Lloydminster          | 23.0                 | 53.6           | 12.7             | 22.4         | 42.7           |
| AB   | Sturgeon County       | 45.0                 | 54.2           | 20.1             | 23.7         | 58.1           |
| AB   | Bonnyville No. 87     | 18.8                 | 56.9           | 17.2             | 24.2         | 62.9           |
| AB   | Fort Saskatchewan     | 45.0                 | 54.2           | 25.4             | 26.1         | 68.6           |
| AB   | Parkland County       | 45.0                 | 54.7           | 20.8             | 26.6         | 54.0           |
| AB   | Strathcona County     | 45.0                 | 55.2           | 22.6             | 26.8         | 59.7           |
| AB   | Red Deer              | 45.9                 | 52.9           | 27.9             | 26.9         | 75.7           |
| AB   | Leduc City            | 45.0                 | 58.9           | 25.8             | 28.2         | 70.4           |
| AB   | Calgary               | 50.9                 | 52.8           | 32.8             | 28.2         | 93.3           |
| AB   | Cochrane              | 50.9                 | 57.5           | 27.2             | 28.8         | 85.3           |
| AB   | Camrose County        | 23.0                 | 57.9           | 16.1             | 29.0         | 35.6           |
| AB   | Edmonton              | 45.0                 | 53.1           | 31.1             | 29.2         | 71.7           |
| AB   | Leduc County          | 45.0                 | 56.4           | 24.1             | 29.3         | 58.8           |
| AB   | Red Deer County       | 45.9                 | 56.2           | 27.3             | 31.0         | 65.5           |
| AB   | Foothills No. 31      | 50.9                 | 54.4           | 28.5             | 31.3         | 74.7           |
| AB   | St. Albert            | 45.0                 | 58.7           | 27.4             | 31.6         | 63.8           |
| AB   | Strathmore            | 25.9                 | 63.9           | 21.3             | 32.1         | 57.5           |
| AB   | Lacombe County        | 45.9                 | 62.4           | 28.0             | 34.8         | 66.7           |
| AB   | Lethbridge City       | 34.6                 | 59.7           | 24.0             | 35.0         | 50.4           |
| AB   | Canmore               | 15.9                 | 58.5           | 73.5             | 37.0         | 164.8          |
| AB   | Medicine Hat          | 31.1                 | 65.4           | 26.0             | 37.7         | 50.4           |
| AB   | Mountain View County  | 50.9                 | 62.7           | 33.3             | 38.1         | 80.2           |

|    |                      |      |      |      |      |       |
|----|----------------------|------|------|------|------|-------|
| AB | Clearwater County    | 13.9 | 72.4 | 44.2 | 38.1 | 80.1  |
| AB | Stony Plain          | 45.0 | 67.3 | 31.5 | 38.1 | 70.2  |
| AB | Wetaskiwin County    | 45.0 | 66.7 | 27.8 | 40.0 | 56.6  |
| AB | Lac Ste. Anne County | 4.6  | 71.5 | 40.8 | 42.1 | 80.9  |
| AB | Camrose City         | 23.0 | 69.7 | 23.8 | 44.0 | 44.8  |
| AB | Yellowhead County    | 1.3  | 85.2 | 68.8 | 51.1 | 124.8 |
| AB | Wetaskiwin City      | 45.0 | 91.0 | 39.5 | 59.8 | 74.3  |
| AB | High River           | 50.9 | 87.7 | 45.3 | 60.2 | 89.8  |
| BC | Fort St. John        | 30.3 | 48.8 | 24.9 | 20.7 | 115.7 |
| BC | Kamloops             | 21.0 | 37.2 | 45.9 | 23.3 | 73.9  |
| BC | Port Moody           | 36.1 | 50.0 | 28.2 | 24.0 | 75.5  |
| BC | Greater Vancouver    | 36.1 | 48.9 | 37.7 | 25.0 | 91.1  |
| BC | Mission              | 39.1 | 51.4 | 12.1 | 25.4 | 38.2  |
| BC | Langford             | 21.1 | 52.3 | 27.1 | 25.9 | 63.3  |
| BC | Port Coquitlam       | 36.1 | 51.8 | 33.3 | 27.2 | 79.6  |
| BC | Lake Country         | 37.1 | 51.8 | 15.0 | 28.8 | 33.9  |
| BC | Coquitlam            | 36.1 | 56.1 | 38.6 | 32.7 | 82.1  |
| BC | Pitt Meadows         | 36.1 | 59.5 | 34.5 | 32.8 | 78.5  |
| BC | Coldstream           | 21.9 | 59.5 | 18.1 | 32.9 | 30.2  |
| BC | Colwood              | 21.1 | 60.4 | 29.6 | 33.2 | 61.3  |
| BC | Squamish             | 47.7 | 61.0 | 44.7 | 33.3 | 127.3 |
| BC | Abbotsford           | 39.1 | 60.8 | 16.5 | 33.7 | 41.7  |
| BC | Maple Ridge          | 36.1 | 60.6 | 36.3 | 34.1 | 81.4  |
| BC | Surrey               | 36.1 | 62.7 | 36.1 | 34.5 | 81.9  |
| BC | New Westminster      | 36.1 | 54.0 | 45.6 | 36.0 | 83.3  |
| BC | Vancouver            | 36.1 | 52.7 | 50.1 | 36.4 | 86.4  |
| BC | Richmond             | 36.1 | 57.9 | 44.3 | 37.4 | 82.9  |
| BC | Chilliwack           | 39.1 | 65.9 | 16.5 | 37.5 | 40.7  |
| BC | North Vancouver City | 36.1 | 57.0 | 45.8 | 38.0 | 83.6  |
| BC | Langley DM           | 36.1 | 66.0 | 37.2 | 38.2 | 80.2  |
| BC | Burnaby              | 36.1 | 58.2 | 46.9 | 38.4 | 86.0  |
| BC | Nelson               | 9.8  | 64.4 | 34.8 | 40.1 | 62.5  |
| BC | Prince George        | 7.0  | 65.0 | 49.2 | 40.3 | 118.6 |
| BC | Equimalt             | 21.1 | 58.3 | 43.3 | 41.1 | 69.4  |
| BC | Nanaimo CSD          | 31.9 | 66.3 | 22.1 | 42.8 | 31.1  |
| BC | Kelowna              | 37.1 | 65.0 | 24.8 | 43.7 | 43.0  |
| BC | Delta                | 36.1 | 70.4 | 41.2 | 44.6 | 79.2  |
| BC | North Vancouver DM   | 36.1 | 71.2 | 41.8 | 45.2 | 80.7  |
| BC | Dawson Creek         | 30.3 | 72.0 | 47.6 | 45.9 | 118.8 |
| BC | Kitimat              | 2.1  | 70.1 | 57.5 | 47.0 | 122.3 |
| BC | Prince Rupert        | 5.8  | 74.6 | 61.3 | 47.0 | 150.1 |

|    |                           |      |       |      |       |       |
|----|---------------------------|------|-------|------|-------|-------|
| BC | Victoria                  | 21.1 | 60.4  | 51.4 | 47.1  | 72.4  |
| BC | Courtenay                 | 33.0 | 72.5  | 19.5 | 48.0  | 27.1  |
| BC | Terrace                   | 2.1  | 77.7  | 52.3 | 49.1  | 126.6 |
| BC | Saanich                   | 21.1 | 70.7  | 43.0 | 49.3  | 68.8  |
| BC | Langley City              | 36.1 | 74.6  | 48.9 | 50.5  | 87.1  |
| BC | Williams Lake             | 4.1  | 81.2  | 53.6 | 51.0  | 98.1  |
| BC | North Cowichan            | 23.4 | 77.6  | 32.6 | 51.8  | 48.9  |
| BC | Campbell River            | 13.3 | 78.0  | 45.3 | 51.9  | 73.9  |
| BC | Vernon                    | 21.9 | 77.9  | 26.0 | 54.5  | 38.4  |
| BC | Cranbrook                 | 6.5  | 81.0  | 45.7 | 58.4  | 93.8  |
| BC | Quesnel                   | 4.1  | 88.8  | 59.7 | 58.4  | 103.9 |
| BC | Central Saanich           | 21.1 | 81.4  | 44.4 | 59.9  | 66.2  |
| BC | Sooke                     | 21.1 | 81.4  | 44.4 | 59.9  | 66.2  |
| BC | Port Alberni              | 1.9  | 88.1  | 43.3 | 60.8  | 66.4  |
| BC | Comox                     | 33.0 | 88.8  | 23.9 | 62.6  | 32.3  |
| BC | Penticton                 | 10.7 | 87.3  | 35.5 | 64.6  | 44.5  |
| BC | North Saanich             | 21.1 | 89.2  | 45.6 | 70.1  | 61.8  |
| BC | Capital F                 | 21.1 | 92.5  | 45.4 | 71.9  | 63.0  |
| BC | Summerland                | 10.7 | 96.8  | 37.3 | 72.2  | 46.0  |
| BC | Salmon Arm                | 17.5 | 99.7  | 45.3 | 72.9  | 64.3  |
| BC | Powell River CSD          | -9.8 | 105.0 | 59.4 | 80.2  | 87.3  |
| BC | Sechelt                   | 16.8 | 107.8 | 49.5 | 82.5  | 56.2  |
| BC | West Vancouver            | 36.1 | 106.2 | 57.2 | 83.1  | 83.7  |
| BC | Oak Bay                   | 21.1 | 107.9 | 50.4 | 85.3  | 69.0  |
| BC | White Rock                | 36.1 | 109.6 | 65.5 | 94.5  | 83.7  |
| BC | Parksville                | 31.9 | 128.0 | 31.2 | 105.2 | 36.1  |
| BC | Sidney                    | 21.1 | 150.9 | 59.2 | 130.0 | 73.4  |
| ON | Milton                    | 63.9 | 56.8  | 18.8 | 18.6  | 60.4  |
| ON | Petawawa                  | 6.4  | 53.1  | 35.9 | 19.7  | 85.8  |
| ON | Essa                      | 35.0 | 54.1  | 37.1 | 23.6  | 86.4  |
| ON | Ajax                      | 46.2 | 59.2  | 40.8 | 26.5  | 104.6 |
| ON | Brampton                  | 43.6 | 59.6  | 32.2 | 27.0  | 95.6  |
| ON | Bradford West Gwillimbury | 35.0 | 59.2  | 41.4 | 28.5  | 93.0  |
| ON | Mapleton                  | 24.5 | 76.4  | 30.8 | 28.5  | 95.0  |
| ON | Halton Hills              | 63.9 | 62.0  | 28.6 | 29.8  | 64.8  |
| ON | Wellesley                 | 34.6 | 75.4  | 25.8 | 30.2  | 84.4  |
| ON | West Lincoln              | 15.4 | 67.1  | 35.4 | 31.8  | 72.0  |
| ON | Russell                   | 14.7 | 67.9  | 57.8 | 32.3  | 134.0 |
| ON | Aurora                    | 50.1 | 63.2  | 44.0 | 32.5  | 103.5 |
| ON | Whitby                    | 46.2 | 66.1  | 44.9 | 32.5  | 107.7 |
| ON | Oakville                  | 63.9 | 63.5  | 31.3 | 32.6  | 67.4  |

|    |                        |      |      |      |      |       |
|----|------------------------|------|------|------|------|-------|
| ON | South Frontenac        | 25.8 | 60.4 | 34.7 | 33.1 | 57.6  |
| ON | Richmond Hill          | 50.1 | 61.4 | 44.6 | 33.2 | 98.0  |
| ON | Toronto                | 22.1 | 55.2 | 35.3 | 33.3 | 65.7  |
| ON | Adjala-Tosorontio      | 35.0 | 61.2 | 45.0 | 33.3 | 87.3  |
| ON | Newmarket              | 50.1 | 62.5 | 45.1 | 33.4 | 101.2 |
| ON | East Gwillimbury       | 50.1 | 59.6 | 44.7 | 33.8 | 91.0  |
| ON | Vaughan                | 50.1 | 66.1 | 41.8 | 33.8 | 97.8  |
| ON | Ottawa                 | 41.0 | 59.5 | 40.9 | 34.1 | 73.0  |
| ON | Kitchener              | 34.6 | 60.1 | 39.8 | 34.1 | 89.2  |
| ON | Mississauga            | 43.6 | 60.7 | 43.2 | 34.2 | 101.1 |
| ON | Cambridge              | 34.6 | 63.3 | 36.9 | 34.4 | 87.6  |
| ON | Waterloo CSD           | 34.6 | 60.1 | 41.8 | 35.0 | 90.4  |
| ON | Caledon                | 43.6 | 65.1 | 39.5 | 35.0 | 96.5  |
| ON | Erin                   | 24.5 | 62.0 | 43.8 | 35.4 | 89.7  |
| ON | Markham                | 50.1 | 62.8 | 46.1 | 35.7 | 95.4  |
| ON | The Nation             | 14.7 | 67.1 | 63.1 | 35.9 | 133.8 |
| ON | Pickering              | 46.2 | 63.1 | 53.1 | 36.1 | 108.0 |
| ON | Springwater            | 35.0 | 65.7 | 47.0 | 36.1 | 91.8  |
| ON | Georgina               | 50.1 | 64.2 | 47.0 | 36.3 | 98.4  |
| ON | Barrie                 | 35.0 | 68.2 | 47.2 | 36.4 | 99.2  |
| ON | Lakeshore              | 3.9  | 69.1 | 44.6 | 36.7 | 102.1 |
| ON | Clarington             | 46.2 | 68.7 | 50.0 | 37.7 | 106.7 |
| ON | Thames Centre          | 27.6 | 65.9 | 39.0 | 37.8 | 73.0  |
| ON | Guelph                 | 24.5 | 66.5 | 48.3 | 38.8 | 99.4  |
| ON | Orangeville            | 31.6 | 73.5 | 57.9 | 39.4 | 122.9 |
| ON | London                 | 27.6 | 65.6 | 44.8 | 39.7 | 81.2  |
| ON | LaSalle                | 3.9  | 70.7 | 49.8 | 40.1 | 107.8 |
| ON | Norwich                | 4.0  | 81.2 | 42.8 | 40.4 | 100.4 |
| ON | Clarence-Rockland      | 14.7 | 71.8 | 65.9 | 40.8 | 130.4 |
| ON | Middlesex Centre       | 27.6 | 73.2 | 37.6 | 40.8 | 72.7  |
| ON | Thorold                | 15.4 | 67.2 | 46.9 | 41.1 | 79.9  |
| ON | St. Clair              | 1.8  | 71.3 | 46.1 | 41.5 | 77.5  |
| ON | Wainfleet              | 15.4 | 68.5 | 43.8 | 42.0 | 71.7  |
| ON | Hamilton               | 11.7 | 75.5 | 62.5 | 42.0 | 79.5  |
| ON | Innisfil               | 35.0 | 70.8 | 50.6 | 42.3 | 92.9  |
| ON | Kingston               | 25.8 | 68.1 | 47.2 | 43.3 | 74.5  |
| ON | Guelph/Eramosa         | 24.5 | 72.2 | 46.8 | 43.4 | 91.6  |
| ON | Perth East             | -1.0 | 83.5 | 46.5 | 43.7 | 111.1 |
| ON | Burlington             | 63.9 | 71.1 | 37.0 | 43.8 | 67.2  |
| ON | King                   | 50.1 | 71.6 | 51.1 | 44.0 | 97.2  |
| ON | Whitchurch-Stouffville | 50.1 | 75.5 | 47.7 | 44.0 | 98.2  |

|    |                           |      |      |      |      |       |
|----|---------------------------|------|------|------|------|-------|
| ON | North Grenville           | 2.6  | 74.8 | 59.2 | 44.0 | 110.5 |
| ON | Central Elgin             | 11.4 | 72.0 | 50.6 | 44.5 | 90.5  |
| ON | Brantford                 | 22.8 | 73.5 | 46.0 | 44.7 | 89.0  |
| ON | Ingersoll                 | 4.0  | 75.9 | 52.0 | 44.8 | 104.2 |
| ON | Brant CSD                 | 22.8 | 73.5 | 45.3 | 45.1 | 85.6  |
| ON | Greater Sudbury CSD       | 2.7  | 70.7 | 49.8 | 45.2 | 84.9  |
| ON | Oro-Medante               | 35.0 | 72.5 | 51.7 | 45.4 | 89.3  |
| ON | Woolwich                  | 34.6 | 78.8 | 39.7 | 45.6 | 87.5  |
| ON | Timmins                   | -3.8 | 75.1 | 63.4 | 45.8 | 119.7 |
| ON | Tecumseh                  | 3.9  | 71.5 | 58.4 | 46.6 | 106.7 |
| ON | Amherstburg               | 3.9  | 74.7 | 55.5 | 46.6 | 108.1 |
| ON | Wilmot                    | 34.6 | 76.9 | 41.4 | 46.8 | 86.4  |
| ON | Oshawa                    | 46.2 | 74.0 | 59.9 | 46.9 | 111.1 |
| ON | Grimsby                   | 15.4 | 76.8 | 45.6 | 47.0 | 77.7  |
| ON | Hamilton                  | 19.3 | 67.6 | 51.2 | 49.5 | 108.6 |
| ON | North Bay                 | 5.9  | 75.0 | 54.4 | 50.0 | 89.4  |
| ON | Niagara Falls             | 15.4 | 76.6 | 50.0 | 50.1 | 80.6  |
| ON | Clearview                 | 35.0 | 80.0 | 54.5 | 50.2 | 95.7  |
| ON | Uxbridge                  | 46.2 | 79.1 | 61.8 | 50.4 | 112.9 |
| ON | Georgian Bluffs           | 8.7  | 75.1 | 54.0 | 50.5 | 79.1  |
| ON | Quinte West               | -1.1 | 79.4 | 56.0 | 51.2 | 93.9  |
| ON | Welland                   | 15.4 | 77.7 | 50.0 | 51.4 | 79.1  |
| ON | St. Thomas                | 11.4 | 82.5 | 53.2 | 51.6 | 97.4  |
| ON | Windsor                   | 3.9  | 79.4 | 59.6 | 51.8 | 112.7 |
| ON | Severn                    | 35.0 | 76.3 | 57.7 | 52.4 | 91.1  |
| ON | Strathroy-Caradoc         | 27.6 | 82.9 | 46.2 | 52.7 | 80.5  |
| ON | New Tecumseth             | 35.0 | 83.0 | 55.3 | 53.0 | 96.5  |
| ON | Smith-Ennismore-Lakefield | 22.1 | 79.4 | 45.0 | 53.5 | 62.3  |
| ON | Center Wellington         | 24.5 | 83.8 | 52.7 | 53.6 | 98.0  |
| ON | Kingsville                | 3.9  | 81.4 | 60.1 | 53.9 | 110.7 |
| ON | Woodstock                 | 4.0  | 82.7 | 58.3 | 53.9 | 105.3 |
| ON | Brockton                  | 2.0  | 86.2 | 61.0 | 54.2 | 88.4  |
| ON | Haldimand County          | -3.5 | 84.9 | 69.4 | 54.5 | 122.8 |
| ON | Essex CSD                 | 3.9  | 80.8 | 61.8 | 54.6 | 109.6 |
| ON | Loyalist                  | 3.0  | 81.1 | 65.9 | 54.6 | 112.1 |
| ON | St. Catherines            | 15.4 | 80.6 | 52.7 | 54.9 | 81.6  |
| ON | South Stormont            | -5.6 | 82.1 | 72.6 | 55.0 | 124.1 |
| ON | Peterborough CSD          | 22.1 | 80.9 | 51.7 | 55.1 | 75.6  |
| ON | North Dundas              | -5.6 | 83.5 | 73.2 | 55.3 | 130.0 |
| ON | Minto                     | 24.5 | 88.4 | 53.1 | 55.6 | 101.5 |
| ON | Huron East                | -4.3 | 90.3 | 58.3 | 55.9 | 100.0 |

|    |                                |      |       |      |      |       |
|----|--------------------------------|------|-------|------|------|-------|
| ON | Fort Erie                      | 15.4 | 81.1  | 51.9 | 56.0 | 78.5  |
| ON | Lincoln                        | 15.4 | 86.7  | 49.5 | 56.2 | 80.7  |
| ON | Scugog                         | 46.2 | 82.9  | 66.4 | 56.8 | 111.8 |
| ON | Kincardine                     | 2.0  | 85.4  | 65.5 | 56.8 | 91.2  |
| ON | West Grey                      | 8.7  | 85.9  | 56.8 | 57.0 | 86.6  |
| ON | Huntsville                     | 21.1 | 85.2  | 56.7 | 57.1 | 80.8  |
| ON | Kenora CSD                     | 10.8 | 84.3  | 69.9 | 57.3 | 118.6 |
| ON | Leamington                     | 3.9  | 89.7  | 60.1 | 58.0 | 116.0 |
| ON | North Perth                    | -1.0 | 91.9  | 59.3 | 58.0 | 116.7 |
| ON | West Nipissing                 | 5.9  | 85.9  | 51.8 | 58.7 | 81.0  |
| ON | Sarnia                         | 1.8  | 85.6  | 60.6 | 58.9 | 92.5  |
| ON | Thunder Bay CSD                | 1.9  | 85.1  | 73.7 | 59.3 | 119.1 |
| ON | Chatham-Kent CSD               | -4.8 | 89.4  | 63.9 | 59.4 | 107.5 |
| ON | Pelham                         | 15.4 | 87.3  | 52.4 | 60.0 | 79.0  |
| ON | Kirkland Lake                  | -3.7 | 89.5  | 67.7 | 60.6 | 97.8  |
| ON | Sault Ste. Marie               | -6.9 | 86.0  | 63.3 | 60.6 | 95.4  |
| ON | Leeds and the Thousand Islands | 2.6  | 87.1  | 69.9 | 60.9 | 107.7 |
| ON | Stratford                      | -1.0 | 87.6  | 67.9 | 61.6 | 116.3 |
| ON | Carleton Place                 | 5.3  | 93.4  | 80.6 | 61.6 | 136.8 |
| ON | Belleville                     | -1.1 | 89.2  | 64.3 | 61.8 | 102.5 |
| ON | Brock                          | 46.2 | 89.8  | 67.3 | 62.0 | 113.3 |
| ON | Bracebridge                    | 21.1 | 89.5  | 59.1 | 62.1 | 82.3  |
| ON | Wellington North               | 24.5 | 94.1  | 56.3 | 62.5 | 100.5 |
| ON | Mississippi Falls              | 5.3  | 94.0  | 80.8 | 63.3 | 127.9 |
| ON | Dryden                         | 10.8 | 91.0  | 71.3 | 63.3 | 117.3 |
| ON | Grey Highlands                 | 8.7  | 95.5  | 57.3 | 63.9 | 87.4  |
| ON | Tiny                           | 35.0 | 85.5  | 63.5 | 64.2 | 90.7  |
| ON | Port Colborne                  | 15.4 | 89.2  | 56.7 | 64.3 | 83.0  |
| ON | Temiskaming Shores             | -3.7 | 97.7  | 66.2 | 64.5 | 97.1  |
| ON | South Glengarry                | -5.6 | 91.2  | 76.8 | 64.7 | 121.1 |
| ON | Saugeen Shores                 | 2.0  | 91.2  | 70.4 | 65.2 | 93.2  |
| ON | Gravenhurst                    | 21.1 | 89.3  | 61.8 | 66.2 | 81.7  |
| ON | Orillia                        | 35.0 | 94.9  | 68.6 | 68.8 | 105.6 |
| ON | Elizabethtown-Kitley           | 2.6  | 95.5  | 79.0 | 69.1 | 121.1 |
| ON | Norfolk County                 | -3.5 | 97.2  | 78.8 | 69.3 | 124.2 |
| ON | Kapuskasing                    | -3.8 | 95.8  | 81.5 | 70.0 | 125.6 |
| ON | Midland                        | 35.0 | 95.6  | 69.2 | 71.6 | 102.1 |
| ON | Kawartha Lakes                 | 10.4 | 96.9  | 74.4 | 71.6 | 107.4 |
| ON | Port Hope                      | 11.7 | 99.4  | 82.8 | 72.7 | 124.0 |
| ON | Greater Napanee                | 3.0  | 100.0 | 76.9 | 73.8 | 120.1 |
| ON | Collingwood                    | 35.0 | 100.5 | 67.2 | 74.8 | 99.8  |



|    |                       |      |       |       |       |       |
|----|-----------------------|------|-------|-------|-------|-------|
| ON | Owen Sound            | 8.7  | 102.2 | 71.4  | 75.1  | 104.0 |
| ON | South Dundas          | -5.6 | 103.1 | 78.2  | 75.2  | 121.2 |
| ON | South Huron           | -4.3 | 103.9 | 68.7  | 75.4  | 100.7 |
| ON | Meaford               | 8.7  | 100.6 | 68.5  | 75.8  | 94.2  |
| ON | Champlain             | 14.7 | 102.9 | 94.2  | 75.9  | 143.5 |
| ON | Cornwall              | -5.6 | 104.5 | 84.1  | 76.2  | 133.8 |
| ON | Smiths Falls          | 5.3  | 106.0 | 90.5  | 76.3  | 138.0 |
| ON | Rideau Lakes          | 2.6  | 102.8 | 79.1  | 78.5  | 110.8 |
| ON | Niagara on the Lake   | 15.4 | 104.4 | 57.8  | 79.1  | 79.3  |
| ON | Pembroke              | 6.4  | 106.3 | 76.1  | 80.2  | 107.0 |
| ON | Lambton Shores        | 1.8  | 105.6 | 68.0  | 81.9  | 89.4  |
| ON | North Glengarry       | -5.6 | 109.5 | 88.0  | 82.1  | 135.3 |
| ON | Brockville            | 2.6  | 109.5 | 86.4  | 83.9  | 125.0 |
| ON | South Bruce Peninsula | 2.0  | 114.8 | 73.8  | 87.3  | 93.2  |
| ON | Tillsonburg           | 4.0  | 115.5 | 70.6  | 88.1  | 105.3 |
| ON | Brighton              | 11.7 | 115.5 | 86.1  | 90.9  | 117.7 |
| ON | Trent Hills           | 11.7 | 116.9 | 89.0  | 91.4  | 122.8 |
| ON | Prince Edward         | 6.6  | 117.6 | 99.0  | 95.2  | 132.8 |
| ON | Wasaga Beach          | 35.0 | 119.8 | 66.3  | 96.4  | 88.2  |
| ON | Hawkesbury            | 14.7 | 122.0 | 107.3 | 96.9  | 151.7 |
| ON | Cobourg               | 11.7 | 134.2 | 95.3  | 106.7 | 131.2 |
| ON | Elliot Lake           | -6.9 | 149.3 | 75.4  | 126.8 | 91.0  |

## APPENDIX C: CANADIAN URBAN LITERATURE

In order to best compare results with the original study, the methodology used closely follows that of Hall and Hall (2008). To determine the prevalence of declining urban areas in the Canadian, English-language urban geography, planning and policy-related literature, the following eight journals were examined:

- The Canadian Geographer
- Canadian Journal of Regional Science
- Canadian Journal of Urban Research
- Canadian Public Policy
- Economic Development Journal of Canada
- Great Lakes Geographer
- Journal of Canadian Studies
- Plan Canada

Seven of these journals were also included in the original Hall and Hall paper. The only exception, the Economic Development Journal of Canada, was used in proxy for the Economic and Technology Development Journal of Canada, for which current issues could not be found. Only limited issues from the Great Lakes Geographer could be included as the journal ceased publication in 2006. For the remaining journals, issues were collected beginning where the Hall and Hall (2008) study left off and ended with the most current issue<sup>4</sup>.

All articles containing some reference to at least one Canadian urban area were included in the analysis. Following Hall and Hall (2008), the articles were identified through a thorough examination of both the article title and abstract. If either explicitly or implicitly mentioned an urban area, the urban system, growth or decline, the article in its entirety was read to determine whether or not it should be included. Furthermore, if the title and abstract

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<sup>4</sup> At the time of analysis, the most current issues available were: *The Canadian Geographer*: 58(1); *Canadian Journal of Regional Science*: 35(1); *Canadian Journal of Urban Research*: 22(1); *Canadian Public Policy*: 40(2); *Economic Development Journal of Canada*: November, 2013; *Great Lakes Geographer*: Volume 13; *Journal of Canadian Studies*: 48(1); and *Plan Canada*: 54(2).

review was inconclusive, the entire article was read. It is very unlikely that any article was incorrectly included, however, I recognize that some articles might have been overlooked.

A total of 1518 articles were examined and of these articles 136 met the search criteria and were included in the analysis. The results from the literature analysis are included below.

**Table C.1: Articles organized by urban size**

| Urban Size                               | % of Articles | Share of Population of Urban Areas, 2011 |
|--|---------------|--|
| Large Urban Areas (>500,000)             | 60.4          | 64.0                                     |
| Large and Middle Size Urban Areas        | 8.9           |  |
| Large, Middle Size and Small Urban Areas | 12.4          |  |
| Total                                    | 81.7          |  |
| Middle Size Urban Areas (50,000-500,000) | 10.1          | 28.5                                     |
| Large and Middle Size Urban Areas        | 8.9           |  |
| Middle Size and Small Urban Areas        | 2.4           |  |
| Large, Middle Size and Small Urban Areas | 12.4          |  |
| Total                                    | 33.8          |  |
| Small Urban Areas (10,000-50,000)        | 5.9           | 7.6                                      |
| Middle Size and Small Urban Areas        | 2.4           |  |
| Large, Middle Size and Small Urban Areas | 12.4          |  |
| Total                                    | 20.7          |  |

**Table C.2: Articles by urban size and region (%)**

|                         | Southern Ontario | Atlantic Canada | Northern Ontario | British Columbia | Central Canada | Quebec |
|-------------------------|------------------|-----------------|------------------|------------------|----------------|--------|
| Large Urban Areas       | 34.7             | 2.5             | 2.5              | 16.5             | 20.7           | 23.1   |
| Middle Size Urban Areas | 47.6             | 19.1            | 14.3             | 0                | 19.1           | 0      |
| Small Urban Areas       | 36.8             | 15.8            | 15.8             | 31.6             | 0              | 0      |

**Table C.3: Large urban area articles by metropolitan region (%)**

| GTA  | Vancouver-Victoria | Montreal | Calgary-Edmonton | Winnipeg | Ottawa-Gatineau | Quebec City | Hamilton |
|------|--------------------|----------|------------------|----------|-----------------|-------------|----------|
| 24.6 | 15.6               | 18       | 10.7             | 16.4     | 4.1             | 4.1         | 6.6      |

**Table C.4: Articles by economic sector**

| <b>Economic Sector</b>   | <b>% of Articles</b> |
|--|----------------------|
| Financial/Insurance/Real Estate/Business and Producer Services | 31.1                 |
| Retail/Commercial/Entertainment                                | 20                   |
| High-tech/Information Technology/ Telecommunications           | 17.8                 |
| Creative Class   | 15.6                 |
| Resource Extraction/Manufacturing                              | 11.1                 |
| Tourism  | 2.2                  |
| Foreign Direct Investment/Corporate Head Office Location       | 2.2                  |

## APPENDIX D: PLANNING EDUCATION

**Table D.1: Codes for decline/shrinkage, revitalization and aging courses in North American accredited university planning programs**

| University  | Program Level | Decline/Shrink  | Revitalization | Aging |
|---|---------------|-----------------|----------------|-------|
| Alabama A&M University  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
| Arizona State University  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| University of Arizona   | Masters       |                 |                |       |
| Auburn University   | Masters       |                 |                |       |
| Ball State University   | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
| University of British Columbia                                      | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| University of Calgary   | Masters       |                 |                |       |
| California State Polytechnic University, Pomona and San Luis Obispo | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
| University of California, Berkeley                                  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| University of California, Irvine                                    | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| University of California, Los Angeles                               | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| University of Cincinnati  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
|   | PhD           | <b>PLAN8002</b> |                |       |
| Clemson University  | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| Cleveland State University  | Masters       |                 |                |       |
| University of Colorado Denver                                       | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| Columbia University   | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| Cornell University  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |
|   | PhD           |                 |                |       |
| Dalhousie University  | Undergrad     |                 |                |       |
|   | Masters       |                 |                |       |

|   |           |               |                |                 |
|---|-----------|---------------|----------------|-----------------|
| East Carolina University                    | Undergrad |               |                |                 |
| Eastern Michigan University                 | Undergrad |               |                |                 |
|   | Masters   |               |                |                 |
| Eastern Washington University               | Undergrad |               |                |                 |
|   | Masters   |               |                |                 |
| Florida Atlantic University                 | Undergrad |               |                |                 |
|   | Masters   |               |                |                 |
| Florida State University                    | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| University of Florida                       | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| Georgia Institute of Technology             | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| University of Guelph                        | Masters   |               |                |                 |
| Harvard University                          | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| University of Hawaii at Manoa               | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| Hunter College, City University of New York | Masters   |               |                |                 |
| University of Illinois at Chicago           | Masters   |               | <b>544</b>     |                 |
|   | PhD       |               |                |                 |
| University of Illinois at Urbana-Champaign  | Undergrad |               | <b>UP474</b>   |                 |
|   | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| Indiana University of Pennsylvania          | Undergrad |               |                |                 |
|   | Masters   |               |                |                 |
| Iowa State University                       | Undergrad |               |                |                 |
|   | Masters   |               | <b>CRP517</b>  |                 |
| University of Iowa                          | Masters   |               | <b>URP6273</b> |                 |
| Jackson State University                    | Masters   |               | <b>URP524</b>  |                 |
|   | PhD       |               | <b>URP724</b>  |                 |
| Kansas State University                     | Masters   |               |                |                 |
| University of Kansas                        | Masters   |               | <b>UBPL716</b> |                 |
| Université Laval                            | Masters   |               | <b>AME6024</b> |                 |
| University of Louisville                    | Masters   |               |                |                 |
|   | PhD       |               |                |                 |
| University of Manitoba                      | Masters   |               |                |                 |
| University of Maryland at College Park      | Masters   |               |                | <b>URSP289A</b> |
|   | PhD       |               |                |                 |
| University of Massachusetts                 | Masters   |               | <b>RP591K</b>  |                 |
|   | PhD       |               |                |                 |
| Massachusetts Institute of Technology       | Undergrad |               |                |                 |
|   | Masters   | <b>11.338</b> |                |                 |

|   |           |                |                   |  |
|---|-----------|----------------|-------------------|--|
|   | PhD       |                |                   |  |
| McGill University                           | Masters   |                |                   |  |
| University of Memphis                       | Masters   |                | <b>7204</b>       |  |
| Michigan State University                   | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
| University of Michigan                      | Masters   |                |                   |  |
|   | PhD       |                |                   |  |
| University of Minnesota                     | Masters   |                |                   |  |
| Missouri State University                   | Undergrad |                |                   |  |
| Université de Montréal                      | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
| Morgan State University                     | Undergrad |                |                   |  |
| University of Nebraska-Lincoln              | Masters   |                |                   |  |
| University of New Mexico                    | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
| University of New Orleans                   | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
|   | PhD       |                |                   |  |
| New York University                         | Masters   |                |                   |  |
| University of North Carolina at Chapel Hill | Masters   |                | <b>53</b>         |  |
|   | PhD       |                |                   |  |
| University of Northern British Columbia     | Undergrad |                |                   |  |
| The Ohio State University                   | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
|   | PhD       |                |                   |  |
| University of Oklahoma                      | Masters   |                | <b>G5712</b>      |  |
| University of Oregon                        | Masters   |                | <b>PPPM532</b>    |  |
| University of Pennsylvania                  | Masters   |                |                   |  |
|   | PhD       |                |                   |  |
| Portland State University                   | Undergrad |                | <b>USP427/527</b> |  |
|   | Masters   |                | <b>UPS427/527</b> |  |
|   | PhD       |                |                   |  |
| Pratt Institute                             | Masters   | <b>Plan764</b> |                   |  |
| Université du Québec à Montréal             | Undergrad |                |                   |  |
| Queen's University                          | Masters   |                |                   |  |
| Rutgers, The State University of New Jersey | Masters   |                | <b>34:970:622</b> |  |
| Ryerson University                          | Undergrad |                |                   |  |
|   | Masters   |                |                   |  |
| San José State University                   | Masters   |                |                   |  |
| University of Saskatchewan                  | Undergrad |                |                   |  |
| Simon Fraser University                     | Masters   |                |                   |  |
|   | PhD       |                |                   |  |
| University of Southern California           | Undergrad |                |                   |  |

|   |           |   |                   |  |
|---|-----------|---|-------------------|--|
|   | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| University at Albany, State University of New York  | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
| University at Buffalo, State University of New York | Masters   |   | <b>URP542</b>     |  |
|   | PhD       | <b>*Students can specialize in declining cities</b> |                   |  |
| Temple University School of Environmental Design    | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
| Texas A&M University                                | Masters   |   | <b>Plan629</b>    |  |
|   | PhD       |   |                   |  |
| Texas Southern University                           | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| University of Texas at Arlington                    | Masters   |   | <b>CIRP5306</b>   |  |
|   | PhD       |   |                   |  |
| University of Texas at Austin                       | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| University of Toronto                               | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| Tufts University                                    | Masters   |   |                   |  |
| University of Utah                                  | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| Virginia Commonwealth University                    | Masters   |   |                   |  |
| Virginia Polytechnic Institute and State University | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| University of Virginia                              | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
| University of Washington                            | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
| University of Waterloo                              | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| Wayne State University                              | Masters   | <b>UP5650</b>                                       | <b>UP6680</b>     |  |
| Western Michigan University                         | Undergrad |   |                   |  |
|   | Masters   |   |                   |  |
| Westfield State University                          | Undergrad |   |                   |  |
| University of Wisconsin-Madison                     | Masters   |   |                   |  |
|   | PhD       |   |                   |  |
| University of Wisconsin-Milwaukee                   | Masters   |   | <b>UrbPlan661</b> |  |
| York University                                     | Masters   |   |                   |  |



## APPENDIX E: U.S. POPULATION AND INCOME DATA

Table E.1: Population and income data Source: U.S. Census Bureau (incomes adjusted to 2015 dollars)

| City             | Indicator  | 1980        | 1990        | 2000        | 2010        |
|------------------|------------|-------------|-------------|-------------|-------------|
| Chicago, IL      | Population | 3005072     | 2783726     | 2896016     | 2695598     |
|                  | Income     | \$26,901.35 | \$30,044.06 | \$33,088.86 | \$31,928.73 |
| Philadelphia, PA | Population | 1688210     | 1585577     | 1517550     | 1526006     |
|                  | Income     | \$19,787.81 | \$23,142.17 | \$23,518.49 | \$22,984.12 |
| Detroit, MI      | Population | 1203339     | 1027974     | 951270      | 713777      |
|                  | Income     | \$24,871.24 | \$24,912.62 | \$28,574.34 | \$24,081.24 |
| Baltimore, MD    | Population | 786775      | 736014      | 651154      | 620961      |
|                  | Income     | \$19,212.45 | \$22,956.52 | \$24,186.62 | \$25,396.05 |
| Memphis, TN      | Population | 646356      | 610337      | 650100      | 646889      |
|                  | Income     | \$21,893.10 | \$25,513.62 | \$29,711.16 | \$27,212.62 |
| Washington, DC   | Population | 638333      | 606900      | 572059      | 601723      |
|                  | Income     | \$29,291.05 | \$36,138.23 | \$40,827.21 | \$45,798.44 |
| Milwaukee, WI    | Population | 636212      | 628088      | 596974      | 594833      |
|                  | Income     | \$25,995.81 | \$25,615.06 | \$28,404.82 | \$25,839.04 |
| Cleveland, OH    | Population | 573822      | 505616      | 478403      | 396815      |
|                  | Income     | \$26,476.37 | \$28,541.57 | \$31,728.38 | \$28,585.11 |
| New Orleans, LA  | Population | 557515      | 496938      | 484674      | 343829      |
|                  | Income     | \$21,128.13 | \$21,766.01 | \$24,585.50 | \$27,133.16 |
| Denver, CO       | Population | 492365      | 467610      | 554636      | 600158      |
|                  | Income     | \$27,967.07 | \$29,839.26 | \$34,333.94 | \$33,529.79 |
| St. Louis, MO    | Population | 453085      | 396685      | 348189      | 319294      |
|                  | Income     | \$19,218.99 | \$20,667.37 | \$22,947.23 | \$23,298.67 |
| Kansas City, MO  | Population | 448159      | 435146      | 441545      | 459787      |
|                  | Income     | \$24,877.78 | \$26,244.77 | \$29,614.29 | \$27,442.27 |
| Atlanta, GA      | Population | 425022      | 394017      | 416474      | 420003      |
|                  | Income     | \$24,913.74 | \$35,317.13 | \$42,741.85 | \$40,501.11 |
| Pittsburgh, PA   | Population | 423938      | 369879      | 334563      | 305704      |
|                  | Income     | \$26,106.96 | \$28,930.11 | \$32,040.36 | \$32,161.65 |
| Cincinnati, OH   | Population | 385457      | 364040      | 331285      | 296945      |
|                  | Income     | \$25,731.01 | \$25,559.56 | \$34,265.56 | \$31,345.34 |
| Minneapolis, MN  | Population | 370951      | 368383      | 382618      | 382578      |
|                  | Income     | \$30,739.26 | \$35,401.34 | \$41,012.40 | \$39,076.37 |
| Buffalo, NY      | Population | 357870      | 328123      | 292648      | 261310      |
|                  | Income     | \$23,190.93 | \$25,953.84 | \$29,000.29 | \$28,710.28 |
| Toledo, OH       | Population | 354635      | 332943      | 313619      | 287208      |
|                  | Income     | \$24,805.86 | \$26,371.09 | \$28,716.80 | \$26,101.34 |
| Newark, NJ       | Population | 329248      | 275221      | 273546      | 277140      |
|                  | Income     | \$24,642.41 | \$33,636.64 | \$35,533.44 | \$34,323.25 |
| Birmingham, AB   | Population | 284413      | 265968      | 242840      | 212237      |
|                  | Income     | \$23,112.47 | \$25,412.18 | \$29,762.45 | \$28,874.63 |

# APPENDIX F: CROSS-CORRELATION RESULTS

Table F.1: Chatham-Kent, ON lag values and correlation coefficients

|                  | Dependency |      | Proportion 65+ |      | Birth |      | Death |      | Immigration |      | Emigration |      | Return Emigrants |      | Temp Emigration |      | Interprovincial |      | Intraprovincial |      | Non Permanent |      | Unemployment |      | Employment |      | Participation |      | House Permit |      | House Starts |      | House Completes |  |  |  |  |  |
|------------------|------------|------|----------------|------|-------|------|-------|------|-------------|------|------------|------|------------------|------|-----------------|------|-----------------|------|-----------------|------|---------------|------|--------------|------|------------|------|---------------|------|--------------|------|--------------|------|-----------------|--|--|--|--|--|
|                  | Lag        | Corr | Lag            | Corr | Lag   | Corr | Lag   | Corr | Lag         | Corr | Lag        | Corr | Lag              | Corr | Lag             | Corr | Lag             | Corr | Lag             | Corr | Lag           | Corr | Lag          | Corr | Lag        | Corr | Lag           | Corr | Lag          | Corr | Lag          | Corr |                 |  |  |  |  |  |
| Dependency       | -          | -    |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Proportion 65+   | 0,+        | 0.61 | -              | -    |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Birth            | 0,+        | 0.72 |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Death            |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Immigration      |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Emigration       |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Return Emigrants |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Temp Emigration  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Interprovincial  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Intraprovincial  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Non Permanent    |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Unemployment     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Employment       |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Participation    |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Permit     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Starts     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Completes  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |

Table F.2: Cape Breton Regional Municipality, NS lag values and correlation coefficients

|                  | Dependency |      | Proportion 65+ |      | Birth |      | Death |      | Immigration |      | Emigration |      | Return Emigrants |      | Temp Emigration |      | Interprovincial |      | Intraprovincial |      | Non Permanent |      | Unemployment |      | Employment |      | Participation |      | House Permit |      | House Starts |      | House Completes |  |  |  |  |  |
|------------------|------------|------|----------------|------|-------|------|-------|------|-------------|------|------------|------|------------------|------|-----------------|------|-----------------|------|-----------------|------|---------------|------|--------------|------|------------|------|---------------|------|--------------|------|--------------|------|-----------------|--|--|--|--|--|
|                  | Lag        | Corr | Lag            | Corr | Lag   | Corr | Lag   | Corr | Lag         | Corr | Lag        | Corr | Lag              | Corr | Lag             | Corr | Lag             | Corr | Lag             | Corr | Lag           | Corr | Lag          | Corr | Lag        | Corr | Lag           | Corr | Lag          | Corr | Lag          | Corr |                 |  |  |  |  |  |
| Dependency       | -          | -    | -              | -    | -     | -    | -     | -    | -           | -    | -          | -    | -                | -    | -               | -    | -               | -    | -               | -    | -             | -    | -            | -    | -          | -    | -             | -    | -            | -    | -            | -    | -               |  |  |  |  |  |
| Proportion 65+   |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Birth            |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Death            |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Immigration      |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Emigration       |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Return Emigrants |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Temp Emigration  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Intraprovincial  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Interprovincial  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Non Permanent    |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Unemployment     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Employment       |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| Participation    |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Permit     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Starts     |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |
| House Completes  |            |      |                |      |       |      |       |      |             |      |            |      |                  |      |                 |      |                 |      |                 |      |               |      |              |      |            |      |               |      |              |      |              |      |                 |  |  |  |  |  |

## APPENDIX G: TRANSFERABILITY FRAMEWORK

Table G.1: Strategy type - adapted from Hummel (2014)

| Type           | Description   |
|----------------|---|
| Land banking   | An organization that holds, manages, redevelops or sells property, either vacant/abandoned or tax-delinquent, acquired against the owner's consent. This allows the supply for housing to be controlled so as to match the demand and stabilize the market. |
| Revitalization | Transforming neighborhoods lacking vitality to desired areas through efforts to increase quality of commercial, recreation, physical and social assets.   |
| Demolition     | Using demolition to match housing supply with demand when market value of structure becomes less than its restoration costs.  |
| Consolidation  | Consolidating municipal footprint to reduce infrastructure and service costs.   |
| Greening       | Transforming blighted, vacant land into a network of green community space in order to boost use, neighborhood property and aesthetic value.  |
| Other          |   |

Table G.2: Strategy goal - adapted from Hospers (2013)

| Goal         | Description  |
|--------------|--|
| Trivializing | Not addressing symptoms of shrinkage and thereby not taking any action.  |
| Countering   | Attempting to foster urban growth as depopulation is only seen as a temporary issue that can be reversed.                            |
| Accepting    | Acknowledging urban shrinkage and adapting strategies to mitigate negative effects of shrinkage, such as further loss of population. |
| Utilizing    | Seeing urban shrinkage as opportunity, recognizing that quality of life does not depend on population growth or density.             |

Table G.3: Level of civic engagement - adapted from Arnstein (1969)

| Level of Civic Engagement | Description  |
|---------------------------|--|
| Citizen control           | Citizens considered partners in decision-making and can negotiate and engage in trade-offs with traditional decision-makers.                                       |
| Tokenism                  | Citizens may be heard but lack the power to enforce their views. Decision-makers are not obligated to follow-through or take citizen view into real consideration. |
| Nonparticipation          | Objective is to not enable citizens to participate in planning whatsoever, rather relying on decision-makers fully.  |
| Unclear                   |  |
| Not available             |  |

**Table G.4: Strategy cost**

| <b>Cost</b> | <b>Description</b>   |
|-------------|--|
| High        | Moving residents, large infrastructure projects, long-term neighbourhood renewal strategies                    |
| Medium      | Small demolition projects, large urban greening projects, attracting investment, small infrastructure projects |
| Low         | Community outreach, community gardens, self financed land banks  |
| Varying     | Cost varies on a case by case (or project by project) basis  |

**Table G.5: Evaluation framework - adapted from Buffet et al. (2011)**

| <b>Construct</b> | <b>Factors/Criteria</b>  | <b>Questions to ask</b>  |
|------------------|--|--|
| Transferability  | Magnitude of issue in target context                                       | Does the need exist? Is it already addressed by other strategies?<br>What is the prevalence of the issue in the local context?<br>What is the difference in the risk status/issue prevalence between the donor and target setting?   |
|                  | Objective of intervention  | Is the measure targeting the same priority objective in the donor and target context?  |
|                  | Magnitude of “reach” vs cost effectiveness of the measure                  | Will the intervention broadly “cover” the target group?<br>Is it proportionate to the costs involved?  |
|                  | Target group characteristics   | Are they comparable to the country of origin?<br>Will any differences in characteristic affect implementation in the target setting?   |
| Applicability    | Political acceptability  | Does the objective of the measure match with political priorities? What are the government’s indicators for success of the measure? Is there political opposition in the current climate?  |
|                  | Social acceptability   | Will the target population be interested in the intervention?  |
|                  | Impact on other affected interest groups/stakeholders : winners and losers | Does the measure contradict the interests of any important stakeholders / interest groups? (trade unions, etc.)  |
|                  | Existing institutional infrastructure                                      | Is the measure’s potential impact contradicting / cancelling out / overlapping with other existing policies? Is the institutional and legislative infrastructure in place? It may be that the measure is premature, as certain preconditions are not satisfied (undeveloped legislation; weak trade unions, etc.). |
|                  | Available resources  | Financial, human resources, training required?<br>Administrative / enforcement capacity in place?  |
|                  | Other local barriers and implementation risks (structural constrains)      | The risk of corruption / deformation of the measure in its implementation due to other structural/cultural constraining factors, inefficient enforcement bodies, immaturity of the economic/financial system, political volatility.  |

## APPENDIX H: STRATEGY INVENTORY

The transferability framework outlined in Chapter 4 relies upon a bank of identified strategies from the academic and governmental literature. In order to perform a thorough review, I was assisted by several research assistants. In this Appendix I have included the instructions provided to the research assistants locating and categorizing the strategies. Furthermore, I have included a full list of the strategies along with their categorizations in Table H.2.

### Step 1: Reviewing and locating the literature

*RA Level 1:* You will be locating and reading academic articles with the intent of identifying strategies, policies and initiatives proposed (or applied) to counter effects of shrinking cities.

You will be provided with a reading list of articles from the academic literature. From this list you need to:

- 1) Locate and download the articles
- 2) Read/review article
- 3) Identify if it contains any proposed:
  - a. Solution
  - b. Strategy
  - c. Policy
  - d. Case study example of any of the above
- 4) Fill in *SCS Review* Excel sheet as you work through reading list
- 5) Save identified articles in a separate folder (to be used in Step 2)

*RA Level 2:* You will be compiling a list of practitioner/official documents (official plans, government reports, etc.) that may contain strategies, policies and initiatives proposed (or ratified) to counter effects of shrinking cities.

You will be provided geographical area for which you will search for official documents. For your region, you will need to:

1. Locate potential sources for strategies, policies and/or initiatives
2. Categorize sources in a comprehensive fashion (document management)
  - a. Type of document
  - b. Reason why you think there may be strategies, policies or initiatives
  - c. Other info you see as pertinent
3. Provide list of potential sources (have either softcopy or link)

**Note:** articles, proposed strategies, policies and initiatives may not explicitly state that they counter shrinking cities effects – you will have to use subjective judgment. If any questions, contact me.

## Step 2: Categorizing shrinkage strategies

Following the specifics of each category detailed in Appendix G, each of the identified strategy discussions were categorized and inputted into an Excel workbook. The numerical key for the sub categorizations is given in Table H.1 and the full list of identified and categorized strategies is in H.2.

**Table H.1: Numerical key for strategies listed in Table D.2**

|          | <b>Type</b>    | <b>Goal</b>  | <b>P/P</b> | <b>Governance</b> | <b>Engagement</b> | <b>Cost</b> |
|----------|----------------|--------------|------------|-------------------|-------------------|-------------|
| <b>1</b> | Land banking   | Trivializing | Public     | Intergovernmental | Citizen control   | High        |
| <b>2</b> | Revitalization | Countering   | Private    | Federal           | Tokenism          | Medium      |
| <b>3</b> | Demolition     | Accepting    | PPP        | Provincial/State  | Nonparticipation  | Low         |
| <b>4</b> | Consolidation  | Utilizing    | Unclear    | Municipal         | Varying           | Varying     |
| <b>5</b> | Greening       | Unclear      |            | Sub-municipal     | N/A               | Unclear     |
| <b>6</b> | Other          |              |            | Multi-level       | Unclear           |             |
| <b>7</b> | Combination    |              |            | Other             |                   |             |
| <b>8</b> |                |              |            | None              |                   |             |
| <b>9</b> |                |              |            | Unclear           |                   |             |

Table H.2: Identified strategy discussion in the literature

| Strategy                      | Type | Goal | P/P | Gov | Engage | Cost | Case Study                             | Source  |
|-------------------------------|------|------|-----|-----|--------|------|--|---|
| Low income housing tax breaks | 1    | 2    | 1   | 4   | 3      | 2    | Detroit, MI                            | (Dewar & Thomas, 2013, pp. 41–63)                   |
| Redevelopment authority       | 1    | 2    | 1   | 4   | 4      | 4    | Philadelphia, PA                       | (Philadelphia Redevelopment Authority, 2014)        |
| Urban redevelopment           | 1    | 2    | 1   | 4   | 4      | 4    | Pittsburgh, PA                         | (Urban Redevelopment Authority of Pittsburgh, 2011) |
| Abandoned property list       | 1    | 3    | 1   | 4   | 6      | 4    | Camden, NJ                             | (City of Camden, n.d.-a)                            |
| Redevelopment Agency          | 1    | 3    | 1   | 4   | 4      | 4    | Hartford, CT                           | (City of Hartford, 2014)                            |
| Genesee County Land Bank      | 1    | 4    | 1   | 7   | 3      | 1    | Flint, MI                              | (Gillotti & Kildee, 2004, pp. 139–146)              |
| Vacant parcel survey          | 1    | 4    | 1   | 4   | 6      | 4    | Gary, IN                               | (City of Gary, 2014)                                |
| Saginaw County Land Bank      | 1    | 4    | 1   | 4   | 6      | 4    | Saginaw, MI                            | (County of Saginaw, 2014)                           |
| Privatization                 | 2    | 1    | 3   | 4   | 3      | 1    | Avilés, ESP                            | (Sánchez-Moral, Méndez, & Prada-Trigo, 2013)        |
| Reducing regulations          | 2    | 2    | 1   | 4   | 6      | 5    | -                                      | (Hummel, 2014, p. 3)                                |
| Decline-oriented planning     | 2    | 2    | 1   | 2   | 2      | 1    | Dresden, DEU                           | (Pallagst et al., 2009, pp. 8–15)                   |
| Utilize university            | 2    | 2    | 1   | 4   | 2      | 2    | Leipzig, DEU                           | (Großmann et al., 2008, pp. 6–7)                    |
| Integrated regionalism        | 2    | 2    | 1   | 4   | 5      | N/A  | Germany                                | (Müller & Siedentop, n.d.)                          |
| Redesigning city ports        | 2    | 2    | 1   | 4   | 5      | 1    | Hamburg, DEU                           | (Grossman, 2006)                                    |
| Recentralization              | 2    | 2    | 1   | 4   | 5      | 1    | Leipzig, DEU                           | (Schett, 2011)                                      |
| Repurpose industrial          | 2    | 2    | 1   | 2   | 5      | 4    | Germany                                | (Bundesministerium für Umwelt, n.d.)                |
| Urban restructuring           | 2    | 2    | 1   | 2   | 5      | 1    | Germany                                | (Karsten & Matthes, 2010)                           |
| Holistic strategies           | 2    | 2    | 1   | 2   | 2      | 4    | Europe                                 | (Bernt et al., 2012)                                |
| Foreign direct investment     | 2    | 2    | 1   | 3   | 3      | 2    | Glasgow, Paris, Sao Paulo, Guadalajara | (Audirac et al., 2012)                              |



|                                   |   |   |   |   |   |   |                            |  |
|-----------------------------------|---|---|---|---|---|---|----------------------------|--|
| Role of public participation      | 2 | 2 | 1 | 4 | 1 | 3 | Buffalo, NY<br>Detroit, MI | (Campo, 2014)  |
| Redevelop vacant land             | 2 | 2 | 1 | 4 | 2 | 4 | Detroit, MI                | (Draus et al., 2013)                                     |
| Shift to resource centered cities | 2 | 2 | 1 | 4 | 3 | 4 | -                          | (De Flander, 2013)                                       |
| Poland case studies               | 2 | 2 | 1 | 4 | 2 | 4 | Poland                     | (Jaroszewska, 2014)                                      |
| Renewal communities               | 2 | 2 | 1 | 6 | 6 | 4 | Detroit, MI                | (U.S. Department of Housing and Urban Development, n.d.) |
| Adaptive reuse                    | 2 | 2 | 1 | 4 | 6 | 4 | Cleveland, OH              | (Cleveland City Planning Commission, n.d.-b)             |
| Adaptive reuse                    | 2 | 2 | 1 | 4 | 6 | 4 | Cleveland, OH              | (Cleveland City Planning Commission, n.d.-a)             |
| Brownfield revitalization         | 2 | 2 | 1 | 4 | 6 | 4 | Toledo, OH                 | (City of Toledo, 2014)                                   |
| Warehouse district                | 2 | 2 | 1 | 4 | 6 | 4 | Toledo, OH                 | (City of Toledo, 2012)                                   |
| Economic development              | 2 | 2 | 1 | 4 | 6 | 4 | Rockford, IL               | (City of Rockford, 2010)                                 |
| Brownfield redevelopment          | 2 | 2 | 1 | 2 | 4 | 1 | Rockford, IL               | (City of Rockford, 2016)                                 |
| Urban renewal                     | 2 | 2 | 1 | 4 | 4 | 4 | Buffalo, NY                | (City of Buffalo, 2011)                                  |
| Urban renewal                     | 2 | 2 | 1 | 4 | 4 | 2 | Buffalo, NY                | (Office of Strategic Planning, 2006)                     |
| Urban revitalization              | 2 | 2 | 1 | 4 | 4 | 2 | Buffalo, NY                | (City of Buffalo, 2006a)                                 |
| Brownfield clean up               | 2 | 2 | 1 | 4 | 6 | 4 | Buffalo, NY                | (City of Buffalo, 2006b)                                 |
| Rebuild neighbourhoods            | 2 | 2 | 1 | 4 | 2 | 4 | Buffalo, NY                | (City of Buffalo, 2006c)                                 |
| Revitalize Youngstown             | 2 | 2 | 1 | 4 | 1 | 1 | Youngstown, OH             | (City of Youngstown, 2014b)                              |
| Rebuilding communities            | 2 | 2 | 1 | 3 | 1 | 4 | St. Louis, MO              | (City of St. Louis, 2013)                                |
| Neighbourhood development area    | 2 | 2 | 1 | 4 | 4 | 4 | St. Louis, MO              | (City of St. Louis, 2005)                                |
| Opportunity area                  | 2 | 2 | 1 | 4 | 6 | 4 | St. Louis, MO              | (City of St. Louis, 2005)                                |
| Downtown                          | 2 | 2 | 1 | 4 | 6 | 4 | St. Louis, MO              | (City of St. Louis, 1999)                                |

|                                     |   |   |   |   |   |   |                  |   |  |  |  |  |  |  |  |
|-------------------------------------|---|---|---|---|---|---|------------------|---|--|--|--|--|--|--|--|
| development plan                    |   |   |   |   |   |   |                  |   |  |  |  |  |  |  |  |
| Main Streets Program                | 2 | 2 | 1 | 4 | 1 | 3 | Baltimore, MD    | (Baltimore Development Corporation, n.d.-b)   |  |  |  |  |  |  |  |
| Brownfield tax credit               | 2 | 2 | 1 | 4 | 1 | 4 | Baltimore, MD    | (Baltimore Development Corporation, n.d.-a)   |  |  |  |  |  |  |  |
| HUBZone tax credit                  | 2 | 2 | 1 | 4 | 1 | 4 | Baltimore, MD    | (Baltimore Development Corporation, n.d.-c)   |  |  |  |  |  |  |  |
| Urban renewal                       | 2 | 2 | 1 | 4 | 6 | 4 | Baltimore, MD    | (City of Baltimore, 2010)                     |  |  |  |  |  |  |  |
| Vacant lot reclamation              | 2 | 2 | 1 | 4 | 6 | 4 | Baltimore, MD    | (City of Baltimore, 2009)                     |  |  |  |  |  |  |  |
| Property search                     | 2 | 2 | 1 | 7 | 6 | 4 | New Orleans, LA  | (New Orleans Redevelopment Authority, 2014)   |  |  |  |  |  |  |  |
| Downtown revitalization             | 2 | 2 | 1 | 4 | 4 | 4 | New Orleans, LA  | (City of New Orleans, 2012a)                  |  |  |  |  |  |  |  |
| Opportunity sites                   | 2 | 2 | 1 | 4 | 4 | 4 | New Orleans, LA  | (City of New Orleans, 2012b)                  |  |  |  |  |  |  |  |
| Blight redevelopment                | 2 | 2 | 1 | 4 | 6 | 3 | Philadelphia, PA | (Philadelphia City Planning Commission, 2014) |  |  |  |  |  |  |  |
| Land management/redevelopment       | 2 | 2 | 1 | 4 | 6 | 4 | Philadelphia, PA | (City of Philadelphia, 2011)                  |  |  |  |  |  |  |  |
| Economic redevelopment              | 2 | 2 | 1 | 4 | 6 | 4 | Philadelphia, PA | (City of Philadelphia, 2011)                  |  |  |  |  |  |  |  |
| Neighbourhood stabilization         | 2 | 2 | 1 | 4 | 4 | 4 | Gary, IN         | (City of Gary, 2015)                          |  |  |  |  |  |  |  |
| Brownfields program                 | 2 | 2 | 1 | 3 | 6 | 4 | Gary, IN         | (BauerLatoza Studio, 2008)                    |  |  |  |  |  |  |  |
| Tax increment financing             | 2 | 2 | 1 | 4 | 6 | 4 | Gary, IN         | (BauerLatoza Studio, 2008)                    |  |  |  |  |  |  |  |
| Downtown Gary Retail Revitalization | 2 | 2 | 1 | 4 | 6 | 3 | Gary, IN         | (BauerLatoza Studio, 2008)                    |  |  |  |  |  |  |  |
| Community revitalization            | 2 | 2 | 1 | 3 | 6 | 4 | Flint, MI        | (City of Flint, 2013a)                        |  |  |  |  |  |  |  |
| Redevelopment ready communities     | 2 | 2 | 1 | 3 | 6 | 4 | Flint, MI        | (City of Flint, 2013a)                        |  |  |  |  |  |  |  |

|                                   |   |   |   |   |   |   |                                |                             |
|-----------------------------------|---|---|---|---|---|---|--------------------------------|-----------------------------|
| Development incentives            | 2 | 2 | 1 | 4 | 6 | 4 | Flint, MI                      | (City of Flint, 2013a)      |
| Capital improvement plan          | 2 | 2 | 1 | 4 | 6 | 4 | Flint, MI                      | (City of Flint, 2013c)      |
| Downtown development              | 2 | 2 | 1 | 4 | 6 | 3 | Saginaw, MI                    | (City of Saginaw, 2014b)    |
| Neighbourhood stabilization       | 2 | 2 | 1 | 4 | 4 | 4 | Saginaw, MI                    | (City of Saginaw, 2014a)    |
| Financial incentives              | 2 | 2 | 1 | 4 | 6 | 4 | Dayton, OH                     | (City of Dayton, n.d.)      |
| Reinvestment area tax abatement   | 2 | 2 | 1 | 4 | 5 | 1 | Cincinnati, OH                 | (City of Cincinnati, 2014b) |
| Brownfield development grants     | 2 | 2 | 1 | 4 | 6 | 4 | Cincinnati, OH                 | (City of Cincinnati, 2014a) |
| Redevelopment plans               | 2 | 2 | 1 | 4 | 4 | 2 | Camden, NJ                     | (City of Camden, n.d.-c)    |
| Business growth and development   | 2 | 2 | 1 | 4 | 6 | 3 | Camden, NJ                     | (City of Camden, 2010)      |
| Redevelopment plans               | 2 | 2 | 1 | 4 | 4 | 4 | Hartford, CT                   | (City of Hartford, 2014)    |
| Brownfield grants                 | 2 | 2 | 1 | 6 | 4 | 4 | Minneapolis, MN                | (City of Minneapolis, 2016) |
| Capital investment                | 2 | 2 | 1 | 4 | 6 | 1 | Providence, RI                 | (Pallagst, 2013, p. 40)     |
| Revitalization                    | 2 | 2 | 1 | 4 | 6 | 1 | Detroit, MI                    | (Pallagst, 2013, p. 47)     |
| Urban greenways                   | 2 | 2 | 1 | 4 | 4 | 4 | Detroit, MI                    | (Pallagst, 2013, pp. 53-54) |
| Tax benefits                      | 2 | 2 | 1 | 4 | 6 | 2 | Porto, PRT                     | (Pallagst, 2013, p. 75)     |
| Redevelopment                     | 2 | 2 | 1 | 4 | 6 | 4 | Porto, PRT                     | (Pallagst, 2013, p. 76)     |
| Porto Vivo                        | 2 | 2 | 1 | 4 | 6 | 4 | Porto, PRT                     | (Pallagst, 2013, p. 73)     |
| Low road strategy                 | 2 | 2 | 2 | 2 | 2 | 2 | Ostrava, Bytom and Timisoara   | (Rink et al., 2014)         |
| Holistic strategy                 | 2 | 2 | 2 | 1 | 2 | 1 | Leipzig, DEU                   | (Rink et al., 2014)         |
| International building exhibition | 2 | 2 | 2 | 8 | 3 | 4 | Saxony-Anhalt, Hamburg, Berlin | (Shay, 2012)                |
| Long-term planning                | 2 | 2 | 2 | 8 | 3 | 4 | Dessau, DEU                    | (Langner, 2014)             |
| Flagship developments             | 2 | 2 | 2 | 4 | 3 | 1 | Manchester, UK                 | (Ortiz-Moya, 2014)          |

|                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Downtown development            | 2 | 2 | 2 | 4 | 6 | 4 | 4 | 2 | 2 | 2 | 2 | 4 | Flint, MI                               | (City of Flint, 2013a)                                 |
| Shared economic vision          | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | Nova Scotia                             | (Ivany, D'Entremont, Christmas, Fuller, & Bragg, 2014) |
| Action plan                     | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | Chatham-Kent, ON                        | (Chatham-Kent Workforce Planning Board, 2013)          |
| Community strategic planning    | 2 | 2 | 2 | 3 | 5 | 2 | 5 | 2 | 2 | 2 | 2 | 2 | Chatham-Kent, ON                        | (Municipality of Chatham-Kent, 2001)                   |
| Infrastructure investment       | 2 | 2 | 2 | 3 | 3 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | Northern Ontario                        | (Province of Ontario, 2011)                            |
| Economic development            | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | Atlantic Canada                         | (Atlantic Canada Opportunities Agency, 2012)           |
| Attracting investment           | 2 | 2 | 2 | 3 | 9 | 6 | 9 | 6 | 3 | 3 | 3 | 3 | -                                       | (Martinez-Fernandez, Audirac, et al., 2012)            |
| Foreign direct investment       | 2 | 2 | 2 | 3 | 9 | 6 | 9 | 6 | 5 | 5 | 5 | 5 | -                                       | (Annegret Haase, Großmann, & Rink, 2013)               |
| P3 regeneration                 | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | Germany/UK                              | (Friecke, 2007)  |
| Beautiful cities                | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | East Germany                            | (Gribat, 2010)   |
| Creative class                  | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | Australia                               | (Argent, Tonts, Jones, & Holmes, 2013)                 |
| Beautiful                       | 2 | 2 | 2 | 3 | 4 | 3 | 4 | 3 | 1 | 1 | 1 | 1 | Leipzig, DEU                            | (Bontje, 2004)   |
| Branding                        | 2 | 2 | 2 | 3 | 4 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | Belfast, UK                             | (Northover, 2010)                                      |
| Smart growth core               | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | Pittsburg, Youngstown, San Jose         | (Pallagst, 2005)                                       |
| Smart growth                    | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | Portugal                                | (Panagopoulos & Barreira, 2012)                        |
| Tax exemption                   | 2 | 2 | 2 | 3 | 4 | 3 | 4 | 3 | 1 | 1 | 1 | 1 | Detroit, MI                             | (Sands & Skidmore, 2013)                               |
| Restructuring the city          | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | Schwedt, Dresden, Youngstown, Pittsburg | (Wiechmann & Pallagst, 2012)                           |
| Development Partnership         | 2 | 2 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 4 | 4 | 4 | Rockford, IL                            | (Rock River Development Partnership, 2014)             |
| Reinvestment area tax abatement | 2 | 2 | 2 | 3 | 4 | 1 | 4 | 1 | 4 | 4 | 4 | 4 | Youngstown, OH                          | (City of Youngstown, 2014a)                            |

|                             |   |   |   |   |   |   |   |                         |   |
|-----------------------------|---|---|---|---|---|---|---|-------------------------|---|
| Youngstown initiative       | 2 | 2 | 3 | 4 | 4 | 1 | 4 | Youngstown, OH          | (City of Youngstown, 2014a)                               |
| Micro-loans                 | 2 | 2 | 3 | 4 | 4 | 1 | 4 | St. Louis, MO           | (City of St. Louis, 2014)                                 |
| PPP                         | 2 | 2 | 3 | 4 | 4 | 6 | 4 | New Orleans, LA         | (City of New Orleans, 2012a)                              |
| Camden redevelopment        | 2 | 2 | 3 | 4 | 4 | 6 | 4 | Camden, NJ              | (City of Camden, n.d.-b)                                  |
| Housing revitalization      | 2 | 2 | 4 | 9 | 9 | 6 | 1 | -                       | (Martinez-Fernandez, Audirac, et al., 2012)               |
| ExWoSt Research Initiative  | 2 | 2 | 4 | 4 | 4 | 4 | 4 | Pirmasens, DEU          | (Pallagst, 2013, p. 90)                                   |
| Uncertain growth            | 2 | 3 | 1 | 4 | 4 | 2 | 1 |                         | (Lloyd, Ireland, Peel, & Nijmegen, 2012)                  |
| Community-oriented planning | 2 | 3 | 1 | 4 | 4 | 2 | 2 | Youngstown, OH          | (Shetty & Reid, 2013)                                     |
| Compact city                | 2 | 3 | 1 | 2 | 2 | 2 | 1 | Dresden, DEU            | (Wiechmann, 2008)   |
| Coping                      | 2 | 3 | 1 | 6 | 6 | 6 | 4 | US, Europe              | (Martinez-Fernandez, Audirac, et al., 2012)ma             |
| Housing & urban empowerment | 2 | 3 | 1 | 4 | 4 | 6 | 3 | Pittsburgh, PA          | (City of Pittsburgh, n.d.-b)                              |
| DEED redevelopment grant    | 2 | 3 | 1 | 3 | 3 | 4 | 4 | Minneapolis, MN         | (City of Minneapolis, 2015)                               |
| Impulse redevelopment       | 2 | 3 | 1 | 4 | 4 | 6 | 4 | Pirmasens, DEU          | (Pallagst, 2013)  |
| Planning for aging          | 2 | 3 | 3 | 4 | 4 | 1 | 3 | Canada                  | (Federation of Canadian Municipalities, 2013)             |
| Rightsizing                 | 2 | 3 | 3 | 4 | 4 | 1 | 1 | Detroit, MI             | (Markowicz, 2013)   |
| Transportation investment   | 2 | 4 | 1 | 2 | 2 | 1 | 2 | Brieselang, Brandenburg | (Annegret Haase, Hospers, Pekelsma, Rink, & Grisel, 2012) |
| Vacant home rehab program   | 2 | 4 | 1 | 4 | 4 | 6 | 4 | Gary, IN                | (City of Gary, 2014)                                      |
| Repurposing committee       | 2 | 4 | 1 | 4 | 4 | 6 | 4 | Flint, MI               | (City of Flint, 2013b)                                    |
| Intensification             | 2 | 4 | 1 | 4 | 4 | 6 | 3 | Flint, MI               | (City of Flint, 2013b)                                    |
| Repurposing public          | 2 | 4 | 1 | 4 | 4 | 6 | 4 | Flint, MI               | (City of Flint, 2013b)                                    |



|                               |   |   |   |   |   |   |                              |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|-------------------------------|---|---|---|---|---|---|------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| property                      |   |   |   |   |   |   |                              |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Brownfield redevelopment      | 2 | 4 | 1 | 4 | 6 | 4 | Saginaw, MI                  |  |  |  |  |  |  |  |  |  |  |  |  |  | (City of Saginaw, 2014a)                        |
| Saginaw economic development  | 2 | 4 | 1 | 4 | 4 | 4 | Saginaw, MI                  |  |  |  |  |  |  |  |  |  |  |  |  |  | (City of Saginaw, n.d.)                         |
| Saginaw brownfield            | 2 | 4 | 1 | 4 | 4 | 4 | Saginaw, MI                  |  |  |  |  |  |  |  |  |  |  |  |  |  | (City of Saginaw, 2011)                         |
| OP goals                      | 2 | 4 | 1 | 4 | 4 | 3 | Dayton, OH                   |  |  |  |  |  |  |  |  |  |  |  |  |  | (City of Dayton, 1999)                          |
| Brownfield program            | 2 | 4 | 1 | 4 | 4 | 4 | Youngstown, OH               |  |  |  |  |  |  |  |  |  |  |  |  |  | (Pallagst, 2013, p. 15)                         |
| Vacant property temporary use | 2 | 4 | 1 | 4 | 6 | 3 | Providence, RI               |  |  |  |  |  |  |  |  |  |  |  |  |  | (Pallagst, 2013, p. 36)                         |
| Community reinvestment        | 2 | 4 | 3 | 4 | 1 | 4 | Pittsburgh, PA               |  |  |  |  |  |  |  |  |  |  |  |  |  | (Pittsburgh Community Reinvestment Group, 2013) |
| Demolish and enhance housing  | 3 | 2 | 1 | 2 | 2 | 2 | East Germany                 |  |  |  |  |  |  |  |  |  |  |  |  |  | (Götz, Paskaleva-Shapira, & Cooper, 2013)       |
| National-level demolition     | 3 | 2 | 3 | 1 | 4 | 1 | US, Europe                   |  |  |  |  |  |  |  |  |  |  |  |  |  | (Shetty & Reid, 2014, pp. 466-470)              |
| Stadumbau                     | 3 | 3 | 1 | 2 | 2 | 1 | Hoyerswerda, DEU             |  |  |  |  |  |  |  |  |  |  |  |  |  | (Gribat, 2010, p. 142)                          |
| Stadumbau <i>ost</i>          | 3 | 3 | 1 | 2 | 2 | 1 | Germany                      |  |  |  |  |  |  |  |  |  |  |  |  |  | (Mulder, 2009)                                  |
| Housing pathfinders           | 3 | 3 | 1 | 4 | 6 | 1 | UK                           |  |  |  |  |  |  |  |  |  |  |  |  |  | (Mulder, 2009)                                  |
| Philadelphia case study       | 3 | 3 | 1 | 2 | 3 | 1 | Philadelphia, PA             |  |  |  |  |  |  |  |  |  |  |  |  |  | (Heo, 2014)                                     |
| Camden case study             | 3 | 3 | 1 | 2 | 3 | 1 | Camden, NJ                   |  |  |  |  |  |  |  |  |  |  |  |  |  | (Heo, 2014)                                     |
| Down-sizing                   | 3 | 3 | 1 | 4 | 5 | 1 | East Germany                 |  |  |  |  |  |  |  |  |  |  |  |  |  | (Wiechmann, Volkmann, & Schmitz, 2014)          |
| Demolition Strategy           | 3 | 3 | 1 | 4 | 6 | 1 | Camden                       |  |  |  |  |  |  |  |  |  |  |  |  |  | (City of Camden, 2014)                          |
| Creative city                 | 3 | 3 | 3 | 3 | 3 | 1 | Chemnitz, DEU                |  |  |  |  |  |  |  |  |  |  |  |  |  | (Pusch, 2013)                                   |
| Green revitalization          | 4 | 2 | 1 | 4 | 6 | 1 | -                            |  |  |  |  |  |  |  |  |  |  |  |  |  | (Martinez-Fernandez, Audirac, et al., 2012)     |
| Rightsizing                   | 4 | 2 | 1 | 4 | 3 | 4 | Youngstown, Buffalo, Detroit |  |  |  |  |  |  |  |  |  |  |  |  |  | (Bertron, 2013)                                 |
| Land consolidation            | 4 | 2 | 1 | 4 | 3 | 1 | New Orleans, LA              |  |  |  |  |  |  |  |  |  |  |  |  |  | (Dewar & Thomas, 2013, pp. 133-150)             |
| Designing rightsize           | 4 | 2 | 3 | 4 | 3 | 1 | -                            |  |  |  |  |  |  |  |  |  |  |  |  |  | (Dewar & Thomas, 2013, pp. 268-288)             |
| Right-sizing                  | 4 | 3 | 1 | 4 | 6 | 4 | -                            |  |  |  |  |  |  |  |  |  |  |  |  |  | (Hummel, 2014)                                  |

|                                    |   |   |   |   |   |   |                           |                                       |
|------------------------------------|---|---|---|---|---|---|---------------------------|---------------------------------------|
| Downsizing                         | 4 | 3 | 1 | 2 | 6 | 1 | Leipzig, DEU              | (Bontje, 2004)                        |
| Historic preservation              | 4 | 3 | 1 | 2 | 6 | 2 | Leipzig, DEU              | (Florentin, 2010)                     |
| Downsizing                         | 4 | 3 | 1 | 3 | 2 | 1 | East Germany              | (Pallagst et al., 2013, p. 142)       |
| Shrinkage adaptation               | 4 | 3 | 1 | 4 | 3 | 4 | Leipzig, Liverpool, Genoa | (Bernt et al., 2014)                  |
| Youngstown Plan                    | 4 | 3 | 1 | 4 | 3 | 1 | Youngstown, OH            | (Dewar & Thomas, 2013, pp. 87-103)    |
| Decline-oriented planning          | 4 | 3 | 1 | 4 | 2 | 4 | Youngstown, Flint         | (Dewar & Thomas, 2013, pp. 289-316)   |
| Accepting decline                  | 4 | 3 | 3 | 4 | 2 | 4 | -                         | (Dewar & Thomas, 2013, pp. 227-243)   |
| Infrastructure and facilities plan | 4 | 4 | 1 | 4 | 6 | 3 | Flint, MI                 | (City of Flint, 2013b)                |
| Reposition assets                  | 4 | 4 | 1 | 4 | 6 | 4 | Flint, MI                 | (City of Flint, 2013a)                |
| Ecosystem services                 | 5 | 1 | 1 | 4 | 5 | 3 | Leipzig, DEU              | (Bauer, Röhl, Haase, & Schwarz, 2012) |
| Citizenship land model             | 5 | 1 | 1 | 4 | 1 | 3 | Detroit, MI               | (Dewar & Thomas, 2013, pp. 17-40)     |
| Green art                          | 5 | 2 | 1 | 4 | 1 | 3 | St. Louis, MO             | (Ganning, n.d.)                       |
| Temporary solutions                | 5 | 2 | 1 | 4 | 2 | 4 | -                         | (Nassauer & Raskin, 2014)             |
| Blue and green infrastructure      | 5 | 2 | 1 | 4 | 2 | 4 | Detroit, MI               | (Safransky, 2014)                     |
| Green community-driven planning    | 5 | 2 | 1 | 4 | 2 | 4 | Buffalo, NY               | (Schilling, 2009)                     |
| Right-Sizing                       | 5 | 2 | 1 | 4 | 6 | 4 | Porto, PRT                | (Pallagst, 2013, p. 75)               |
| Green space development            | 5 | 3 | 1 | 6 | 2 | 2 | Germany, DEU              | (Rößler, 2008)                        |
| Green heritage                     | 5 | 3 | 1 | 4 | 2 | 2 | Leipzig, DEU              | (Florentin, 2010)                     |
| More green less density            | 5 | 4 | 1 | 9 | 3 | 2 | Leipzig, DEU              | (D. Haase, Haase, & Rink, 2014)       |
| Spatial planning                   | 5 | 4 | 1 | 4 | 2 | 2 | Leipzig, DEU              | (ICLEI Europe, 2008)                  |
| Green retirement cities            | 5 | 4 | 1 | 4 | 6 | 2 | Walcheren, NLD            | (Nefs et al., 2013)                   |
| Sustainability planning            | 5 | 4 | 1 | 4 | 2 | 2 | -                         | (Dewar & Thomas, 2013, pp. 244-267)   |
| Green mentality                    | 5 | 4 | 1 | 4 | 6 | 3 | Detroit, MI               | (Pallagst, 2013, pp. 45-64)           |
| Right-Sizing                       | 5 | 4 | 1 | 4 | 6 | 4 | Detroit, MI               | (Pallagst, 2013, pp. 45-64)           |

|                                |   |   |   |   |   |   |   |                    |  |
|--------------------------------|---|---|---|---|---|---|---|--------------------|--|
| Urban Agriculture              | 5 | 4 | 1 | 4 | 4 | 6 | 3 | Detroit, MI        | (Pallagst, 2013, pp. 45–64)                              |
| Small, green, clean            | 5 | 4 | 3 | 4 | 2 | 1 | 1 | Youngstown, OH     | (Shetty & Reid, 2013)                                    |
| Plan amendments                | 6 | 1 | 1 | 4 | 3 | 4 | 4 | East Germany       | (Hendricks, 2013)  |
| Negotiation                    | 6 | 1 | 1 | 6 | 1 | 3 | 3 | -                  | (Beeck, 2012)  |
| Demolition waste disposal      | 6 | 2 | 1 | 4 | 5 | 4 | 4 | -                  | (Hiete, Stengel, Ludwig, & Schultmann, 2011)             |
| Government reform              | 6 | 2 | 1 | 4 | 3 | 4 | 4 | Liverpool, Leipzig | (Rink et al., 2012)                                      |
| Art                            | 6 | 2 | 1 | 4 | 1 | 3 | 3 | Detroit, MI        | (Dewar & Thomas, 2013, pp. 64–84)                        |
| Regeneration                   | 6 | 2 | 3 | 4 | 2 | 4 | 4 | Tscharnergut, CHE  | (Schenkel, 2013)   |
| Smart decline                  | 6 | 3 | 1 | 2 | 2 | 2 | 2 | -                  | (Hollander & Németh, 2011)                               |
| Smart-decline                  | 6 | 3 | 1 | 2 | 3 | 1 | 1 | Flint, MI          | (Hollander, 2010b)                                       |
| Inclusive public participation | 6 | 3 | 1 | 4 | 2 | 3 | 3 | Leipzig, DEU       | (Garcia-Zamor, 2014)                                     |
| Anticipate shrinkage           | 6 | 3 | 3 | 4 | 6 | 4 | 4 | -                  | (Rink et al., 2011)                                      |
| Diversify industries           | 6 | 3 | 3 | 4 | 3 | 4 | 4 | Bathurst, NB       | (Schatz, Leadbeater, Martinez-Fernandez, & Weyman, 2013) |
| Integrated realistic plan      | 6 | 5 | 1 | 2 | 2 | 3 | 3 | Europe             | (Schlappa, 2015)   |
| Youngstown 2010                | 7 | 3 | 1 | 4 | 1 | 1 | 1 | Youngstown, OH     | (City of Youngstown, 2010)                               |
| Neighborhood Reinvestment      | 7 | 3 | 1 | 4 | 6 | 3 | 3 | Pittsburgh, PA     | (City of Pittsburgh, n.d.-a)                             |
| Planning culture change        | 7 | 3 | 1 | 4 | 4 | 4 | 4 | Youngstown, OH     | (Pallagst, 2013, pp. 18–23)                              |



## APPENDIX I: INTERVIEW GUIDE

The research instrument (interview guide) detailed below was followed in full in all 6 of the interviews. However as described in Section 1.6.2 (Research Design), due the manuscript-based style of the dissertation, only targeted results from the key informant interviews (namely the General and Rightsizing portions of the interview) were included in the presentation of results in Chapter 4. Full transcripts of the interviews are available upon request.

Information about these interview questions: Interviews will be one-to-one and open-ended. Because of this, the exact wording may change slightly. Sometimes other short questions may be used to ensure understanding of the interviewee's response or if more detail is required. For examples, supplementary questions to ensure understanding ("*So, you are saying that...?*"), to get more information ("*Could you expand on that?*"), or to gain additional insight ("*Why do you think that is...?*").

### General

- 1) What would you consider the most significant planning challenges facing the **(insert name of municipality)**?
- 2) What contributing factors led to these challenges?
- 3) Do these factors also provide any opportunities?
- 4) Do you think that "achieving fiscal health and increasing the quality of life of current residents" is an appropriate overarching planning and economic development goal for **(insert name of municipality)**?

### Rightsizing

- 1) Do you think there exists a need to condense the current service boundary?
- 2) Using the map provided, draw an estimation of the current service (water, sewage and public street/road) boundary of **(insert name of municipality)** and where you think a reasonable new service boundary might lie.
- 3) Would rightsizing the service boundary address current municipal challenges? How so?
- 4) How appropriate and feasible is rightsizing as a municipal strategy?
- 5) How is rightsizing addressed in current policies or strategies?
- 6) How could rightsizing as a strategy be implemented and what are the opportunities and constraints?
- 7) What do you anticipate would be the response to a rightsizing strategy from stakeholder groups?
- 8) Are there any other barriers or implementation risks?

## Green Infrastructure

- 1) Do you think there exists a need to add more green space to the city?
- 2) Using the map provided, highlight areas that could contribute to a network of green space throughout the city.
- 3) Would a network of green space address current municipal challenges? How so?
- 4) How appropriate and feasible is green infrastructure as a municipal strategy?
- 5) How is green infrastructure addressed in current policies or strategies?
- 6) How could green infrastructure as a strategy be implemented and what are the opportunities and constraints?
- 7) What do you anticipate would be the response to a green infrastructure strategy from stakeholder groups?
- 8) Are there any other barriers or implementation risks?

## Follow-Up

- 1) Does a rightsizing service strategy match current political priorities? Is there political opposition in the current climate?
- 2) If a rightsizing service strategy was adopted, how do you think the public would respond?
- 3) Does a rightsizing service strategy conflict with the interests of any important stakeholders or interest groups?
- 4) Does the municipality have the financial and human resources to implement a rightsizing service strategy?
- 5) Regardless of your opinion of whether or not it could be successful, do you think that a rightsizing service strategy could, in theory, help the municipality achieve fiscal health?
- 6) Considering the political climate, probable social acceptability and the impact on other stakeholders, do you think that it is feasible that the current municipal government could adopt a rightsizing service strategy?
- 7) In your opinion, should the municipal government adopt a rightsizing service strategy?