THE SHIFTING GEOGRAPHY OF PRECARIOUS EMPLOYMENT IN CANADA

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ABSTRACT

This thesis marks an attempt to define and pinpoint a critical geography of precarious employment in Canada, which has garnered little attention thus far. In doing so, it provides the first detailed analysis of the geographic and temporal dimensions (across provinces, economic regions and census divisions) of precarious employment in Canada. To study these trends, the thesis draws on data from the Labour Force Survey (LFS) and the Canadian Census of Population. The LFS is used to determine long-term national- and provincial- level trends of precarious employment from 1976 to 2013, while the census is used to provide a clearer snapshot of the geographical dimensions of precarious employment in Canada for the years 1991 to 2011. Using the Moran's *I* test and local indicators of spatial association (LISA), I discover that different forms of precarious employment exhibit distinct spatiotemporal patterns. With special attention placed on youth employment trends, I find that shifts in the spatial clustering of precarious employment indicators for the total labour force tend to mirror shifts experienced by young workers, only they occurred several years later for the total labour force. This pattern suggests that young people are more susceptible to changes in labour market dynamics.

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Chapter 1: INTRODUCTION

Growing instability and insecurity characterize the Canadian labour market. In other words, employment in Canada is becoming more precarious. Reports from government organizations and media sources confirm this trend.

One study suggests that growth in precarious forms of labour is a by-product of globalization and the maintenance of a flexible labour input by governments and corporations (Standing 2011). Thereupon, precarious employment is arguably at the very core of our market system. Grant (2014) cites Lewchuk, Professor of economics and labour studies at McMaster University, who explains that, "'these are not the 1970s jobs anymore. There's no sense of permanence to them. That's the area that's really changing – the lack of commitment by employers to employees in the long term'" (online). The lack of permanence and stability characteristic of our Post-Fordist economy indicates a deviation from the standard employment relationship, which I will discuss in greater detail later on.

Rising precarity in the labour force is largely discussed at the national level. The labour market as a whole is cutting hours and decreasing wages, both of which contribute to the findings of the Canadian Imperial Bank of Commerce: employment quality overall is on a downward trend (Grant et al 2015). According to the Canadian Labour Congress (2014a), between 2008 and 2013, growth rates of part time employment nearly doubled growth rates of full time employment, with the increase in the former accounting for about 40 per cent of total job growth. The rising growth rate of part time employment reflects a shift in the total labour force away from full time, stable work towards an employment form that is arguably more insecure and precarious.

Reports of rising precarity at the national level fail to provide an accurate representation of the distinct geographic dimensions of precarity in Canada. For example, the precarity experienced by the labour force varies by city. In Toronto, nearly half of the population "is working in situations that are part-time, vulnerable or insecure in some way" and this trend does not seem to be slowing down (Mcisaac & Yates 2013). In Montreal, unions are under attack where the municipal government seeks to decrease overall costs of operations by taking away job benefits, increasing working hours, and contracting some work out (Bruemmer 2015).

Throughout these distinct geographic areas, precarious employment takes on a variety of forms. For instance, precarity appears in the form of multiple job-holding. Workers seek out multiple jobs in an attempt to work the equivalent hours clocked by those engaged in year round, full time employment, which is the most secure and stable employment relationship (Mcisaac & Yates 2013). As Grant et al (2015) indicate, precarity may also take the form of self-employment.

Increasing precarity is not without consequence. As several studies suggest, growth in precarious employment is positively associated with a decline in health of those experiencing it (Mcisaac & Yates 2013; Grant 2014).

The reports and trends detailed above only provide a snapshot of precarity in Canada. This thesis attempts to present an in-depth analysis of precarious employment in Canada by developing a framework to examine the evolution of the employment form within the Canadian space economy. After defining precarious employment within the Canadian context, this report pushes the inquiry further by addressing the geographic dimensions inherent in this employment relationship. As the literature review reveals, much research thus far focuses on indicators of precarious employment at national and provincial levels. By and large, the existing literature fails to undertake a spatial and temporal analysis of precarious employment. However, numerous scholars assert that precarity is intrinsically spatial and that context and location are important (Cranford et al, 2003; Waite, 2009; MacDonald, 2009). This research seeks to contribute to the literature by illustrating that a critical geography of precarious employment does indeed exist within Canada.

Furthermore, various population subgroups are disproportionately affected by precarious employment. Of particular interest to this study is the population subgroup comprised of young workers. To address rising concerns amongst youth populations about future job prospects, I place special emphasis on youth employment trends.

The questions which this thesis seeks to address are as follows:

i) What is precarious employment and which indicators are relevant to the Canadian context?
ii) What are the general trends of precarious employment at both the national and provincial level?

iii) Does precarious employment have distinct spatiotemporal dimensions?
iv) Are young workers disproportionately affected by precarious employment compared to the total Canadian labour force?

In studying the geography of precarious employment in Canada, this thesis attempts to lay the groundwork for policy-makers to tackle the growing issue of labour market insecurity in the country.

The structure of the remainder of this thesis is as follows. Chapter 2 first interrogates the historical underpinnings of precarious employment. Subsequently, this chapter defines precarity and advances several indicators. Chapter 2 concludes by delving into the relevant literature on the subject and reiterating the lack of scholarly focus on the geography of precarious employment in Canada. Chapter 3 reviews the methodology, concentrating on data sources and the exploratory spatial statistical methods this research employs, specifically the local and global Moran's *I*. Chapter 4 presents general national and provincial level trends, relying on data from the Labour Force Survey. Chapter 5 investigates an aggregate and regional spatiotemporal analysis, using data from the Canadian Census of Population. Lastly, Chapter 6 wraps up the research, recounts key findings and suggests possible avenues for future studies of the topic.

Chapter 2: LITERATURE REVIEW

2.1 The standard employment relationship – A fleeting reality?

Examination of the existing literature on precarious employment reveals that there is no consistent or uniform definition of the concept. To a large extent, such a shortcoming reflects the mosaic of political systems and labour markets across the globe, all of which are differentiated by national or regional economic and social structures. As such, a range of terms and concepts exists that depicts precarity, such as contingent, atypical or non-standard employment (Economic Council of Canada 1990; ILO 2011). The common thread across these concepts is the notion that the last 30 years or so have seen a deviation from the standard employment relationship (SER) which characterized labour relations during most of the golden age period (i.e. era of prosperity after World War II). Before I arrive at an operational definition of precarious employment, I first explore in greater depth the evolution of the SER and its counterpart, the non-standard employment relationship (NSER).

Following the end of World War II, the Fordist regime of accumulation expanded. Under Fordism, governments directly intervened in the economy, expanded the welfare state, and shifted labour policy toward achieving full employment (Stockhammer 2011). Organized labour emerged as the norm, and unions and collective bargaining were standard protections extended to the labour force. As such, "non precarious employment became the standard employment relationship" (ILO 2011, p. 19). In other words, the regime gave birth to the SER. The nature of this employment relationship allowed workers to plan for the future (Bosch 2004), enjoying stable long-term prospects and rising standards of living. Specifically, scholars define the SER as a situation where a worker has one employer, works full year and full time on the employer's premises, expects indefinite employment and enjoys statutory entitlements and benefits (Cordova 1986; Rodgers 1989; Schellenberg and Clark 1996; Vosko et al 2003).

As it emerged, the SER model typically reflected a male breadwinner working in manufacturing (e.g. an automobile assembly plant), on a year round and full time basis. Furthermore, this worker was likely a member of a union. Bosch (2004) argues that "only full-time employment guarantees a family wage and an adequate level of social protection, while a stable job places the relations between employer and employee on a long-term footing" (p. 618). Divergence from the

SER, where workers no longer benefited from secure job prospects, introduced the notion of precarity. Large-scale structural changes in the economy strongly affected this relationship. It is important to note these structural changes to understand the historical foundations of precarious work.

This secure, stable full-time employment relationship in Canada, alongside many other advanced industrialized countries, underwent extensive restructuring from the 1970s onwards. As Fordism gradually gave way to post-Fordism and a neoliberal mode of regulation, governments tended to embrace globalization and intervene less in the economy, resulting in the opening up of financial sectors and labour markets. Under globalization, capital became highly mobile, undermining the institutional and distributional structure that characterized the post war period, and "employers used precarious work to lower costs and employment standards" (ILO 2011, p. 19-20). As a by-product of Neoliberalism, organized labour and unions came under attack as did government-sponsored labour protections, all of which threatened the success of the new mode of regulation (Lee 2005; Stockhammer 2011). In Canada today, manufacturing employment (i.e., representing a typical SER) rates are at their lowest since World War II, while employment in the service sector continues to increase (Stanford & Canadian Centre for Policy Alternatives (CCPA) 2008). Furthermore, the labour force composition has changed. For example, according to Vosko (2002), female participation in the Canadian labour force has increased significantly since the 1970s. These drastic transformations threaten to make the SER obsolete. The result is an increase in non-standard, precarious employment (Rodgers 1989; Krahn 1991).

2.2 Defining precarious employment

The concept of a non-standard employment relationship (NSER) gained wide acceptance with Canadian scholars when the Economic Council of Canada published a (1990) study, announcing that nearly 50 per cent of all new jobs created between 1981 and1986 deviated from the "traditional model of a full-time, full-year job" (p. 11,12). Krahn (1991) applies this term to his own research and introduced the notion of job insecurity when he describes the employment relationship as providing "less job security, lower pay, and fewer fringe benefits" (p. 1). He identifies four indicators of the NSER in the Canadian context that deviate from the SER, which

scholars still widely accepted today, including: part time employment, multiple job holdings, own-account self-employment and temporary or contract work (Krahn, 1995). Krahn (1991) also identifies part-year employment as an additional indicator of precarity.

However, from a practical perspective, the relationship precarious employment shares with the NSER is not as straightforward as it might seem. As Noack and Vosko (2011) assert, "some non-standard employment is relatively secure and some full-time permanent employment is precarious" (4). The NSER model is problematic as it simply defines precarity based on the amount non-standard employment deviates from the SER. The model is rigid and restricts the study of precarity to the analysis of employment status and form. The NSER model does not take into account direct indicators of precarious employment and, in doing so, creates a dichotomy of standard versus non-standard, which fails to capture the essence of precarity (Cranford et al 2003).

Accordingly, Cranford et al (2003) insist that "a more complete portrait of insecurity in the Canadian labour market must… consider the relationship between employment forms and dimensions of precarious employment" (p. 10). Thus, to understand the true nature of precarity requires an understanding of the NSER as well as the factors which determine whether a job is precarious, the latter of which is discussed below.

In a highly influential book, Rodgers (1989) identifies four dimensions fundamental in establishing whether a job is considered precarious. The first is the degree of certainty of continuing employment, which includes both the expected duration of the labour contract and the risk of job loss. Second is the extent of control over the labour process. Here, Rodgers emphasizes access to trade unions and collective agreements which determine working conditions and wages of workers. Third is the amount of regulatory protection through laws or trade unions that act as safeguards against prejudicial practices and harmful working environments. Fourth is the level of income affiliated with employment. While certain workers have employment in stable and long-term jobs, their wages may be inadequate to support and maintain themselves and any dependants they may have. These workers are considered to be in a financially insecure or precarious situation.

Vosko's (2006) attempt to define precarious employment most successfully captures the aforementioned attributes of labour market insecurity in Canada. She argues that:

> Precarious employment encompasses forms of work involving limited social benefits and statutory entitlements, job insecurity, low wages, and high risks of ill-health. It is shaped by employment status (i.e., self-employment or wage work), form of employment (i.e., temporary or permanent, part-time or full-time), and dimensions of labour market insecurity as well as social context (such as occupation, industry, and geography), and social location (the interaction between social relations, such as gender and "race," and political and economic conditions) (p. 3-4).

In this thesis, the analysis of precarity focuses on employment status as well as form of employment, while considering Rodgers' four dimensions of precarity. More importantly, this thesis attempts to address the geographic dimensions of precarious employment, which Vosko believes is integral in understanding labour market insecurity (as detailed above). It should be noted that selecting precarious forms of employment is restricted by the accessibility of statistical indicators that incorporate Rodgers' four dimensions. Specifically, for the spatial analysis carried out in this paper, identifying viable indicators is further constrained by their availability across census years, as the Canadian Census of Population has changed its format and questionnaire over time.

While keeping these constraints in mind, I propose a definition of precarious employment that best exemplifies the Canadian situation. At the regional level, which is the main focus of this paper, I explore three main precarious employment relationships: **self-employment**, **part time employment** and **part year employment**. The dimensions of labour market insecurity related to these indicators include low-income, limited access to regulatory protections and a lack of control over the labour process. Let us examine each of these precarious employment relationships in more depth.

Self-employment

Legally, the government regards the **self-employed as** individual entrepreneurs (i.e., someone who manages and organizes a business and consequentially takes on a higher than average financial risk) subject to the commercial law, and thus should not receive labour protection

(Fudge et al 2002; Vosko 2011). Fudge et al (2002) contend that "the legal status of being… [a dependant] employee is the gateway to most employment-related protection at common law and under legislation, the statutory regimes of collective bargaining, and a range of social benefits from employment insurance to pensions" (p. 8). As such, by labelling the self-employed as entrepreneurs and not dependant employees, the law effectively ascribes precarity to this employment status. The majority of self-employed are legally ineligible for normal Employment Insurance (EI) benefits (Vosko 2011). In fact, Battle et al (2006) assert that EI often prevents many workers in non-standard employment (e.g. self-employment and part time employment) from realizing any benefits.

Determining whether the self-employed experience income precarity requires breaking down the employment status into its constituent parts. For instance, a government-sponsored report suggests that the self-employed are more financially well-off than paid employees as a whole (e.g. median household income of the self-employed was 81% that of paid employees in 2009), although further analysis reveals variations within self-employed sub-groups: self-employed owners of incorporated businesses had higher household incomes than paid employees while those of the unincorporated were lower than paid employees (LaRochelle-Côté & Uppal 2011; see Table 3.1 of Appendix A for definitions of self-employed sub-groups). In this way, income precarity differentially affects sub-groups that comprise the self-employed. Further breaking down self-employed sub-groups, Vosko (2011) declares that, despite the idea of high-earning entrepreneurs, many of the self-employed without employees report relatively low earnings, even though most of them work full time. Finally, in the case of the self-employed without employees, who seem to have great autonomy in their employment, they lack true control over the labour process (Vosko 2011). Limitations in data availability for spatial analysis require this study to adopt a definition of self-employment that encompasses all of the sub-groups detailed above. Although this definition masks the varying degrees of labour market insecurity experienced by particular groups within the self-employed, I advance this status of employment as an indicator of precarity because the category as a whole encounters a disproportionate amount of labour market insecurity in comparison to the SER.

Part time and part year employment

The incorporation of **part time work** in this study is debatable. Part time work can be voluntary or involuntary. Parents may prefer to work part time to better balance their work and home lives. Many students prefer to work part time to balance their work and school schedules. Part time employment allows people to balance paid work with other activities (Schellenberg and Clark 1996). Regardless of preference, in relation to full time work, Noack and Vosko (2011) "take part-time to typically be more precarious… [because those employed] part-time often have less job security (e.g. due to seniority rules), fewer social benefits and statutory entitlements (as they may fail to meet minimum hours thresholds) and less influence in their work environment" (p. 4). For example, part time workers have limited access to EI benefits, which tend to be inherently restrictive overall as aforementioned. In her study, Vosko (2011) reveals that it takes over twice as many weeks for a woman working part time to qualify for EI benefits as it does a woman working full time.

For the purposes of this paper, in terms of precarity, **part year work** is synonymous with temporary employment. Cranford et al (2003) assert that the majority of part year workers, including seasonal workers, are accounted for in the total number of temporary workers,[i] thus part year workers may be assumed to share the same level of precarity. Standing (2011) explains that the majority of temporary workers are precariously employed since "they have tenuous relations of production, low incomes compared with others doing similar work and low opportunity in occupational terms" (p. 14-15). As such, temporary workers experience precarity owing to a lack of control over the labour process and to low-income earnings. In their 1996 report, Schellenberg and Clark (1996) found that temporary workers were nearly twice as likely to be hired on a part time basis compared to their counterparts employed in SERs, and often had reduced hours and lower hourly wages. In addition to low-incomes, temporary employees are also much less unionized and lack access to benefits (e.g. persons employed less than three months do not qualify to receive paid time-off for bereavement leave and employers do not need to give notice of termination). Accordingly, besides precarious wages and a lack of control over the labour process, temporary employees (i.e., part year employees) also experience labour insecurity through a lack of regulatory protections.

Due to the limited availability of statistics, part time and part year work are studied as one precarious employment relationship. The Canadian Census of Population (1991-2006) combines the categories 'part time employment' with 'part year employment' and creates the category '**part time or part year employment**.' Cranford et al (2003) suggest a continuum of precarious wage work in which they regard full time permanent employees as belonging to the least precarious employment situation, followed by full time temporary, part time permanent and finally part time temporary employees as belonging to the most precarious employment situation. With this continuum in mind, the category part time or part year acts as a satisfactory indicator of precarious employment, considering it contains the three most precarious relationships of the continuum.

Manufacturing employment

In addition to the self-employed and those employed part year or part time, this study also incorporates **manufacturing employment** into the typology of indicators of precarity at the regional level. Stanford and CCPA (2008) claim that Canada is realizing massive profits from its resource industry, fueled by tremendous commodity prices worldwide. These profits, alongside policy decisions made under the Harper administration, contributed to the restructuring of the Canadian economy, resulting in decreased attention paid to manufacturing growth. As a result, manufacturing employment has been in recession for nearly a decade. However, this decline is part of a longer structural and world-wide trend. The Canadian Chamber of Commerce (2012) released a policy brief that suggests declines in manufacturing employment and output have been occurring for about thirty years across all industrialized nations. The downward spiral of the manufacturing sector contributes to the overall increase in employment precarity in Canada, as it poses a threat to job security. Furthermore, historically, manufacturing was heavily unionized in Canada. As employment in the manufacturing sector decreases, so does union membership in the total labour force. As a result, a larger portion of the labour force faces labour market insecurity.

At the regional level, other indicators that may serve as proxies to precarity include the **unemployment rate**, the **percentage of the labour force employed** (overall), as well as the **percentage of the labour force employed year round and full time**. These indicators help inform the argument of rising regional labour market insecurity.

Unemployment

Several researchers study the spatial interdependence of **unemployment** in European regions, but they do not explicitly link their work to precarity (Patacchini & Zenou 2007; Cracolici et al 2008). Cracolici et al (2008) contend that, "geographic unemployment rates are often regarded as signposts for the socio-economic performance of regions" (275). In other words, unemployment rates of particular regions may be seen as status indicators of the health of both the local economy and society. As such, it is expected that precarious employment is more acute in regions with a high clustering of unemployment rates.

Labour market statistics mask certain population sub-groups experiencing precarity. For example, unemployment statistics do not include 'discouraged workers.' Statistics Canada defines discouraged workers "as those persons who reported wanting to work at a job or business during reference week and were available but who did not look for work because they believed no suitable work was available" (see 'discouraged searcher' in *Guide to the Labour Force Survey* 2012, p. 11). Akyeampong (1992) found that these discouraged workers tended to be concentrated in areas of high unemployment. Ergo, a connection exists between unemployment rates and unrealized labour market participants who feel that work is too precarious to pursue. Conceivably, determining regions of high unemployment may shed light on the scope of this ignored group experiencing precarity. Indeed, mapping out the unemployment rate may help determine the true state of labour market insecurity overall in Canada

The **percentage of the labour force employed** simply represents the flipside of the unemployment rate and also acts as an indicator of the socio-economic health of a region. Analyzing both unemployment and employment together increases the validity of the spatial analysis.

Full year, full time employment

Full time and full year employment represents the best measure of the SER. These labour force participants face the least precarity in their work (Cranford et al 2003). Mapping out this indicator provides a snapshot of where this employment relationship still persists, and whether or

not it is becoming less clustered over time. Greater clustering suggests greater stability in local economies. Conversely, less clustering illustrates rising precarity across regions.

Multiple job holdings

This thesis applies the majority of the indicators discussed above to the analysis of general national and provincial level trends. At the national level, I incorporate another indicator of labour market insecurity: **multiple job holdings.** Multiple job holdings (i.e. Canadians working more than one job) indicate that workers feel they need more than one job for financial or employment security. However, in his 1991 study, Krahn reveals that most multiple job holders are supplementing a full time job, so not all of these workers experience precarious employment. Nonetheless, the portion of multiple jobholders who are not supplementing a full time job are either in part time or temporary employment, both of which, as demonstrated in the discussion of regional indicators, have links to precarity. Also, even if supplementing a full time job, these workers are not satisfied with their primary job, which exemplifies feelings of insecurity and constitutes precarity. Moreover, tracking total employment in multiple job holdings provides an indication of how far the labour force deviates from the SER.

Youth unemployment

While I examine these indicators for the labour force cohort 15 years and over (i.e., the total labour force), I place special emphasis on employed Canadians 15 to 24 years old in an attempt to contribute to academic research regarding the precarity faced by the young workers of Canada's labour market. Analyzing precarity of youth employment provides a demographic perspective of the changing nature of the SER. Concurrently, it reveals the new reality of labour markets, into which youth populations must enter.

Foster (2012) refers to a 2009 report by the ILO that claims youth unemployment has achieved 'crisis' status, and that future prospects are bleak. She then contends that, relative to other OECD countries, youth unemployment rates in Canada remain relatively low. However, this does not mean that young workers do not experience greater precarity in the work place. Youth labour force participants are increasingly "in jobs that are low-wage, non-unionized, temporary and/or part-time, which rarely offer additional benefits" (Foster 2012: 3). This employment relationship

marks a clear deviation from the SER and also indicates growing insecurity. Supporting the precarious situation facing youth, the Canadian Labour Congress (2014b) states that, since the 2008 recession, youth unemployment has failed to rebound and simultaneously, more and more young people are employed in low-wage, part-time and temporary work. LaRochelle-Côté (2013) provides further evidence of increasing insecurity, explaining that, in 2007, 23 per cent of non-student employees between 16 and 29 years old were involved in some type of 'employment instability.' Furthermore, the personal statements of young people reflect growing feelings of insecurity of the youth population as a whole. A Broadbent Institute survey finds that millennials fear their futures will be characterized by precarious, short-term work arrangements (Friesen, 2014). To young workers, stability and security in employment seem like nostalgic memories of previous generations.

Accounts of rising youth employment precarity increasingly show up in scholarly literature, government reports and media sources simultaneously, revealing the gravity of the situation. I wish to contribute to the understanding of this narrative.

2.3 Preceding scholarship and the need for a spatial perspective

Existing studies of precarious employment in Canada are concentrated in three areas: (i) describing trends at national and provincial scales, (ii) determining population sub-groups who are especially vulnerable to employment precarity and (iii) exploring the impact of precarious employment on the individual and society at large. I now explore each of these areas of focus in more detail.

National and provincial level trends

When it comes to describing **national level patterns** of precarious employment in Canada, Krahn (1991, 1995) and Vosko (2006, 2011) are among the leading voices. Looking at Labour Force Survey data over the 1976 to 1994 period, Krahn (1995) notes that the percentage of part time workers increases considerably. Vosko (2011) states that around 78 per cent of self-employed youth (i.e., ages 15-24) without others under their employ, experience low-income precarity. In their **provincial level study** of Ontario, Noack and Vosko (2011) find that 26 per

cent of part time temporary employees encounter all four dimensions of precarity, and an additional 32 per cent experience low wages, no pensions, and no union coverage.[ii]

The precarity of gender, age, and disability

Much of the attention of pre-existing Canadian scholarship investigating the relationship between **precarious employment and population sub-groups** appears to be given to four distinct population sub-groups: women employees, young and old workers, and people with disabilities.

Scholarship associating precarity with gender focuses on the population subgroup comprised of women. The general contours of gender vis-à-vis employment precarity rests primarily on the understanding that starting in the 1970s, as NSER work became more prevalent, female employment increased simultaneously. Hughes (1999) claims that total self-employment increased rapidly throughout the 1990s. The large growth resulted in a greater proportion of workers engaging in precarious employment. Women increasingly turned to this type of employment because it more easily enabled work-family balance, thus suggesting a link between working mothers and precarity (Hughes, 1999). This assertion is taken further in the following decade. Throughout the 2000s, single mothers worked part-time in the absence of full time employment possibilities at double the rate of married mothers, a situation often explained by parental responsibilities failing to coincide with demands of full time, SER, jobs (Evans, 2009). In other words, the responsibilities and duties of raising children often do not fit well within the SER. As a result, employed mothers, who must balance both work and child-rearing, engage in jobs that enables flexibility, and these jobs are inherently precarious.

However, other, larger, societal constrictions contribute to this gendered working relationship. The standard employment relationship (SER) was premised on the assumption that a "contract" between men and women existed – where women depended on men as breadwinners. The prevalence of this prejudice notion has diminished in recent decades, in accordance with the SER's fall, as women prominently emerge in the NSER workforce (Fudge and Vosko, 2001). Since labour laws are still locked in the framework of SERs, the gendered biases of social norms, holding men above women as breadwinners, continue to contribute to employment precarity for female workers.

Scholars researching the association between age and precarity often study young and old workers simultaneously. Precarious employment cuts both ways for young and old alike. Naturally, labour market insecurity affects each group differently, though the nature of the problem remains essentially the same for each group: navigating the changing landscape of employment. Increasing labour flexibility may work well for the youth, since it can easily facilitate work-study combinations despite otherwise-bleak job prospects; however, this same flexibility may work against older workers, who are often pushed into precarious work due to structural necessities and other larger adjustments (Felsted, Krahn & Powell 1999). Regarding youth (ages 15-24), current statistics do not bode well for future, permanent employment. Indeed, according to Foster (2012), the youth unemployment rate in Canada grew from 2001's 12.9% to 14.1% from 2001 to 2011, a rise essentially matched by declining permanent employment situations.

In terms of employment instability, which shares many indicators with precarious employment (e.g. working a permanent job but only part time or working a temporary job), analysis of the youth demographic again yields troubling results. LaRochelle-Côté (2013) finds that workers under the age of 21 are disproportionately affected by employment instability compared to older workers. Additionally, he advances work experience as a strong indicator of instability: workers with only two years of experience in the workforce trailed their counterparts with more than six years of experience by a full seven percentage points (LaRochelle-Côté 2013). Youth are handicapped by work experience, while older workers find themselves disadvantaged by structural market shifts despite retaining work experience at greater levels than their younger counterparts. Regardless of their differences, large gaps in scholarship exist pertaining to precarity experienced by both young and old workers

Finally, people with disabilities represent an important population subgroup that has yet to be fully studied by the academic community, but nevertheless remains an important demographic considering the close relationship between disability and precarious employment. Defining "disabilities" within statistical models and data sets remains the primarily problem in assessing this matter; the variety of definitions result in uneven data and results. However, once these particularities are accounted for, a concerning reality emerges. In Canada, 43-63% of disabled workers are employed part time or part year, while only 29-49% of disabled workers are

employed all year, full time (Tompa et al 2006). Thus, the majority of disabled workers are potentially experiencing precarious employment.

Health and precarity

The last focus of precarious employment literature is the association between **negative health outcomes** and precarity. Precarious employment affects workers' health in many ways, ranging from physical to psychological. Precarious jobs often involve high levels of stress, physical risks, and/or inflict suffering due to uncertain remuneration, which separately and collectively impact workers' health (Tompa et al, 2007). Indeed, precarious jobs are frequently moderately dangerous employment situations. Aside from physical precarity, the uncertainty of a job also impacts workers' health by complicating their finances: irregular paychecks decrease a worker's quality of life. Furthermore, stress, tension, and frustration on the job, with distasteful at-home-conditions like insomnia and headaches, illustrate negative health effects workers experience with precarious employment (Lewchuk et al, 2008). Thus, precarious employment is not separate from health. Rather, research indicates that this type of employment relationship negatively impacts the worker, both physically and psychologically, underscoring the importance of advancing research of precarious employment.

Precarious geographies

While the preceding scholarship on labour market insecurity detailed above reveals general trends at numerous scales, determines the most vulnerable population sub-groups and investigates the negative effects of precarious employment on workers, it fails to explicitly explore the spatial contours of employment precarity in Canada. In fact, Waite (2009) argues that the study of precarious employment is relatively new to the discipline of geography as a whole. Thus, overall, precarity is largely lacking from geographic literature. In an effort to correct this, MacDonald (2009) urges scholars to consider the spatial dimensions of labour market insecurity, although she does not offer an explicit spatial analysis of her own. She explains that "precariousness is created not just by specific job characteristics but by the spatial contexts in which such work occurs" (211). In a similar vein, Soja (1980) contends that all 'relations of production' have particular socio-spatial dimensions and contexts. This thesis acknowledges the

inherent geographic dimensions of precarious employment, and seeks to pinpoint said spatial contexts in the Canadian context.

Chapter 3: SPACIAL DATA AND METHODS

This thesis explores the spatial dimensions of precarious employment trends in Canada at three different scales of analysis: at the national, provincial and census-division level. To do so, the analysis draws on publically available employment data from Statistics Canada. I begin by compiling yearly datasets at the national and provincial level using the Labour Force Survey (LFS), over the 1976 to 2013 period. As Statistics Canada explains, the LFS is a nationwide telephone-based questionnaire which interviewers conduct each month. The LFS collects employment and unemployment data on approximately 56,000 civilian households chosen as a representative sample to keep track of the performance of the Canadian economy on a frequent basis.[iii] I then use these compiled yearly datasets to determine descriptive statistical trends of precarious employment at both national and provincial levels.

Census-division level statistics provide data that can be applied to an exploratory spatial data analysis, outlined below, to establish regional level trends. The statistics come from the Canadian Census of Population, which is available on a five-year basis, for the years 1991, 1996, 2006 and 2011. The Census of Population collects information from a much larger sample of Canadian citizens, thus it is a much more comprehensive data source than the LFS and allows a more detailed exploration of the geographical dimensions of the problem.

From a methodological perspective, it is important to note that from 1991 to 2006, Statistics Canada conducted a mandatory long-form survey. However, they discontinued this long-form survey in 2010. Instead, for the 2011 Census, Statistics Canada collected the information using a new voluntary National Household Survey.[iv] Thus, for 1991 to 2006, the Census of Population datasets contain more detailed and reliable information relevant to my study. With the change in survey, the 2011 census lacks some essential census-division level data, which I will indicate later on. Excluding this gap in the final study year, the data analyzed at the census-division level still allows the mapping of a more nuanced representation of precarious employment trends relative to national and provincial level data. In other words, the census-division level allows the observation of local variations that provide insight into wider-scale trends. At all three scales, I consider employment data of the total labour force (i.e., 15 years and over) as well as young workers (i.e., 15 to 24 years), although less data is available for the latter.

As mentioned, one of the main objectives of this paper is to geographically depict small-scale variation in precarious employment trends. In other words, this thesis aims to capture regional spatial trends of precarious employment. This is accomplished by exploring six individual labour force characteristics and groups, which I argue are most pertinent to our discussion. This thesis explores the percentage of labour force (i**) self-employed**, (ii) **employed part year or part time**, (iii) **employed in manufacturing**, (iv) **unemployed**, (v) **total employed**, and (vi) **employed full year, full time** (see Table 3.1 of Appendix A for definitions). These six variables are defined in the table below. Note that Statistics Canada calculates total employed as a percentage of the population, whereas this thesis calculates the total employed as a percentage of the total labour force. Furthermore, I adopt the 2010 definition of self-employment in order to standardize the data from census years 1991 to 2006.

I map these variables using GIS ArcMap and GeoDa. I first join data from the Canadian Census of population to shapefiles downloaded from Statistics Canada. This step is repeated for each Census year. The shapefiles and their corresponding attribute tables are then exported to GeoDa for spatial analysis. Geoda computes the global Moran's *I* and LISA values for each variable, both of which I discuss in more detail below.

By mapping out these indicators of precarious employment across the landscape, I attempt to identify whether there are patterns of spatial interdependence (or spatial autocorrelations) over space. Odland (1988) suggests that such spatial interdependence may be due to interaction and dissemination processes that underlie certain geographic datasets. In terms of the data on precarious employment relationships, these processes are inherent. The people and economy involved in precarious employment do not have set boundaries, unlike the borders of national, provincial and census regions. Rather, they ebb and flow through the Canadian space economy, sometimes clustering in certain regions while other times dispersing from these regions. Accordingly, I utilize spatial autocorrelation techniques in an attempt to capture the dynamic geographies of precarious employment.

To advance the analysis of these spatial and temporal trends, I apply exploratory spatial data analysis (ESDA) methods to the six indicators of precarity described above. ESDA allows me to review these trends and identify patterns within them by using visual and numerical techniques

(Haining 2003). More specifically, two classes of ESDA methods exist to identify and quantify these patterns: (i) global statistics determine if spatial distribution patterns or autocorrelations, like clustering, are identifiable across an entire study area and reveal its pattern; (ii) local statistics of spatial autocorrelation provide a more precise geographic lens of these patterns by identifying localized 'hotspots' or 'coldspots' over the study area (Mitchell 1999).

Mitchell (1999) formally defines the Moran's *I* statistic as:

$$I = \frac{n \sum_i \sum_j w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{\sum_i \sum_j w_{ij} \sum_i (x_i - \bar{x})^2}$$

Eq. (1)

where n represents the number of regions (i.e., census division), x_i is the value of the target variable for region *i*, $\bar{x}$ is the average value of the variable across regions and w_{ij} is the spatial weights matrix that calculates spatial proximity between regions *i* and *j*.

In global statistics, or the Moran's *I* statistic, the *I* values range from -1 to +1, with values close to -1 signifying strong negative spatial autocorrelation, and values close to +1 signifying strong positive spatial autocorrelation. Positive spatial autocorrelation exists when neighboring features are more similar to each other than they are to more distant features. For example, if a given variable has a Moran's *I* value of 0.5, the entire study area exhibits strong positive spatial autocorrelation. Conversely, negative spatial autocorrelation exists when nearby features are not similar.

I use two spatial weight matrices in order to describe the type of spatial interdependence (i.e., spatial proximity) between census divisions. The choice of spatial weights matrix defines the nature of the spatial relationship between geographic units. The first is a simple Queen's contiguity weight matrix that classifies a census division's neighbors as those divisions with shared borders or vertices. The second is a nearest-neighbor index where the values of each variable are compared to those of its five (k=5) nearest neighbors. Using two different spatial autocorrelation techniques for the analysis ensures more robust findings. All Moran' *I* statistics

were determined by creating a Moran Scatter Plot in GeoDa set to a randomization of 999 permutations.

After computing global statistics, the study turns to local indicators of spatial association (LISAs) in order to pinpoint the geographical source of the spatial clustering patterns identified using the Moran's *I*. As Patacchini and Zenou (2007) indicate, these statistics depict the relationship between the value of a variable at a specific site and that of its neighbors, and between the value of the regional or neighborhood set compared to the entire sample. More specifically, LISA values allow the determination of whether local clusters exist and help to identify potential outliers present in the dataset (Anselin, 1995). Anselin (1995) formally defines the LISA statistic as:

$$I_i = z_i \sum_i w_{ij} z_j$$

Eq. (2)

where z_i and z_j are, respectively, analogous to $(x_i - \bar{x})$ and $(x_j - \bar{x})$ from equation one. The parameters correspond to those in the Moran's *I* equation. I_i represents the calculation of a LISA value for each census division. The sum of LISA statistics parallels the global statistic.

The results of LISA statistics are interpreted in cluster maps, which were created using the aforementioned Queen's contiguity spatial weights matrix and set to a randomization of 999 permutations. In this research, I am particularly interested in the location of 'hotspots' and 'coldspots' across the study area since these enable me to track changes in local variations over time. Exploring localized spatial analysis contributes greatly to the understanding of national, provincial and sub-provincial precarious employment.

Once I calculate both global and local statistics, the geographic and temporal variations of precarious employment in Canada is given numerical and visual significance. These findings are then incorporated into a detailed analysis of precarious employment in the country and the regional variations which exist.

Chapter 4: DESCRIPTIVE RESULTS AND ANALYSIS

As previously discussed, literature concerning precarious employment in Canada largely focuses on national and provincial level trends. These general trends provide useful insights into the development of precarious employment in the Canadian context and help to inform the analysis of the localized geographic dimensions of precarity, the latter forming the crux of this thesis. As such, before delving into the spatial analysis of precarity, I begin by presenting an analysis of national and provincial level trends based on data taken from the Labour Force Survey. For each variable that follows, I compare trends of the total labour force with those experienced by young workers.

4.1 National-level results

Employment and unemployment

From 1976 to 2013, while the total labour force (i.e., age group 15 years and over) shows an overall increase in employment of 81.9% over the entire study period, young workers show a net decline of 3.3% (see Tables 4.1.1 and 4.1.4 of Appendix A). However, the net decline of employment for young workers over the entire study period is accounted for by the steady decrease in youth employment from the late 1970s to the late 1990s (see Figure 4.1.1 of Appendix B). Since the late 1990s, employment of young workers steadily increase, although still at a slower rate than the age group 15 years and over. With marked employment declines in the first two decades of the study period and slower employment growth than the labour force as a whole since the late 1990s, young workers are arguably experiencing more job insecurity.

Figure 4.1.2 (see Appendix B) illustrates the temporal trends of unemployment for both age groups. From 1976 to 2013, employed Canadians 15 years and over realize consistently lower unemployment rates than young workers. For both age groups, unemployment rates spike significantly three times during this period. Each sudden increase corresponds to a recession: the recessions that occurred in the early 1980s and 1990s and the more recent 2008 recessions. Following each crisis, young workers experienced disproportionately high unemployment rates

compared to the total labour force. This phenomenon suggests that all workers realize a certain degree of precarity in the Canadian labour market, since market forces out of their control can determine whether they will continue having a job. These trends also suggest that young workers are more vulnerable to job losses after economic turmoil, thus experiencing greater precarity compared to the labour force as a whole.

While young workers may be more vulnerable to job loss during employment, when they are unemployed and actively searching for jobs, they tend to find them more quickly than their older counterparts. In terms of the duration of unemployment (see Table 3.1 of Appendix A for definition), from 1997 to 2013, unemployed Canadians 15 years and over are consistently looking for work longer than young workers (see 'average weeks unemployed, no top-code' in Tables 4.1.3 and 4.1.6 of Appendix A – for definition see Table 3.1 of Appendix A). This trend may be due to a time lag experienced by older workers to adjust to new labour market standards. With technologies improving and a desire for flexible labour inputs, the current labour market supports a more fluid approach to job duration, where moving from one job to the next is becoming the norm. While young people are better equipped to deal with the new marketplace, older workers may still be adjusting.

Self-employment

Data on self-employment could only be obtained for the total labour force. From 1976 to 1988, self-employment is a disproportionately large contributor to overall employment growth. In this period, total employment grows by 30.4% while self-employment grows by 49.7% (see Table 4.1.1 of Appendix A). Fudge et al (2012) support this finding, noting that self-employment "grew at a faster rate than paid employment between 1979 and 1990" (22). More recent trends in self-employment growth suggest that the labour market is shifting away from the employment status. Between 2000 and 2013, total employment grows by 20.1% while self-employment only grows by 13.7%. Thus, in terms of an overall rise in precarious employment, self-employment is arguably becoming a smaller contributor over time.

Full time vs. part time employment

From 1976 to 2013, both full time employment and part time employment (see Table 3.1 of Appendix A for definitions) increase steadily for the total labour force, although gains in part time employment are much greater than gains in full time employment (+68.6 for full time compared to +175.2% for part time; see Table 4.1.1 of Appendix A). Growth in part time employment is especially rapid from 1976 to 1988 (+75.4%). The growth in part time work depicts an overall shift of the labour market towards precarity. Despite these massive gains, it should be noted that full time employment remains the dominant form of employment.

Regarding job tenure (see Table 3.1 of Appendix A for definition), full time employment lasts consistently longer than part time employment for this age group (see Table 4.1.1 of Appendix A). However, job tenure for part time employment is increasing at a faster rate, which is likely associated with the disproportionately greater increase of overall part time employment. With increasing durations of job tenure in part time work, this precarious form of employment is in fact becoming more stable. As the total workforce in part time employment represents the largest category of precarious employment, the increase in job stability is a positive step towards a brighter future for the Canadian labour market. This trend is also indicative of a further separation of the current labour force from the SER.

For young workers, the general trend in part time employment growth is relatively similar to that of the total labour force (see Tables 4.1.1 and 4.1.4 of Appendix A). However, full time employment for this age group decreases steadily since 1976 to the extent that part time work will soon surpass full time work as the dominant employment form (see Figure 4.1.3 of Appendix B).

Concerning average job tenure, similar to that of the total labour force, the duration of part time work increases faster and nearly surpasses the duration of full time employment for young workers (see Table 4.1.4 of Appendix A). Relative to the total labour force, the job tenure of the young labour force is much shorter for both full time and part time jobs. With much shorter job tenures relative to their older counterparts, consistent declines in full time employment, and an overall decline in job tenure for full time work, young workers are quickly losing the SER. Young workers are arguably in a more precarious situation than older workers.

Employment in the goods-producing vs. services-producing sector

Exploring trends in both the goods- and services-producing sectors (see Table 3.1 of Appendix A for definitions) sheds some light on manufacturing employment trends, which are explored in the section on regional analysis. For this study, since manufacturing is a component of the goods-producing sector, the following findings of the goods-producing sector may be applied to the industry.

Of the total labour force, by 2013, over three times more people are employed in the services-producing sector than goods-producing sector (see Table 4.1.1 of Appendix A). In both the goods-producing and services-producing sectors, full time employment persists as the principle form of employment, although part time employment increases at a faster rate, especially in the services-producing sector.

For workers 15 years and over, from 1976 to 2013, total employment in the services-producing sector grows much faster than in the goods-producing sector, with an increase of 117.2% for the services-producing sector compared to an increase of +15.2% for the goods-producing sector. In terms of average job tenure, the total labour force realizes increases in both sectors since 1987, although tenure in the services-producing sector rises significantly faster (see Table 4.1.2 of Appendix A). These trends suggest a labour market shift away from traditional jobs in the goods-producing sector as a whole, and consequently away from the stable, secure SER.

The situation for young workers is drastically different. Overall employment in the goods-producing sector steadily declines after 1976 (see Table 4.1.4 of Appendix A). Within the goods-producing sector, full time employment decreases much faster than part time employment. Conversely, during the same period, employment in the services-producing sector grows. Within this sector, after 1976, full time employment largely decreases. Thus, the growth in total employment is accounted for by increases in part time jobs, which grows by 138.6% versus the 26.6% decline experienced in full-time employment. For young workers, part-time replaces full time as the primary employment form. Thus, with rapid declines in full time jobs in the goods-producing sector, and total employment growth accounted for by increases in service-sector part time jobs, young workers are in a more precarious situation than their older counterparts.

Multiple jobholders

For the total labour force, multiple job holdings in all industries grows after 1987, although overall increases are slowing down (see Table 4.1.2 of Appendix A). The largest increases are found in the services-producing sector, corresponding to the disproportionate growth of total employment in this sector detailed above.

For young workers, total multiple jobholders continues to grow as well, but a similar stagnation of growth rates is occurring (see Table 4.1.5 in Appendix A). The increase in multiple jobholders is accounted for in the services-producing sector, while the goods-producing sector realizes major declines.

Overall, multiple job holdings, which permit a worker to log equivalent hours to full time employment, increase for both age groups, especially in the services producing sector. The growth of multiple job holders implies that workers across all age groups do not feel stable or secure in their current employment relationship and wish to find other jobs to supplement their income.

Permanent versus temporary employment

For the total labour force, growth in temporary employment outpaces permanent employment growth since 1997, signifying that more and more people in this age group face precarity (see Table 4.1.3 of Appendix A). Within temporary employment growth, the largest contributor is the rising participation in term or contract jobs, followed by increases in casual and seasonal job participation.

Like the total labour force, employment growth of young workers in temporary jobs is consistently greater than employment growth in permanent jobs since 1997 (see Table 4.1.6 of Appendix A). Indeed, young employees in permanent jobs see overall decreases after 1997, indicating increasing precarity compared to the total labour force.

Both age groups experience declines in overall permanent employment after the 2008 recession, but growth rates of the total labour force recover quickly. In fact, relative to the total labour force, which has more permanent jobs in 2013 than before the crisis, the total number of young

workers in permanent jobs remains lower than pre-crisis levels. Unlike their older counterparts, young workers have not made a full recovery, which suggests disproportionately worsening precarity for this age group (see Figure 4.1.4 of Appendix B).

From 1997 to 2013, similar to employed Canadians 15 years and over, growth in temporary employment is primarily in term or contract jobs followed by casual and seasonal employment.

Wages

As a final trend to note, the median hourly wage rate is even more telling of the unequal amount of precarity facing young workers. Since 1997, the median hourly wage rate is consistently much lower for young workers, as might be expected, but of greater importance is that the gap widens. This increasing division of pay grades ultimately subjects young workers low incomes, contributing to their increasing precarity (see Figure 4.1.5 of Appendix B).

Key findings at the national level

Spikes in unemployment across age groups following economic recessions suggest that employment in the Canadian labour force is always in a state of precarity. These recessions were global in scale, and the effects were consequences of Neoliberal modes of regulations enacted under Post-Fordism to free up markets. With market forces determining labour input and output, which are outside of workers' control, employment in Canada loses stability and security.

Self-employment is found to contribute less to precarious employment growth over time.

As part time employment growth vastly outstrips full time employment growth, the labour market as a whole faces more precarity. However, part time job tenure increases simultaneously. This trend suggests that, although more of the labour force becomes involved in precarious forms of employment, the degree of precarity of part time employment decreases. With longer job tenures, it may be possible to qualify for more EI benefits.

Total employment and job tenure in the services-producing industry largely outpaces the goods-producing industry. This trend suggests a shift away from the traditional SER enjoyed by employment in the goods-producing sector to a more part time oriented and dynamic services-producing sector.

The consistent growth of multiple job holdings after 1997 indicates a feeling of instability and insecurity in the Canadian labour market, where workers attempt to supplement their income. It also depicts a shift away from the SER.

Temporary employment increases disproportionately fast relative to permanent employment, especially temporary employment in the form of contract work. Rising temporary employment contributes to falling rates of unionization and is associated with lower hourly wages than permanent employment. As such, more and more of the labour market is experiencing a lack of control over the labour process, a lack of regulatory protections, and precarious incomes.

With the exception of shorter durations of unemployment, young workers are arguably in more precarious situations across all categories. Youth employment shows marked decreases after the late 1970s up to the early 1990s, and, as of 2013, continues to lag behind employment growth of the total labour force. Young people are disproportionately affected by economic recessions, with their unemployment rate consistently spiking higher than unemployment of the total labour force following each event. Young workers also have much shorter job tenures across the board and higher rates of employment in part time positions than full time positions, while the majority of the labour force 15 years and over remains mostly employed in full time work. After the 2008 recession, permanent jobs for young people decrease significantly, and have not yet made a full recovery unlike their older counterparts. Lastly, young workers experience increasing precarity relative to the total labour force as the wage gap between both age groups continues to increase.

4.2 Provincial-level results

Employment and unemployment

From 1976 to 2013, most employment growth (relative to the population in each province) occurs in British Columbia (BC) and Alberta (+117.6% and +158.6% respectively) for the total labour force (see Table 4.2.1 of Appendix A). Young workers, with the exception of those in BC and Alberta, experience overall declines in employment (see Table 4.2.2 of Appendix A). Comparing Ontario and Québec, which have the highest number of young employees, both see

large declines in employment between 1988 and 2000. However, from 2000 to 2013, the trend reverses and youth employment grow, with employment in Québec increasing more significantly (+11.4% in Québec and +2.2% in Ontario).

In terms of increases in the unemployment rate, Ontario tops the list. From 1988 to 2000, Ontario is one of the only province to experience increases in the unemployment rate, the other being Newfoundland and Labrador (see Table 4.2.3 of Appendix A). This may be due to manufacturing employment continuing to leave the province, or part of the labour force seeking work in the oil sands of the Prairies. Then, once more, from 2000 to 2013, Ontario is among only a few provinces (i.e., New Brunswick and Manitoba), with rising unemployment rates. Growth in Ontario remains the highest at a staggering 31.6% increase, followed by Manitoba with +8.0% increase. Considering Ontario has the largest population and labour force in the country, this growth in unemployment rates is especially troubling. As aforementioned, growth in unemployment is associated with increasing overall precarity of the labour market. Conversely, unemployment rates in Québec largely decline since 1988 (from 9.5% in 1988 to 7.6% in 2013).

Young workers see similar trends. From 1976 to 2013, Ontario's unemployment rate grows the most rapidly (+47.4%) and continues to do so (see Table 4.2.4 of Appendix A). From 2000 to 2013, Ontario's unemployment rate grows by 36.4%. Alongside Ontario, Nova Scotia, Prince Edward Island and New Brunswick all experience significant growth in unemployment. Young workers in Québec, on the other hand, realize a 7.1% decrease in their unemployment rate, smaller than the 10.6% decrease realized by the total labour force. Comparing age groups, young workers in Ontario experience a disproportionate share of growth in unemployment rates relative to the total labour force in Ontario between 1976 and 2013 (i.e., +47.7% for young workers versus +23.0% for the total labour force). Young workers in the Maritimes experience a much higher unemployment rate between 2000 and 2013 than their older counterparts. Unemployment of the total labour force in Québec drop more significantly than unemployment of young workers in this period. All of these trends suggest that young workers in Canada are disproportionately negatively affected by changes by the unemployment rate, and are thus in more precarious situations. Furthermore, the precarity facing this age group varies by province and region, hence the need for a regional spatial analysis, which will follow.

Self-employment

From 1976 to 2013, growth in self-employment is especially strong in Nova Scotia, Ontario, Quebec, Alberta and BC. In fact, during this period, with the exception of Alberta, a comparison between percent increases in self-employment and the growth in total employed, all classes of workers (see Tables 4.2.5 and 4.2.6 of Appendix A), reveals that self-employment is a disproportionately large contributor to overall employment growth in these provinces. These findings suggest a positive association between the population of a region and the rate of self-employment.

Full time employment

From 2000 to 2013, the rate of full time employment for the total labour force increases significantly in the Prairie Provinces as well as Québec and Ontario (see Table 4.2.7 of Appendix A). The rate of full time employment in BC, on the other hand, slows down (+32.1% from 1988 to 2000 followed by only +18.3% from 2000 to 2013). Despite this stagnation, relative growth in full time employment in BC is amongst the highest from 1976 to 2013 (i.e., +101.1%), second only to Alberta (i.e., +155.0%), which may suggest a balancing out or redistribution of employment in the Canadian labour market.

For young workers, while full time employment decreases at the national scale, a few provinces realize significant growth from 2000 to 2013, including BC, Alberta and Saskatchewan (see Table 4.2.8 of Appendix A).

Part time employment

Nearly all provinces exhibit massive growth in part time employment from 1976 to 2013, with the largest increase, a growth of 238.6%, found in Québec (see Table 4.2.9 of Appendix A). From 2000 to 2013, the largest overall growth in this form of employment is found in Prince Edward Island, Québec, Ontario and BC.

For young part time workers, most provinces have much lower growth from 1976 to 2013 compared to their older counterparts, with the exception of Québec, which maintains relatively strong growth rates (see Table 4.2.10 of Appendix A). In fact, from 2000 to 2013, growth of

youth part time employment in Québec surpasses that of the total labour force (+40.5% for young workers compared to +35.2% for total labour force).

Employment in the goods-producing sector

For the total labour force, Alberta dominates total employment growth in the goods-producing sector from 1976 to 2013 (see Table 4.2.11 of Appendix A). From 2000 to 2013, rising employment in the goods-producing sector mainly occurs in Alberta, Saskatchewan and BC, suggesting that the goods-producing sector is shifting west from its historical roots in southern Ontario and southern Québec. In the case of Alberta and Saskatchewan, this shift likely represents a wage-driven migration. From 1997 to 2013, both provinces record the greatest increase in median hourly wage rates in the country. Grant and Morison (2012) report similar findings.

Québec and Ontario report decreases in employment in this sector since 1988. However, Québec, and especially Ontario, remain regions with the most employment overall in the goods-producing sector, a reflection of their historical domination, although Alberta is quickly catching up. As an exception to this migration westward, Newfoundland and Labrador also exhibit high growth from 2000 to 2013.

In terms of average job tenure from 2000 to 2013, all four of these provinces (i.e., Alberta, Saskatchewan, BC and Newfoundland and Labrador) experience marked decreases in the goods-producing sector (see Table 4.2.12 of Appendix A). This trend may reflect a high turnover rate in employment in these areas, or potentially a new employment relationship which is effectively more precarious. While these provinces report decreasing average job tenure, Québec and Ontario report net increases. Thus employment in the goods-producing sector in Québec and Ontario represents a double-edged sword: while both provinces experience overall decreases in total employment in this sector (i.e., less job security in terms of risk of job loss, thus increasing precarity), they also realize longer employment (i.e., increased job security in terms of duration of employment for those still working in the sector).

Between 2000 and 2013, similar to trends of the total labour force, Alberta, Saskatchewan and Newfoundland and Labrador all experience significant increases in youth employment in the

goods-producing sector (see Table 4.2.13 A). Indeed, growth of youth employment in the goods-producing sector in Newfoundland and Labrador is greater than that of the total labour force in those provinces from 2000 to 2013 (+51.5% for young workers versus +27.3% for the total labour force).

Permanent vs. temporary employment

From 1997 to 2013, for the total labour force, Alberta realizes the largest growth in permanent jobs (+58.1%) nearly surpassing BC in total numbers (see Table 4.2.14 of Appendix A). For young workers, growth is significantly less than their older counterparts for every province except Québec, where youth permanent employment grows at a faster rate (see Table 4.2.15 of Appendix A).

In Ontario especially, youth permanent employment lags behind permanent employment of the total labour force. Considering that Ontario's young workers are facing rampant unemployment, the growth in temporary employment makes sense. As discussed previously, unemployment in an area acts as an indicator of socio-economic health, and we would expect to see more precarious employment growth in these areas.

Growth in temporary work tells a drastically different story. For the total labour force, from 1997 to 2013, temporary employment grows the fastest in the four most populated provinces - Ontario, Québec, BC and Alberta (see Table 4.2.16 of Appendix A) - whereas permanent employment grows more uniformly across provinces. This may suggest a positive association between temporary employment growth and areas that act as global nodes of commerce in Canada. Youth temporary employment sees similar increases during this period (see Table 4.2.17 of Appendix A).

Following national level trends, most provinces report higher growth in temporary rather than permanent employment from 1997 to 2013. An interesting outlier is Prince Edward Island, which actually reports negligible growth in temporary employment compared to permanent employment for the labour force 15 years and over. And young temporary workers on the island actually experience net declines during this period.

Key findings at the provincial level

From 1976 to 2013, employment growth, an indicator of the health of an economy, occurs most significantly in BC and Alberta. As such, these areas likely experience less clustering of precarity overall compared to other provinces. Indeed, these provinces experience the highest full time employment growth during this period. Additionally, Alberta realizes the largest increase in permanent employment, an employment form with more regulatory protections and financial stability, from 1997 to 2013.

Ontario, on the other hand, is disproportionately affected by increases in unemployment. Thus, it is likely that Ontario displays more clustering of precarious employment relative to other provinces.

Nearly all provinces depict massive growth in part time employment from 1976 to 2013.

From 2000 to 2013, increasing rates of employment in the goods-producing sector primarily take place in Alberta, Saskatchewan and BC. This trend represents a shift away from the traditional areas of goods-producing employment in southern Ontario and southern Québec. In fact, these two provinces report overall decreases in total goods-producing employment since 1988.

Interestingly, while employment in the goods-producing sector decreases in Ontario and Québec, the average job tenure in this industry actually increases in both provinces between 2000 and 2013. On the flipside, Alberta, Saskatchewan and BC report net decreases in job tenure. So, while overall employment in the goods-producing sector may be increasing in the West, it remains less stable and secure than employment in this sector in Ontario and Québec.

Ontario, Québec, BC and Alberta see the most growth in temporary employment from 1997 to 2013.

With the exception of Alberta and BC, youth employment decreases in all provinces from 1976 to 2013. In fact, in BC and Alberta, full time employment of young workers grows significantly in these provinces.

Unemployment, on the other hand, increases significantly from 2000 to 2013 in Ontario, Nova Scotia, Prince Edward Island and New Brunswick. In all of these provinces, compared to their

older counterparts, young workers experience disproportionately high levels of unemployment growth, suggesting that youth employment is disproportionately affected by changes in the unemployment rate.

In terms of part time employment, with the exception of Québec, young workers in most provinces experience much slower growth than the total labour force between 1976 and 2013.

From 1997 to 2013, with the exception of Québec, growth in youth permanent employment is significantly less than the age group 15 years and over in all provinces. Interestingly, permanent employment of young workers in Québec grows at a faster rate than permanent employment of the total labour force. This suggests that Québec may be implementing particular youth employment initiatives, which the other provinces may want to emulate.

Chapter 5: EXPLORATORY SPATIAL DATA RESULTS AND ANALYSIS

Precarious employment experiences and realities vary through space and cannot be bounded like the borders of a country or individual provinces suggest. Rather, the economy and people involved are highly mobile, and precarious employment needs to be studied in terms of clustering and diffusion over the entire country. In doing so, precarity takes on a distinct regional pattern devoid of meaningless boundaries. Before discussing regional patterns of precarious employment, this thesis performs a spatial and temporal analysis at the national level to capture overall clustering and dispersal patterns.

Note that, due to the aforementioned change of the Canadian Census of Population in 2010, youth employment trends are only available for two variables – percentage unemployed and percentage employed – and are restricted to the years 1991, 1996 and 2006. As such, the spatial analysis that follows mostly covers precarious employment trends of the total labour force. Furthermore, data for the variable 'part year or part time' could only be obtained for the period 1991 to 2006.

5.1 Aggregate spatial trends

Table 5.1.1 through Table 5.1.8 (see Appendix A) present Moran's *I* values for the dataset, using both the Queen's contiguity and K-nearest neighbor spatial weights matrices outlined in the Chapter 3. Generally, although the Moran's *I* value varies between Queen's contiguity and K-nearest neighbor, patterns of spatial autocorrelation follow similar upwards and downwards trajectories for each Census cycle.

A striking commonality shared by all variables is the positive and statistically significant (i.e., all have *p*-values of 0.001) Moran's *I* values. These values imply strong positive spatial autocorrelation across all census divisions in Canada. Although all variables display significant spatial clustering, the strength of this pattern differs for each variable and varies over time. For standardization and simplification purposes, I will focus on the Queen's contiguity values presented in each figure.

Employment and unemployment

For the total labour force employed, the Moran's *I* decreases significantly from 1991 onwards, especially between 2006 and 2011, from 0.653 to 0.485 (see Queen's contiguity in Table 5.1.1 of Appendix A). Indeed, this large decrease in spatial clustering is the greatest of all variables during this period, with the exception of the decrease realized by the unemployed (which is expected). Regarding the overall decrease of the Moran's *I* since 1991, a similar trend occurs for young workers until 2006 (see Queen's contiguity in Table 5.1.2 of Appendix A). This trend suggests that, although initially displaying very strong positive spatial autocorrelation, the spatial concentration of employment for both age groups decreases. In other terms, there is less clustering of census divisions with high (low) levels of employment around others with similarly high (low) levels of employment. This decrease in clustering through time is unequal between age groups, with employed Canadians 15 to 24 years old experiencing greater spatial diffusion between Census cycles 1996 and 2006.

As can be expected, unemployment trends follow a nearly parallel trajectory to employment trends (see Queen's contiguity in Table 5.1.3 of Appendix A). For the total labour force, the Moran's *I* decreases significantly over time, especially between 2006 and 2011. The unemployed youth share this decrease in geographic concentration, although, like employed youth, they are also disproportionately affected by the spatial diffusion of unemployment between 1996 and 2006 (see Queen's contiguity in Table 5.1.4 of Appendix A).

Self-employment

Contrary to the reduction in significant clustering of employment and unemployment of the total labour force between 1991 and 1996 (see Queen's contiguity in Table 5.1.5 of Appendix A), the clustering of self-employment changes very little during this period, with the Moran's *I* value increasing from 0.619 to 0.621. However, by 2006, the clustering of self-employment decreases and, by 2011, does not recover. Overall, clustering of self-employment in Canada changes the least compared to all other variables that display data up to 2011.

Full year, full time employment

The labour force employed full year and full time follows similar trends as employment and unemployment, showing marked decreases in spatial concentration over time. A significant decrease in spatial clustering occurs between 1996 and 2006, the Moran's *I* dropping from 0.527 to 0.448 (see Queen's contiguity in Table 5.1.6 of Appendix A). 2011 sees a further reduction in clustering. Out of the variables investigated during the 2011 Census cycle, the labour force employed full year and full time was the least spatially concentrated.

Part year or part time employment

Similar to the trend of the self-employed, the labour force employed part year or part time experiences some increased clustering between 1991 and 1996 (see Queen's contiguity in Table 5.1.7 of Appendix A). Then, by 2006, in line with the previous five variables, the spatial distribution of the labour force employed part year or part time becomes more diffuse. Compared to full year and full time employment, part year or part time employment is more clustered in 2006.

Manufacturing employment

The case of manufacturing employment is unique. This form of employment is the only variable which becomes more clustered since 1991, and significantly so. The increase in clustering indicates that manufacturing employment becomes more and more concentrated across census divisions. In the 2011 census cycle, between 63% and 68% of the share of this employment in a given census division is accounted for by the respective level of manufacturing employment in neighboring census divisions (see Queen's contiguity in Table 5.1.8 in Appendix A). Indeed, manufacturing employment produces the strongest clustering in Canada in 2011.

Key findings of aggregate spatial statistics

The spatial concentration of the three variables, which this thesis typifies as being most precarious (i.e., self-employment, part year or part time employment and manufacturing employment), either increases significantly or, at the most, decreases very little relative to the other variables. These findings suggest that precarious employment becomes more spatially

concentrated in Canada. In contrast, the spatial concentration of full time and full year employment, which represents the stable, secure standard employment relationship, decreases significantly during the study period and is the least spatially clustered variable by 2011. Thus, secure, stable forms of employment become increasingly diffuse.

The findings, based on global statistics, indicate that different forms of precarious employment produce different spatial patterns over time. However, these findings do not account for spatial variation of each precarious relationship across the Canadian landscape.

5.2 Regional clusters of precarious employment

In order to identify geographic sources of spatial clustering, I turn to LISA statistics. LISA maps provide a more localized and precise measurement of the regional distribution of precarious forms of employment. I will determine the dominant spatial regimes e.g. high-high or low-low clusters) as they appear on the LISA maps and determine if there is any temporal variation. The spatial regimes in each map are categorized by variety of spatial autocorrelation: dark blue for low-low clusters (i.e., census divisions with low values of a given variable surrounded by census divisions with similarly low values of that variable), red for high-high clusters (i.e., census divisions with high values of a given variable surrounded by census divisions with similarly high values of that variable), light blue for low-high clusters, pink for high-low clusters. Of particular interest are the high-high (HH) and low-low (LL) census divisions, which represent clustering of high or low levels of a given variable. High-low and low-high census divisions display spatial outliers, or atypical regions, which this thesis does not explore.

Employment and unemployment – A general spatial perspective on regional labour markets in Canada

The LISA maps in Figure 5.2.1 (see Appendix C) depict the location of census divisions with significant values of spatial autocorrelation for the total labour force. From 1996 to 2011, the area encompassing southern Saskatchewan, southern Manitoba and northern Alberta (i.e., the Prairie Provinces) show marked decreases in the clustering of census divisions with high levels

of employment neighboring other census divisions with high levels of employment (i.e., decrease in hot spots, or HH clusters). Most of this decrease occurs in northern Alberta between 2006 and 2011, while southern Saskatchewan realizes greater spatial concentration during the same period and Manitoba remains relatively unchanged.

During this time, southern Ontario realizes a large reduction in hot spots of employment, especially between 2006 and 2011. As noted above, total employment sees the largest decrease in spatial concentration of all other variables with the exception of unemployment. Considering that the province of Ontario has by far the largest population in Canada, the reduction in hot spots in southern Ontario between 2006 and 2011 likely causes the overall decrease in significant clustering at the national scale. While Ontario lost hot spots, clustering of high rates of employment expand in southern Québec since 1996, especially between 2006 and 2011. This trend seems to depict a geographic shift in labour market dynamics, although exploration of the underlying factors that cause this shift is beyond the scope of this thesis.

Beginning in 1996, LL clustering (i.e., cold spots) from the northeastern Maritime Provinces and northern Québec spreads across northern Canada, effectively capping off the country with ubiquitous low levels of employment. In 2011, the growing LL region hit the northwest coast, and appears in regions of British Columbia (BC). Keep in mind that, as described above, overall employment in Canada becomes less clustered after 1991. Therefore, the reduction in overall clustering must be due to changes in the Prairie region and southern Ontario.

In terms of youth employment trends, Figure 5.2.2 (see Appendix C) shows a similar fanning out of LL clustering across northern Canada over time, although comparing Figures 38 and 39 shows that this northern LL clustering of youth employment spreads earlier on for this age group. Similarly, in BC, LL clusters appear earlier on for young workers (i.e., 2006), compared to 2011 for the total labour force. Additionally, the region comprised of southern Saskatchewan, southern Manitoba and Alberta remains more clustered with hot spots in 2006. Like the labour force 15 years and over, young workers realize a growth in HH clustering in southern Québec over time. Interestingly, by 2006, clustering of high rates of employment cover a larger region in Québec for young workers. Ontario, comparatively, sees rapid declines in HH clustering of employment earlier on for young workers. While significant hot spots persist for the total labour force in

2006, these clusters completely disappear for young workers. Overall, these LISA maps suggest that young workers experience labour market changes earlier on than their older counterparts.

Even though in 2006 young workers experience increasing LL employment clustering across northern Canada and in parts of BC, increasing HH clustering in southern Québec, and retain significant HH clustering in northern Alberta, they still realize a disproportionate decrease in overall clustering at the global level compared to the total labour force. This phenomenon may be accounted for by the disappearance of HH clustering in Ontario between 1996 and 2006, specifically from the region around Toronto.

Figures 5.2.3 and 5.2.4 (see Appendix C) depict unemployment trends across census divisions for both age groups. As may be expected, the unemployment spatial trends for both age groups mirror those of employment spatial trends, with little observed variation in the LISA maps other than the replacement of HH regions with LL regions and vice-versa.

Over time, for the total labour force, HH clustering of unemployment spread from the northwest Maritime Provinces across northern Canada while LL clustering becomes increasingly concentrated in southern Québec. The coverage of cold spots decreases since 1996 in the Prairie Provinces. LL unemployment clustering nearly disappears from Ontario between 2006 and 2011, and it completely disappears for young workers in 2006. The reduction and disappearance of these cold spots for each age group, respectively, coincides with the disproportionately large growth in unemployment rates faced in Ontario compared to the rest of Canada (as detailed in the section on provincial level trends).

Self-employment

In terms of self-employment, Figure 5.2.5 (see Appendix C) shows significant and consistent clustering of cold spots in the northeast region of the Maritime Provinces and across northern Canada from 1991 to 2011. This area comprises nearly uniform low levels of self-employment. Comparatively, the southern portion of the Prairie Provinces are characterized by consistent clustering of hot spots from 1991 to 2011. The consistency in coverage of hot spots and cold spots corresponds to the scant change in overall clustering at the national level.

Full year, full time employment

The LISA maps for the total labour force employed full time year round depict spatial variations in clustering of four main provinces or regions: BC; northern Alberta and Northwest Territories region; southern Saskatchewan and; southern Ontario and southern Québec (see Figure 5.2.6 in Appendix C). In BC from 1991 to 2011, LL clustering steadily spreads from the interior of the province, eventually incorporating the coast. In 2011, the region encompassing northern Alberta and most of the Northwest Territories sees a spike in coverage of HH clustering. Southern Saskatchewan, on the other hand, shifts back and forth since 1991 between minimal and nearly total coverage of the region by high levels of full time and full year employment, the latter being the case in 2011.

Starting in 1991, HH clustering becomes increasingly polarized in southern Ontario and southern Québec. In fact, as of 2011, these high levels of full time year round employment are centered on Toronto and Montréal, as well as their surrounding census divisions. Thus, these maps depict a clear retreat of clustering of stable, secure employment to the metropoles. This phenomenon calls into question a possible urban rural divide of precarious employment in Canada.

Since the first three regions discussed all experience increased clustering in 2011, the large reduction in clustering of full time, year round employment between 2006 and 2011 at the national level is likely accounted for in the retreat of clustering to the metropoles of Toronto and Montréal.

Part year or part time employment

Figure 5.2.7 (see Appendix C) provides LISA maps for the total labour force working part year or part time. Areas of interest include regions in BC, the southern portions of the Prairie Provinces, and southern Ontario and southern Québec. BC sees an increase in HH clustering from 1991 to 1996, but this trend reverses by 2006. In the southern portion of the Prairie Provinces, low levels of part year or part time become increasingly clustered by 2006. Furthermore, similar to full year and full time employment trends, from 1991 to 2006, the region comprised of southern Ontario and southern Québec sees increasingly polarized concentrations of LL clusters of part year or part time employment.

Manufacturing employment

As mentioned previously, manufacturing employment is the only variable to undergo an overall increase in spatial concentration from 1991 to 2011 at the national level. The Prairie Provinces and Territories are consistently characterized by nearly total coverage of low levels of manufacturing employment (see Figure 5.2.8 in Appendix C). Conversely, from 1991 to 2011, southwest Ontario and southeast Québec are the primary regions characterized by HH clustering. As previously mentioned, these two regions are historically areas that dominated employment in the manufacturing sector. Similar to the trends of full time and full year and part time or part year employment, overall coverage of these hot spots seems to retreat and become increasingly centralized in these areas, especially between 2006 and 2011. Regarding the overall increase in spatial concentration from 1991 to 2011, the source of this growth is rather unclear given the observations from the LISA maps.

Key findings of regional patterns of precarious employment

Hot spots of employment are consistently concentrated in the southern portion of the Prairie Provinces between 1991 and 2011. Interestingly, between 1996 and 2011, high rates of employment shift from southern Ontario to southern Québec.

Unemployment spatial clustering and dispersion effectively mirror patterns and trends of employment clustering and dispersion. Similar to clusters of low rates of employment, clusters of high rates of unemployment cover much of northern Canada by 2011.

Self-employment remains rather static on the map over time. Since 1991, the region stretching from the northeast Maritime region across northern Canada sees consistently low levels of self-employment. The region comprised of the southern portions of the Prairie Provinces, on the other hand, sees consistently high levels of self-employment.

Contrary to self-employment, part year or part time employment seems much more dynamic across the Canadian landscape. The southern portion of the Prairie Provinces experience increased spatial concentration of low levels of part year or part time employment between 1996 and 2006. Between 1991 and 1996, high levels of part year or part time employment are increasingly clustered within BC.

Especially interesting is the polarization of certain variables in the region encompassing southern Ontario and southern Québec. From 1991 onward, low levels of part year or part time employment become increasingly polarized between regions around Montréal and Toronto. These same areas are characterized by increased polarization of high levels of full time and full year employment. Furthermore, high levels of manufacturing employment become increasingly polarized between southwest Ontario and southeast Québec from 2006 to 2011.

Particularly striking is that shifts in the spatial clustering of the total labour force seem to mirror shifts young workers experience, only they occur several years later for the age group 15 years and over. LL employment clustering, which spreads across northern Canada from 1996 to 2011 for the total labour force, spreads sooner for young workers. Similarly, in BC, LL clusters appear earlier on (i.e., 2006) for this age group, compared to 2011 for the total labour force. By 2006, clustering of high rates of employment for young workers cover a large region in southern Québec, the size of which the total labour force only match by 2011. Ontario, comparatively, realizes rapid declines in HH clustering of employment earlier on for young workers. While significant hot spots persist for the total labour force in 2006, these clusters completely disappear for young workers. Overall, these LISA maps suggest that young workers experienced labour market changes earlier on than their older counterparts. These findings suggest that young workers are particularly vulnerable to fluctuations in the labour market, and lack stability and security in their jobs.

These local statistics shed light on the spatial and temporal variation of different forms of precarious employment within Canada.

Chapter 6: CONCLUSION

This research marks an attempt to define and pinpoint a critical geography of precarious employment within the Canadian space economy. In doing so, it provides the first detailed study of the geographic and temporal dimensions of precarious employment at the regional level. To achieve this, I first investigate national and provincial level trends using data from the Labour Force Survey from 1976 to 2013. I then apply exploratory spatial data analysis methods to data derived from four cycles of the Canadian Census of Population (1991 to 2011) in order to locate particular regions facing precarity. Finally, to address the growing concerns of young workers over future job prospects, this paper places special emphasis on youth employment trends.

As national and provincial level trends of the tested indicators suggest, precarious employment increases in Canada over the past few decades. Part time work, which is the largest category of precarious employment nationally by total jobs, grows much faster than full time employment. Out of all provinces, Québec reports the highest increases in part time employment from 1976 to 2013.

Temporary employment increases faster than permanent employment since 1997, with term or contract jobs spearheading the growth. Interestingly, the four largest provinces by population report the highest proportional increases in temporary employment: Ontario, Québec, BC and Alberta.

Multiple job holdings sees consistent growth since 1987. This trend indicates a feeling of instability and insecurity in the Canadian labour market, where workers attempt to supplement their income. It also depicts a shift away from the SER.

From 2000 to 2013, increasing rates of employment in the goods-producing sector, which I argue may be gauged as yet another indicator of precarity, primarily takes place in Alberta, Saskatchewan and BC. This trend represents a shift away from the traditional regions of southern Ontario and southern Québec where employment in the goods-producing sector once flourished. In fact these two provinces report overall decreases in this employment form since 1988.

Intriguingly, while employment in the goods-producing sector decreases in Ontario and Québec, average job tenure in this industry realizes increases in both provinces between 2000 and 2013. I

contend that employment in the goods-producing sector in Québec and Ontario represents a double-edged sword: while both provinces experience overall decreases in total employment in the sector (i.e., less job security in terms of risk of job loss, thus increasing precarity), they also realize longer employment (i.e., increased job security in terms of duration of employment for those still working in the sector). On the flipside, Alberta, Saskatchewan and BC report net decreases in job tenure. So, while overall employment in the goods-producing sector may be increasing in the West, it remains less stable and less secure than in Ontario and Québec.

Where national and provincial level statistics succeed in providing general trends of the Canadian labour market, they fail to pinpoint the local geographic sources. What follows are some key findings at the regional level, which are derived from spatial statistics. The results of the spatial analysis, which uses global and local statistics, reveal that different forms of precarious employment exhibit distinct spatiotemporal patterns.

At the national scale, all variables display strong positive and statistically significant spatial clustering, although clustering varies in strength and through time for each variable. An especially noteworthy finding is that the spatial concentration of the three variables, which I typify as being most precarious (i.e., self-employment, part year or part time employment and manufacturing employment), either increase significantly or, at the most, decrease very little relative to the other variables. These findings suggest that precarious employment becomes more spatially concentrated in Canada. In contrast, the spatial concentration of full time and full year employment, which represents the stable, secure standard employment relationship, decreases significantly during the study period and is the least spatially clustered variable by 2011. Thus, secure, stable forms of employment are increasingly diffuse.

Although aggregate spatial statistics are useful, the concentration of precarious employment is not uniform across the Canadian landscape. To pinpoint exact locations of spatial clustering, I create LISA maps.

As is seen, the geographies of self-employment remain rather static across Canada over time. Since 1991, the region stretching from the northeast Maritime region across northern Canada sees consistently low levels of self-employment. During this period, the region comprised of the

southern portions of the Prairie Provinces, on the other hand, sees consistently high levels of self-employment.

Contrary to self-employment, part year or part time employment seems much more dynamic across the Canadian landscape. The southern portion of the Prairie Provinces experience increased spatial concentration of low levels of part year or part time employment between 1996 and 2006. Between 1991 and 1996, high levels of part year or part time employment increasingly cluster within BC.

Especially interesting is the polarization of certain variables in the region comprised of southern Ontario and southern Québec. From 1991 onward, low levels of part year or part time employment are increasingly centered and concentrated in regions surrounding Montréal and Toronto. These same areas are characterized by increasing polarization of high levels of full time and full year employment. Furthermore, high levels of manufacturing employment also increasingly polarize between southwest Ontario and southeast Québec from 2006 to 2011.

Regarding youth employment trends, young workers are arguably in more precarious situations. For one, they experience a disproportionate growth in unemployment during economic crises. After the most recent financial crisis, they take longer than their older counterparts to recover positions in permanent jobs. Since 1976, they experience a net decline in full time positions while the older labour force experiences a net gain. Likewise, since 1997, the gap in median hourly wages between young workers and the rest of the labour force grows, increasing the precarity of young employees through lower earnings.

Particularly striking is that shifts in spatial clustering of the total labour force tend to mirror shifts that young workers experience, only they occurred several years later for the total labour force. LL employment clustering, which spreads across northern Canada from 1996 to 2011 for the total labour force, spreads sooner for young workers. Similarly, in BC, LL clusters appear earlier on (i.e., 2006) for this age group, compared to 2011 for the total labour force. By 2006, clustering of high rates of youth employment cover a large region in southern Québec, the size of which the total labour force only match in 2011. Southern Ontario, comparatively, realizes rapid declines in HH clustering of employment earlier on for young workers. While significant hot spots in southern Ontario persist for the total labour force in 2006, that same year those clusters

completely disappear for young workers. Overall, these LISA maps depict young workers experiencing labour market changes earlier on than their older counterparts. This pattern suggests that young workers are particularly vulnerable to fluctuations in the labour market, and that they lack stability and security in their jobs.

As mentioned, the largest limitation encountered in this research was the change of Canadian Census of Population survey in 2011 from the mandatory long-form survey to the voluntary National Household Survey. As a result, youth employment trends could not be mapped for several indicators of labour market insecurity including the employment rate, unemployment rate, and, of crucial importance to this study in particular, part year or part time employment.

Concerning regional policy implications, these findings imply that policy-makers should increase their focus on youth employment trends, which seem to act as a gauge of the where the labour market is heading for the labour force as a whole. In acknowledging this phenomenon, policy-makers may then project potential labour development initiatives in an attempt to positively alter the course of the total labour force.

For future research, the exploration of an urban/rural divide should be considered. The polarization of part year or part time as well as full time and full year employment between Montréal and Toronto suggests that such a divide exists.

Additionally, spatial regression modelling should be performed to determine the underlying factors that influence the spatial distribution of precarious employment. In other words, future research should seek to answer the following questions: *Why is precarious employment in Canada concentrated in particular regions over others? What is happening in the Canadian labour market, economy and society that accounts for the spatiotemporal shifts of precarious employment?*

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NOTES

i. As Cranford et al (2003) note, Canada's annual General Social Survey (GSS) included part-year work, defined as a main job that typically lasts nine months or less per year, in their 1989 questionnaire, which Krahn analyzed in his 1991 publication. However, in 1994, part-year work was not included in the GSS questionnaire. Regardless, they claim that most employees with jobs 'typically' lasting nine months or less per year (e.g. seasonal workers) are accounted for in the definition of temporary employees. Thus,

ii. Noack and Vosko (2011) employ for dimensions of precarity in their analysis: low wages, no pensions, no union coverage, and small firm size.

iii. For more information on the LFS, visit http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf

iv. For more information on the Canadian Census of Population, visit http://www12.statcan.gc.ca/census-recensement/2011/ref/overview-apercu/pop1-eng.cfm

Appendix A

Table 3.1 Variables defined

Variable	Definition
Class of worker	"whether an employed person is an employee or is self-employed."[1]
Class of worker – not applicable	"unemployed persons aged 15 years and over who have never worked for pay or in self-employment or who had last worked prior to January 1 2010 only."[2]
Discouraged searcher	"(also called Discouraged worker) Since 1997, discouraged searchers are defined as those persons who reported wanting to work at a job or business during reference week and were available but who did not look for work because they believed no suitable work was available. Prior to January 1997, the definition of discouraged searcher was limited to those who looked for work within the previous 6 months but not during the last 4 weeks although they were available, and did not look because they believed no suitable work was available. The change in concept and question wording results in a complete break in the series."[3]
Duration of unemployment	"Number of continuous weeks during which a person has been on temporary layoff or without work and looking for work. Respondents are required to look for work at least once every four weeks, they are not required to undertake job search activities each week in order to be counted as unemployed. The LFS measures the duration of incomplete spells of unemployment, since the information is collected only from those currently unemployed. A spell of unemployment is interrupted or completed by any period of work or withdrawal from the labour force."[4]
Employee	"persons who worked for others in the context of an employer-employee relationship. This includes persons who worked for wages, salaries, commissions, tips, piece-rates, or payments 'in kind' (payments in goods or services rather than money). Exclusion: "Employee" does not include working owners of incorporated businesses even though they may receive wages, salaries, commissions, tips, piece-rates, or payments 'in kind' (payments in goods or services rather than money). "[5]
Employment	"Number of persons who, during the reference week, worked for pay or profit, or performed unpaid family work or had a job but were not at work due to own illness or disability, personal or family responsibilities, labour dispute, vacation, or other reason. Those persons on layoff and persons without work but who had a job to start at a definite date in the future are not considered employed."[6]
Employment rate	"The employment rate (formerly the employment/population ratio) is the number of persons employed expressed as a percentage of the population 15 years of age and over. The employment rate for a particular group (age, sex, marital status) is the

[1] Statistics Canada, http://www.statcan.gc.ca/concepts/definitions/labour-travail-02-eng.htm. Accessed 28 September 2014.
[2] Computing in the Humanities and Social Sciences, http://datacenter.chass.utoronto.ca/census/2011nhs/docs/en/help.html#f85. Accessed 20 October 2014.
[3] *Guide to the Labour Force Survey.* (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[4] *Guide to the Labour Force Survey.* (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[5] Statistics Canada, http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=114430&CVD=114430&CLV=0&MLV=1&D=1. Accessed 28 September 2014.
[6] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.

	number employed in that group expressed as a percentage of the population for that group."[7]
Full-time employment	"Full-time employment consists of persons who usually work 30 hours or more per week at their main or only job."[8]
Goods-producing industries (or goods sector)	"Includes agriculture; forestry, fishing, mining, and oil and gas extraction; utilities (electric power, gas and water); construction; and manufacturing."[9]
In labour force	"persons who during the reference period were either employed or unemployed. The labour force consists of persons who contribute or are available to contribute to the production of goods and services falling within the System of National Accounts production boundary."[10]
Job tenure	"The number of consecutive months or years a person has worked for the current (or, if employed within the previous twelve months, the most recent) employer. The employee may have worked in one or more occupations or in one or more locations, or have experienced periods of temporary layoff with recall and still be considered to have continuous tenure if the employer has not changed. But if a person has worked for the same employer over different periods of time, job tenure measures the most recent period of uninterrupted work."[11]
Multiple job holders	"Persons who, during the reference week, were employed in two or more jobs simultaneously. This group is sometimes referred to as 'Moonlighters'."[12]
Part-time employment	"Part-time employment consists of persons who usually work less than 30 hours per week at their main or only job."[13]
Permanent (job permanency)	"A permanent job is one that is expected to last as long as the employee wants it, given that business conditions permit. That is, there is no pre-determined termination date."[14]
Self-employed	"Includes self-employed with an incorporated business and self-employed with an unincorporated business. Also included among the self-employed are unpaid family workers."[15]

[7] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.
[8] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.
[9] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[10] Statistics Canada, http://www.statcan.gc.ca/concepts/definitions/labour-travail-class01a-eng.htm. Accessed 28 September 2014.
[11] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[12] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[13] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.
[14] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[15] Computing in the Humanities and Social Sciences, http://datacenter.chass.utoronto.ca/census/2011nhs/docs/en/help.html#f140. Accessed 19 January 2015.

Self-employed incorporated, with paid help	"Working owners of an incorporated business, farm, or professional practice who had employees."[16]
Self-employed incorporated, no paid help	"Working owners of an incorporated business, farm, or professional practice who did not have employees."[17]
Self-employed unincorporated, with paid help	"Working owners of a business, farm, or professional practice that is not incorporated and self-employed persons who do not have a business (for example, baby-sitters and newspaper carriers). This group had employees."[18]
Self-employed unincorporated, no paid help	"Working owners of a business, farm, or professional practice that is not incorporated and self-employed persons who do not have a business (for example, baby-sitters and newspaper carriers). This group did not have employees."[19]
Services-producing industries	"Includes trade; transportation and warehousing; finance, insurance, real estate and leasing; professional, scientific and technical services; business, building and other support services; educational services; health care and social assistance; information, culture and recreation; accommodation and food services; other services; and public administration."[20]
Temporary (job permanency)	A temporary job has a predetermined end date, or will end as soon as a specified project is completed. Information is collected to allow the sub-classification of temporary jobs into four groups: seasonal; temporary, term or contract, including work done through a temporary help agency; casual job; and other temporary work."[21]
Duration of unemployment (for average weeks unemployed, no top-code)	"The number of continuous weeks during which a person has been without work and is looking for work or is on temporary layoff. Respondents are required to look for work at least once every four weeks; they are not required to undertake job search activities each week in order to be counted as unemployed."[22]
Unemployment	"Number of persons who, during the reference week, were without work, had actively looked for work in the past four weeks, and were available for work. Those persons on layoff or who had a new job to start in four weeks or less are considered unemployed."[23]
Unemployment rate	"The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force. The unemployment rate for a particular group (age,

[16] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820012&tabMode=dataTable&srchLan=-1&p1=-1&p2=9#F7. Accessed 16 October 2014.
[17] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820012&tabMode=dataTable&srchLan=-1&p1=-1&p2=9#F7. Accessed 16 October 2014.
[18] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820012&tabMode=dataTable&srchLan=-1&p1=-1&p2=9#F7. Accessed 16 October 2014.
[19] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820012&tabMode=dataTable&srchLan=-1&p1=-1&p2=9#F7. Accessed 16 October 2014.
[20] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[21] *Guide to the Labour Force Survey*. (2012) (1st ed.). Ottawa. Retrieved from http://www.statcan.gc.ca/pub/71-543-g/71-543-g2012001-eng.pdf
[22] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820048&tabMode=dataTable&srchLan=-1&p1=-1&p2=9#F3. Accessed 14 February 2015.
[23] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.

	sex, marital status) is the number unemployed in that group expressed as a percentage of the labour force for that group."[24]
Worked full year full time with employment income	"Was an earner or employment income recipient and worked 49 to 52 weeks in 2005, mostly full time."[25]
Worked part year or part time with employment income	"Was an earner or employment income recipient and worked less than 49 weeks or worked mostly part time in 2005."[26]
31-33 Manufacturing	"This sector comprises establishments primarily engaged in the physical or chemical transformation of materials or substances into new products. These products may be finished, in the sense that they are ready to be used or consumed, or semi-finished, in the sense of becoming a raw material for an establishment to use in further manufacturing. Related activities, such as the assembly of the component parts of manufactured goods; the blending of materials; and the finishing of manufactured products by dyeing, heat-treating, plating and similar operations are also treated as manufacturing activities. Manufacturing establishments are known by a variety of trade designations, such as plants, factories or mills. Manufacturing establishments may own the materials which they transform or they may transform materials owned by other establishments. Manufacturing may take place in factories or in workers' homes, using either machinery or hand tools. Certain activities involving the transformation of goods are classified in other sectors. Some examples are post-harvest activities of agricultural establishments, such as crop drying; logging; the beneficiating of mineral ores; the production of structures by construction establishments; and various activities conducted by retailers, such as meat cutting and the assembly of products such as bicycles and computers."[27]

[24] Statistics Canada, http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=2820002&tabMode=dataTable&srchLan=-1&p1=-1&p2=9. Accessed 19 January 2015.

[25] Statistics Canada, http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/tbt/Rp-eng.cfm?LANG=E&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=0&GID=0&GK=0&GRP=1&PID=97611&PRID=0&PTYPE=88971,97154&S=0&SHOWALL=0&SUB=0&Temporal=2006&THEME=74&VID=0&VNAMEE=&VNAMEF. Accessed 6 February 2015.

[26] Statistics Canada, http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/tbt/Rp-eng.cfm?LANG=E&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=0&GID=0&GK=0&GRP=1&PID=97611&PRID=0&PTYPE=88971,97154&S=0&SHOWALL=0&SUB=0&Temporal=2006&THEME=74&VID=0&VNAMEE=&VNAMEF. Accessed 6 February 2015.

[27] Statistics Canada, http://stds.statcan.gc.ca/spaggr-agrsp/labour-travail-2007/labnaics07cs-travscian07cr-eng.asp?criteria=31-33. Accessed 19 January 2015.

Table 4.1.1 Canadian labour force characteristics: Both sexes; 15 years and over; 1976-2013

	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Total labour force (persons x 1,000)	10,491.3	13,779.1	15,841.9	19,079.4	+81.9	+31.3	+15.0	+20.4
Total employment (persons x 1,000)	9,747.5	12,709.6	14,760.1	17,731.2	+81.9	+30.4	+16.1	+20.1
Full-time employment (persons x 1,000)	8,529.7	10,573.9	12,089.4	14,380.2	+68.6	+24.0	+14.3	+18.9
Part-time employment (persons x 1,000)	1,217.8	2,135.7	2,670.7	3,351.0	+175.2	+75.4	+25.1	+25.5
Total unemployment (persons x 1,000)	743.8	1,069.5	1,081.8	1,348.2	+81.3	+43.8	+1.2	+24.6
Unemployment rate (% unemployed of labour force)	7.1	7.8	6.8	7.1	+0.0	+9.9	-12.8	+4.4
Total employment, goods-producing sector (persons x 1,000)	3,370.9	3,746.2	3,809.5	3,883.4	+15.2	+11.1	+1.7	+1.9
Total employment, services-producing sector (persons x 1,000)	6,376.6	8,963.4	10,950.6	13,847.7	+117.2	+40.6	+22.2	+26.5
Full-time employment, goods producing sector(persons x 1,000)	3,198.4	3,497.7	3,578.5	3,638.9	+13.8	+9.4	+2.3	+1.7
Full-time employment, services producing sector (persons x 1,000)	5,331.3	7,076.2	8,510.9	10,741.2	+101.5	+32.7	+20.3	+26.2
Part-time employment, goods-producing sector (persons x 1,000)	172.5	248.5	231.0	244.5	+41.7	+44.1	-7.0	+5.8
Part-time employment, services-producing sector (persons x 1,000)	1,045.3	1,887.2	2,439.7	3,106.5	+197.2	+80.5	+29.3	+27.3
Total employed, all classes of workers, all industries (persons x 1,000)	9,747.5	12,709.6	14,760.1	17,731.2	+81.9	+30.4	+16.1	+20.1
Total employees, all industries (persons x 1,000)	8,562.5	10,935.5	12,379.1	15,024.5	+75.5	+27.7	+13.2	+21.4
Total self-employed, all industries (persons x 1,000)	1,185.0	1,774.1	2,381.0	2,706.7	+128.4	+49.7	+34.2	+13.7
Average job tenure, both full- and part-time employment (months)	83.7	86.0	95.8	103.3	+23.4	+2.7	+11.4	+7.8
Average job tenure, full-time employment (months)	88.6	92.9	103.2	110.3	+24.5	+4.9	+11.1	+6.9
Average job tenure, part-time employment (months)	49.4	52.1	62.2	73.3	+48.4	+5.5	+19.4	+17.8

Sources: CANSIM Tables 282-0002, 282-0008, 282-0012, 282-0038

Table 4.1.2 Canadian labour force characteristics: Both sexes; 15 years and over; 1987-2013

	1987	2000	2013	1987-2013	1987-2000	2000-2013
Multiple jobholders, all industries (persons x 1,000)	504.5	712.8	932.5	+84.8	+41.3	+30.8
Multiple jobholders, goods-producing sector (persons x 1,000)	119.7	121.6	125.5	+4.8	+1.6	+3.2
Multiple jobholders, services-producing sector (persons x 1,000)	384.9	591.1	807.0	+109.7	+53.6	+36.5
Average job tenure, total employed, all industries (months)	86.5	95.8	103.3	+19.4	+10.8	+7.8
Average job tenure, goods-producing sector (months)	106.1	113.7	115.9	+9.2	+7.2	+1.9
Average job tenure, services-producing sector (months)	78.3	89.5	99.8	+27.5	+14.3	+11.5

Sources: CANSIM Tables 282-0031, 282-0042

Table 4.1.3 Canadian labour force characteristics: Both sexes; 15 years and over; 1997-2013

	1997	2004	2013	1997-2013	1997-2004	2004-2013
Average weeks unemployed, no top-code (weeks)	26.5	16.9	21.1	-20.4	-36.2	+24.9
Total employees: all wages, permanent and temporary, covered and not covered by union (persons x 1,000)	11,364.5	13,451.9	15,024.5	+32.2	+18.4	+11.7
Median hourly wage rate - Total employees: all wages, permanent and temporary, covered and not covered by union ($ CAD)	14.0	16.4	21.0	+50.0	+16.8	+28.4
Employees with permanent and temporary jobs, all industries (persons x 1,000)	11,364.5	13,451.9	15,024.5	+32.2	+18.4	+11.7
Employees with permanent jobs, all industries (persons x 1,000)	10,081.3	11,736.2	13,011.1	+29.1	+16.4	+10.9
Employees with temporary jobs, all industries (persons x 1,000)	1,283.20	1,715.70	2,013.40	+56.9	+33.7	+17.4
Employees with seasonal jobs, all industries (persons x 1,000)	322.60	394.00	429.60	+33.2	+22.1	+9.04
Employees with term or contract jobs, all industries (persons x 1,000)	588.10	826.80	1,076.00	+83.0	+40.6	+30.1
Employees with casual jobs, all industries (persons x 1,000)	334.70	457.40	496.10	+48.2	+36.7	+8.5
Employees with other temporary jobs, all industries (persons x 1,000)	37.80	37.50	11.70	-69.1	-0.79	-68.8

Sources: CANSIM Tables 282-0048, 282-0074, 282-0080

Table 4.1.4 Canadian labour force characteristics: Both sexes; 15 to 24 years; 1976-2013

	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Total labour force (persons x 1,000)	2,891.9	2,891.6	2,619.4	2,837.9	-1.9	+0.0	-9.4	+8.3
Total employment (persons x 1,000)	2,533.6	2,559.1	2,287.4	2,450.2	-3.3	+1.0	-10.6	+7.1
Full-time employment (persons x 1,000)	2,000.0	1,696.2	1,289.3	1,282.2	-35.9	-15.2	-24.0	-0.6
Part-time employment (persons x 1,000)	533.6	863.0	998.1	1,168.0	+118.9	+61.7	+15.7	+17.0
Total unemployment (persons x 1,000)	358.4	332.4	332.0	387.7	+8.2	-7.3	-0.1	+16.8
Unemployment rate (% unemployed of labour force)	12.4	11.5	12.7	13.7	+10.5	-7.3	+10.4	+7.9
Total employment, goods-producing sector (persons x 1,000)	774.9	608.0	451.6	390.7	-49.6	-21.5	-25.7	-13.5
Total employment, services-producing sector (persons x 1,000)	1,758.7	1,951.2	1,835.8	2,059.5	+17.1	+10.9	-5.9	+12.2
Full-time employment, goods producing sector(persons x 1,000)	706.5	531.2	383.8	332.6	-52.9	-24.8	-27.7	-13.3
Full-time employment, services producing sector (persons x 1,000)	1293.5	1165.0	905.5	949.6	-26.6	-9.9	-22.3	+4.9
Part-time employment, goods-producing sector (persons x 1,000)	68.4	76.8	67.8	58.1	-15.1	+12.3	-11.7	-14.3
Part-time employment, services-producing sector (persons x 1,000)	465.2	786.2	930.3	1,109.9	+138.6	+69.0	+18.3	+19.3
Average job tenure, both full- and part-time employment (months)	19.8	16.6	16.7	19.1	-3.5	-16.2	+0.6	+14.4
Average job tenure, full-time employment (months)	20.6	18.3	17.7	19.6	-4.9	-11.2	-3.3	+10.7
Average job tenure, part-time employment (months)	16.6	13.3	15.4	18.6	+12.0	-19.9	+15.8	+20.8

Sources: CANSIM Tables 282-0002, 282-0008, 282-0038

Table 4.1.5 Canadian labour force characteristics: Both sexes; 15 to 24 years; 1987-2013

	1987	2000	2013	1987-2013	1987-2000	2000-2013
Multiple jobholders, all industries (persons x 1,000)	118.2	144.5	153.4	+29.8	+22.3	+6.2
Multiple jobholders, goods-producing sector (persons x 1,000)	21.1	18.8	14.2	-32.7	-10.9	-24.5
Multiple jobholders, services-producing sector (persons x 1,000)	97.1	125.7	139.2	+43.4	+29.5	+10.7

Sources: CANSIM Tables 282-0031

Table 4.1.6 Canadian labour force characteristics: Both sexes; 15 to 24 years; 1997-2013

	1997	2004	2013	1997-2013	1997-2004	2004-2013
Average weeks unemployed, no top-code (weeks)	13.5	9.0	11.9	-11.9	-33.3	+32.2
Total employees: all wages, permanent and temporary, covered and not covered by union (persons x 1,000)	1,877.8	2,355.2	2,369.4	+26.2	+25.4	+0.6
Median hourly wage rate - Total employees: all wages, permanent and temporary, covered and not covered by union ($ CAD)	7.8	9.0	12.0	+53.8	+15.4	+33.3
Employees with permanent and temporary jobs, all industries (persons x 1,000)	1,877.8	2,355.2	2,369.4	+26.2	+25.4	+0.6
Employees with permanent jobs, all industries (persons x 1,000)	1,407.0	1,663.8	1,660.2	+18.0	+18.3	-0.2
Employees with temporary jobs, all industries (persons x 1,000)	470.80	691.40	709.20	+50.64	+46.86	+2.57
Employees with seasonal jobs, all industries (persons x 1,000)	136.60	170.60	176.20	+28.99	+24.89	+3.28
Employees with term or contract jobs, all industries (persons x 1,000)	174.80	275.10	298.00	+70.48	+57.38	+8.32
Employees with casual jobs, all industries (persons x 1,000)	149.80	236.90	231.50	+54.54	+58.14	-2.28
Employees with other temporary jobs, all industries (persons x 1,000)	9.60	8.70	3.40	-64.58	-9.38	-60.92

Sources: CANSIM Tables 282-0048, 282-0074, 282-0080

Table 4.2.1. Total employment; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	158.8	199.7	198.8	232.8	+46.6	+25.8	-0.5	+17.1
Prince Edward Island	43.0	54.6	62.8	74.1	+72.3	+27.0	+15.0	+18.0
Nova Scotia	297.9	373.7	411.7	453.8	+52.3	+25.4	+10.2	+10.2
New Brunswick	231.1	291.0	331.6	351.2	+52.0	+25.9	+14.0	+5.9
Quebec	2,543.4	3,081.4	3,401.5	4,032.2	+58.5	+21.2	+10.4	+18.5
Ontario	3,740.7	5,083.1	5,814.9	6,879.4	+83.9	+35.9	+14.4	+18.3
Manitoba	434.4	506.3	552.2	633.2	+45.8	+16.6	+9.1	+14.7
Saskatchewan	382.3	462.8	472.9	555.3	+45.3	+21.1	+2.2	+17.4
Alberta	854.9	1,222.3	1,583.1	2,211.0	+158.6	+43.0	+29.5	+39.7
British Columbia	1,060.9	1,434.6	1,930.8	2,308.1	+117.6	+35.2	+34.6	+19.5

Source: CANSIM Table 282-0002

Table 4.2.2 Total employment; both sexes (15 to 24 years)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	45.7	39.4	27.3	29.0	-36.5	-13.8	-30.7	+6.2
Prince Edward Island	12.1	11.7	11.1	11.3	-6.6	-3.3	-5.1	+1.8
Nova Scotia	79.7	78.5	63.6	61.9	-22.3	-1.5	-19.0	-2.7
New Brunswick	64.7	61.1	52.1	45.2	-30.1	-5.6	-14.7	-13.2
Québec	661.1	590.4	510.7	568.9	-13.9	-10.7	-13.5	+11.4
Ontario	924.5	1,056.2	890.8	910.6	-1.5	+14.2	-15.7	+2.2
Manitoba	118.3	106.4	96.3	101.6	-14.1	-10.1	-9.5	+5.5
Saskatchewan	108.7	93.2	82.4	86.9	-20.1	-14.3	-11.6	+5.5
Alberta	250.8	248.7	274.9	317.6	+26.6	-0.8	+10.5	+15.5
British Columbia	268.0	273.5	278.2	317.2	+18.4	+2.1	+1.7	+14.0

Source: CANSIM Table 282-0002

Table 4.2.3 Unemployment rate; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	13.4	16.2	16.6	11.4	-14.9	+20.9	+2.5	-31.3
Prince Edward Island	9.3	12.2	12.0	11.5	+23.7	+31.2	-1.6	-4.2
Nova Scotia	9.2	10.2	9.1	9.0	-2.2	+10.9	-10.8	-1.1
New Brunswick	11.0	11.8	10.0	10.4	-5.5	+7.3	-15.3	+4.0
Québec	8.7	9.5	8.5	7.6	-12.6	+9.2	-10.5	-10.6
Ontario	6.1	5.0	5.7	7.5	+23.0	-18.0	+14.0	+31.6
Manitoba	4.7	7.7	5.0	5.4	+14.9	+63.8	-35.1	+8.0
Saskatchewan	3.8	7.3	5.1	4.0	+5.3	+92.1	-30.1	-21.6
Alberta	3.9	8.0	5.0	4.6	+17.9	+105.1	-37.5	-8.0
British Columbia	8.4	10.3	7.2	6.6	-21.4	+22.6	-30.1	-8.3

Source: CANSIM Table 282-0002

Table 4.2.4 Unemployment rate; both sexes (15 to 24 years)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	20.5	25.2	25.4	16.7	-18.5	+22.9	+0.8	-34.3
Prince Edward Island	14.8	15.8	14.6	18.1	+22.3	+6.8	-7.6	+24.0
Nova Scotia	16.3	15.6	15.8	18.3	+12.3	-4.3	+1.3	+15.8
New Brunswick	16.8	18.1	15.7	17.8	+6.0	+7.7	-13.3	+13.4
Québec	15.2	13.0	14.0	13.0	-14.5	-14.5	+7.7	-7.1
Ontario	10.9	7.9	11.8	16.1	+47.7	-27.5	+49.4	+36.4
Manitoba	8.3	12.4	9.3	10.5	+26.5	+49.4	-25.0	+12.9
Saskatchewan	6.9	12.7	10.5	7.8	+13.0	+84.1	-17.3	-25.7
Alberta	7.4	12.3	10.6	8.6	+16.2	+66.2	-13.8	-18.9
British Columbia	14.4	14.7	13.8	12.9	-10.4	+2.1	-6.1	-6.5

Source: CANSIM Table 282-0002

Table 4.2.5 Self-employed; all industries; rate; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	19.0	25.1	25.8	22.7	+19.5	+32.1	+2.8	-12.0
Prince Edward Island	8.6	10.7	11.3	11.1	+29.1	+24.4	+5.6	-1.8
Nova Scotia	31.5	47.0	57.6	64.3	+104.1	+49.2	+22.6	+11.6
New Brunswick	24.5	32.9	40.4	39.6	+61.6	+34.3	+22.8	-2.0
Québec	255.5	410.8	503.6	538.2	+110.6	+60.8	+22.6	+6.9
Ontario	391.8	618.3	901.4	1,055.5	+169.4	+57.8	+45.8	+17.1
Manitoba	60.3	87.0	89.9	86.6	+43.6	+44.3	+3.3	-3.7
Saskatchewan	111.6	120.4	111.9	106.5	-4.6	+7.9	-7.1	-4.8
Alberta	155.0	208.8	283.7	365.6	+135.9	+34.7	+35.9	+28.9
British Columbia	127.1	213.0	355.4	416.5	+227.7	+67.6	+66.9	+17.2

Source: CANSIM Table 282-0012

Table 4.2.6 Total employed; all classes of worker; all industries; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	158.8	199.7	198.8	232.8	+46.6	+25.8	-0.5	+17.1
Prince Edward Island	43.0	54.6	62.8	74.1	+72.3	+27.0	+15.0	+18.0
Nova Scotia	297.9	373.7	411.7	453.8	+52.3	+25.4	+10.2	+10.2
New Brunswick	231.1	291.0	331.6	351.2	+52.0	+25.9	+14.0	+5.9
Québec	2,543.4	3,081.4	3,401.5	4,032.2	+58.5	+21.2	+10.4	+18.5
Ontario	3,740.7	5,083.1	5,814.9	6,879.4	+83.9	+35.9	+14.4	+18.3
Manitoba	434.4	506.3	552.2	633.2	+45.8	+16.6	+9.1	+14.7
Saskatchewan	382.3	462.8	472.9	555.3	+45.3	+21.1	+2.2	+17.4
Alberta	854.9	1,222.3	1,583.1	2,211.0	+158.6	+43.0	+29.5	+39.7
British Columbia	1,060.9	1,434.6	1,930.8	2,308.1	+117.6	+35.2	+34.6	+19.5

Source: CANSIM Table 282-0012

Table 4.2.7 Full-time employment; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	146.6	175.8	169.1	198.9	+35.7	+19.9	-3.8	+17.6
Prince Edward Island	37.0	45.5	52.4	60.9	+64.6	+23.0	+15.2	+16.2
Nova Scotia	261.0	312.0	335.5	365.3	+40.0	+19.5	+7.5	+8.9
New Brunswick	205.7	243.5	280.5	294.0	+42.9	+18.4	+15.2	+4.8
Québec	2,314.8	2,616.1	2,829.2	3,258.2	+40.8	+13.0	+8.1	+15.2
Ontario	3,235.7	4,240.0	4,769.4	5,561.3	+71.9	+31.0	+12.5	+16.6
Manitoba	373.1	408.5	447.6	509.6	+36.6	+9.5	+9.6	+13.9
Saskatchewan	324.3	361.6	380.4	457.9	+41.2	+11.5	+5.2	+20.4
Alberta	729.3	1,010.3	1,291.9	1,859.9	+155.0	+38.5	+27.9	+44.0
British Columbia	902.3	1,160.7	1,533.3	1,814.2	+101.1	+28.6	+32.1	+18.3

Source: CANSIM Table 282-0002

Table 4.2.8 Full-time employment; both sexes (15 to 24 years)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	40.8	28.8	16.7	16.9	-58.6	-29.4	-42.0	+1.2
Prince Edward Island	9.1	8.0	6.8	6.2	-31.9	-12.1	-15.0	-8.8
Nova Scotia	62.7	52.0	35.0	33.2	-47.0	-17.1	-32.7	-5.1
New Brunswick	53.1	41.6	33.3	25.5	-52.0	-21.7	-20.0	-23.4
Québec	564.7	411.3	300.4	273.4	-51.6	-27.2	-27.0	-9.0
Ontario	690.9	683.3	464.0	436.6	-36.8	-1.1	-32.1	-5.9
Manitoba	93.7	68.0	57.4	57.6	-38.5	-27.4	-15.6	+0.3
Saskatchewan	85.9	61.9	50.1	55.7	-35.2	-27.9	-19.1	+11.2
Alberta	196.2	169.8	171.8	207.1	+5.6	-13.5	+1.2	+20.5
British Columbia	202.8	171.4	153.8	170.1	-16.1	-15.5	-10.3	+10.6

Source: CANSIM Table 282-0002

Table 4.2.9 Part-time employment; both sexes (15 years and over)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	12.3	23.9	29.7	33.9	+175.6	+94.3	+24.3	+14.1
Prince Edward Island	6.0	9.1	10.4	13.2	+120.0	+51.7	+14.3	+26.9
Nova Scotia	36.9	61.6	76.1	88.5	+139.8	+66.9	+23.5	+16.3
New Brunswick	25.5	47.4	51.1	57.2	+124.3	+85.9	+7.8	+11.9
Québec	228.6	465.3	572.3	774.0	+238.6	+103.5	+23.0	+35.2
Ontario	505.0	843.2	1,045.4	1,318.1	+161.0	+67.0	+24.0	+26.1
Manitoba	61.3	97.8	104.6	123.6	+101.6	+59.5	+7.0	+18.2
Saskatchewan	58.0	101.3	92.5	97.4	+67.9	+74.7	-8.7	+5.3
Alberta	125.6	212.0	291.2	351.0	+179.5	+68.8	+37.4	+20.5
British Columbia	158.7	274.0	397.4	493.9	+211.2	+72.7	+45.0	+24.3

Source: CANSIM Table 282-0002

Table 4.2.10 Part-time employment; both sexes (15 to 24 years)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	4.9	10.5	10.6	12.1	+146.9	+114.3	+1.0	+14.2
Prince Edward Island	3.0	3.7	4.3	5.1	+70.0	+23.3	+16.2	+18.6
Nova Scotia	16.9	26.5	28.6	28.7	+69.8	+56.8	+7.9	+0.3
New Brunswick	11.7	19.6	18.8	19.6	+67.5	+67.5	-4.1	+4.3
Québec	96.5	179.1	210.3	295.5	+206.2	+85.6	+17.4	+40.5
Ontario	233.5	372.9	426.8	474.0	+103.0	+59.7	+14.5	+11.1
Manitoba	24.6	38.4	39.0	44.1	+79.3	+56.1	+1.6	+13.1
Saskatchewan	22.7	31.3	32.3	31.2	+37.4	+37.9	+3.2	-3.4
Alberta	54.6	78.9	103.0	110.5	+102.4	+44.5	+30.5	+7.3
British Columbia	65.1	102.1	124.5	147.0	+125.8	+56.8	+21.9	+18.1

Source: CANSIM Table 282-0002

Table 4.2.11 Employment in goods-producing sector; both sexes (15 years and older)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	50.7	57.7	42.5	54.1	+6.7	+13.8	-26.3	+27.3
Prince Edward Island	14.1	17.2	17.2	17.2	+22.0	+22.0	+0.0	+0.0
Nova Scotia	88.5	103	89.7	85.3	-3.6	+16.4	-12.9	-4.9
New Brunswick	75.9	80.2	82.6	78.1	+2.9	+5.7	+3.0	-5.4
Québec	894.3	910.4	898.2	861.8	-3.6	+1.8	-1.3	-4.1
Ontario	1,326.7	1,579.4	1,569.1	1,417.8	+6.9	+19.0	-0.7	-9.6
Manitoba	135.2	137.8	144.4	148.0	+9.5	+1.9	+4.8	+2.5
Saskatchewan	155.3	154.8	130.3	149.7	-3.6	-0.3	-15.8	+14.9
Alberta	306.4	354.2	428.4	625.3	+104.1	+15.6	+20.9	+46.0
British Columbia	323.8	351.5	407.2	446.2	+37.8	+8.6	+15.8	+9.6

Source: CANSIM Table 282-0008

Table 4.2.12 Average job tenure (months); goods-producing sector; both sexes (15 years and over)

	(months)			(percentage change)		
	1997	2004	2013	1997-2013	1997-2004	2004-2013
Newfoundland and Labrador	81.8	106.0	90.8	+11.0	+29.6	-14.3
Prince Edward Island	117.1	103.5	128.0	+9.3	-11.6	+23.7
Nova Scotia	99.4	111.6	119.3	+20.0	+12.3	+6.9
New Brunswick	89.8	109.0	111.2	+23.8	+21.4	+2.0
Québec	101.8	110.7	120.1	+18.0	+8.7	+8.5
Ontario	105.6	112.2	122.6	+16.1	+6.3	+9.3
Manitoba	127.4	134.0	130.3	+2.3	+5.2	-2.8
Saskatchewan	171.4	186.9	144.9	-15.5	+9.0	-22.5
Alberta	103.5	106.7	96.9	-6.4	+3.1	-9.2
British Columbia	91.6	105.1	101.8	+11.1	+14.7	-3.1

Source: CANSIM Table 282-0042

Table 4.2.13 Employment in goods-producing sector; both sexes (15 to 24 years)

	(persons x 1,000)				(percentage change)			
	1976	1988	2000	2013	1976-2013	1976-1988	1988-2000	2000-2013
Newfoundland and Labrador	11.9	8.7	3.3	5.0	-58.0	-26.9	-62.1	+51.5
Prince Edward Island	3.7	3.1	2.3	1.9	-48.6	-16.2	-25.8	-17.4
Nova Scotia	20.0	17.5	8.6	8.1	-59.5	-12.5	-50.9	-5.8
New Brunswick	19.9	13.7	9.4	7.6	-61.8	-31.2	-31.4	-19.1
Québec	218.6	155.9	113.3	81.4	-62.8	-28.7	-27.3	-28.2
Ontario	272.6	257.6	170.1	133.0	-51.2	-5.5	-34.0	-21.8
Manitoba	33.0	23.1	22.1	18.6	-43.6	-30.0	-4.3	-15.8
Saskatchewan	37.1	22.6	17.7	20.9	-43.7	-39.1	-21.7	+18.1
Alberta	83.4	53.4	59.5	68.0	-18.5	-36.0	+11.4	+14.3
British Columbia	74.6	52.3	45.3	46.2	-38.1	-29.9	-13.4	+2.0

Source: CANSIM Table 282-0008

Table 4.2.14 Total employees with permanent jobs; all industries; both sexes (15 years and over)

	(persons x 1,000)			(percentage change)		
	1997	2004	2013	1997-2013	1997-2004	2004-2013
Newfoundland and Labrador	125.4	138.5	161.4	+28.7	+10.4	+16.5
Prince Edward Island	35.3	43.3	49.1	+39.1	+22.7	+13.4
Nova Scotia	270.4	315.1	325.8	+20.5	+16.5	+3.4
New Brunswick	216.4	250.9	256.9	+18.7	+15.9	+2.4
Québec	2,338.9	2,751.6	2,984.2	+27.6	+17.6	+8.5
Ontario	4,027.3	4,739.3	5,104.4	+26.7	+17.7	+7.7
Manitoba	379.1	433.7	483.2	+27.5	+14.4	+11.4
Saskatchewan	306.1	339.1	394.4	+28.8	+10.8	+16.3
Alberta	1,026.8	1,281.9	1,623.0	+58.1	+24.8	+26.6
British Columbia	1,355.6	1,442.7	1,628.8	+20.2	+6.4	+12.9

Source: CANSIM Table 282-0080

Table 4.2.15 Total employees with permanent jobs; all industries; both sexes (15 to 24 years)

	(persons x 1,000)			(percentage change)		
	1997	2004	2013	1997-2013	1997-2004	2004-2013
Newfoundland and Labrador	14.2	14.1	16.1	+13.4	-0.7	+14.2
Prince Edward Island	5.9	5.8	7.5	+27.1	-1.7	+29.3
Nova Scotia	34.1	42.7	40.8	+19.6	+25.2	-4.4
New Brunswick	28.6	33.7	28.7	+0.3	+17.8	-14.8
Québec	285.1	382.9	390.2	+36.9	+34.3	+1.9
Ontario	544.8	619.5	595.6	+9.3	+13.7	-3.9
Manitoba	63.0	66.7	75.8	+20.3	+5.9	+13.6
Saskatchewan	56.3	60.6	62.7	+11.4	+7.6	+3.5
Alberta	173.2	230.2	226.9	+31.0	+32.9	-1.4
British Columbia	201.8	207.5	216.0	+7.0	+2.8	+4.1

Source: CANSIM Table 282-0080

Table 4.2.16 Total employees with temporary jobs; all industries; both sexes (15 years and over)

	(persons x 1,000)			(percentage change)		
	1997	2004	2013	1997-2013	1997-2004	2004-2013
Newfoundland and Labrador	38.80	48.90	48.70	+25.52	+26.03	-0.41
Prince Edward Island	12.90	12.90	13.90	+7.75	+0.00	+7.75
Nova Scotia	53.20	66.50	63.70	+19.74	+25.00	-4.21
New Brunswick	47.90	54.60	54.70	+14.20	+13.99	+0.18
Québec	352.60	430.70	509.80	+44.58	+22.15	+18.37
Ontario	411.50	626.30	719.60	+74.87	+52.20	+14.90
Manitoba	50.50	57.00	63.30	+25.35	+12.87	+11.05
Saskatchewan	42.90	44.90	54.40	+26.81	+4.66	+21.16
Alberta	126.20	171.00	222.40	+76.23	+35.50	+30.06
British Columbia	146.80	202.90	262.90	+79.09	+38.22	+29.57

Source: CANSIM Table 282-0080

Table 4.2.17 Total employees with temporary jobs; all industries; both sexes (15 to 24 years)

	(persons x 1,000)			(percentage change)		
	1997	2004	2013	1997-2013	1997-2004	2004-2013
Newfoundland and Labrador	10.10	13.80	12.30	+21.78	+36.63	-10.87
Prince Edward Island	3.90	4.40	3.60	-7.69	+12.82	-18.18
Nova Scotia	18.60	23.10	19.40	+4.30	+24.19	-16.02
New Brunswick	15.20	18.20	14.90	-1.97	+19.74	-18.13
Québec	122.30	154.80	163.90	+34.01	+26.57	+5.88
Ontario	164.90	290.90	280.90	+70.35	+76.41	-3.44
Manitoba	20.40	24.80	22.40	+9.80	+21.57	-9.68
Saskatchewan	18.10	19.10	19.20	+6.08	+5.52	+0.52
Alberta	49.40	69.70	81.10	+64.17	+41.09	+16.36
British Columbia	48.00	72.70	91.70	+91.04	+51.46	+26.13

Source: CANSIM Table 282-0080

Table 5.1.1 Percentage of labour force employed (15 years and over)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.714	0.001	0.758	0.001
1996	0.700	0.001	0.737	0.001
2006	0.653	0.001	0.705	0.001
2011	0.485	0.001	0.585	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (National Household Survey (NHS)), Canadian Census of Population

Table 5.1.2 Percentage of labour force employed (15 to 24 years)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.710	0.001	0.725	0.001
1996	0.690	0.001	0.705	0.001
2006	0.628	0.001	0.657	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

Table 5.1.3 Percentage of labour force unemployed (15 years and over)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.714	0.001	0.758	0.001
1996	0.700	0.001	0.737	0.001
2006	0.653	0.001	0.705	0.001
2011	0.488	0.001	0.588	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Table 5.1.4 Percentage of labour force unemployed (15 to 24 years)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.710	0.001	0.726	0.001
1996	0.690	0.001	0.705	0.001
2006	0.633	0.001	0.659	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

Table 5.1.5 Percentage of labour force self-employed (15 years and over)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.619	0.001	0.572	0.001
1996	0.621	0.001	0.579	0.001
2006	0.577	0.001	0.537	0.001
2011	0.581	0.001	0.537	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Table 5.1.6 Percentage of labour force employed full year, full time (15 years and over)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.533	0.001	0.632	0.001
1996	0.527	0.001	0.626	0.001
2006	0.448	0.001	0.568	0.001
2011	0.391	0.001	0.469	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Table 5.1.7 Percentage of labour force employed part time or part year (15 years and over)

Census year	Queen's contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.543	0.001	0.619	0.001
1996	0.545	0.001	0.631	0.001
2006	0.516	0.001	0.624	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

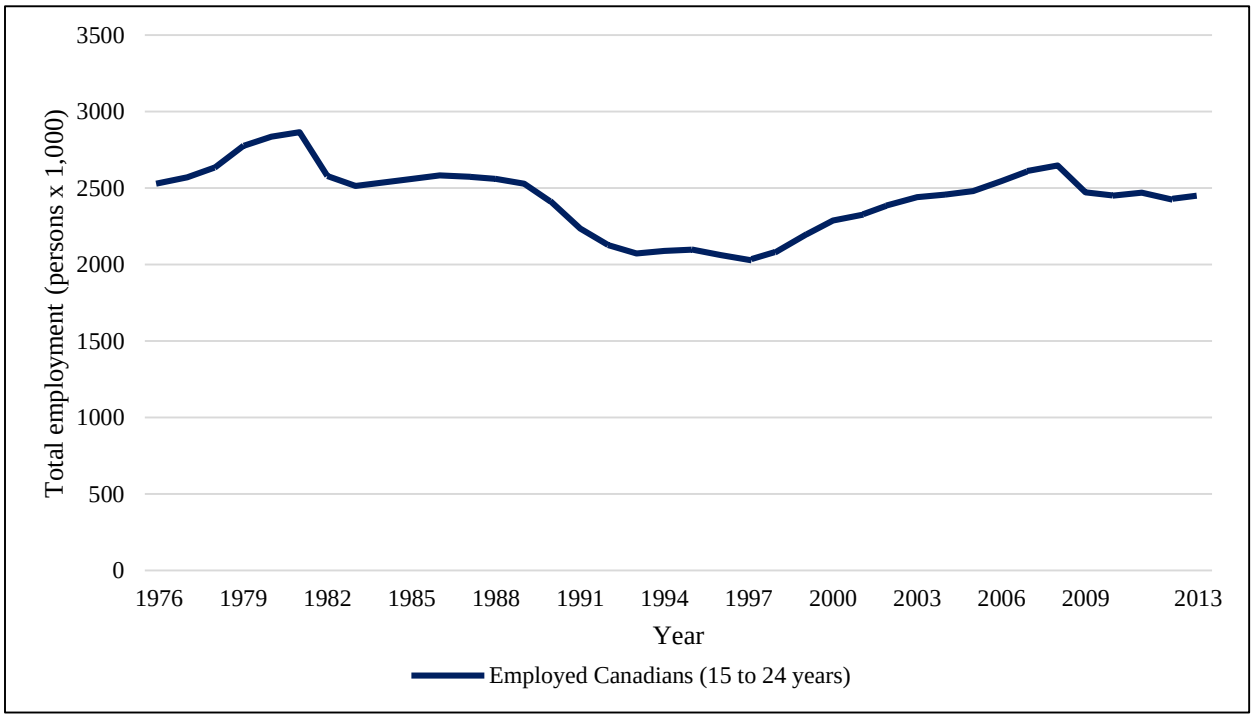
Table 5.1.8 Percentage of labour force employed in manufacturing (15 years and over)

Census year	Queen' contiguity (1)		K-nearest neighbor (5)	
	Moran's *I*	*p*-value	Moran's *I*	*p*-value
1991	0.610	0.001	0.579	0.001
1996	0.614	0.001	0.544	0.001
2006	0.683	0.001	0.632	0.001
2011	0.681	0.001	0.628	0.001

Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

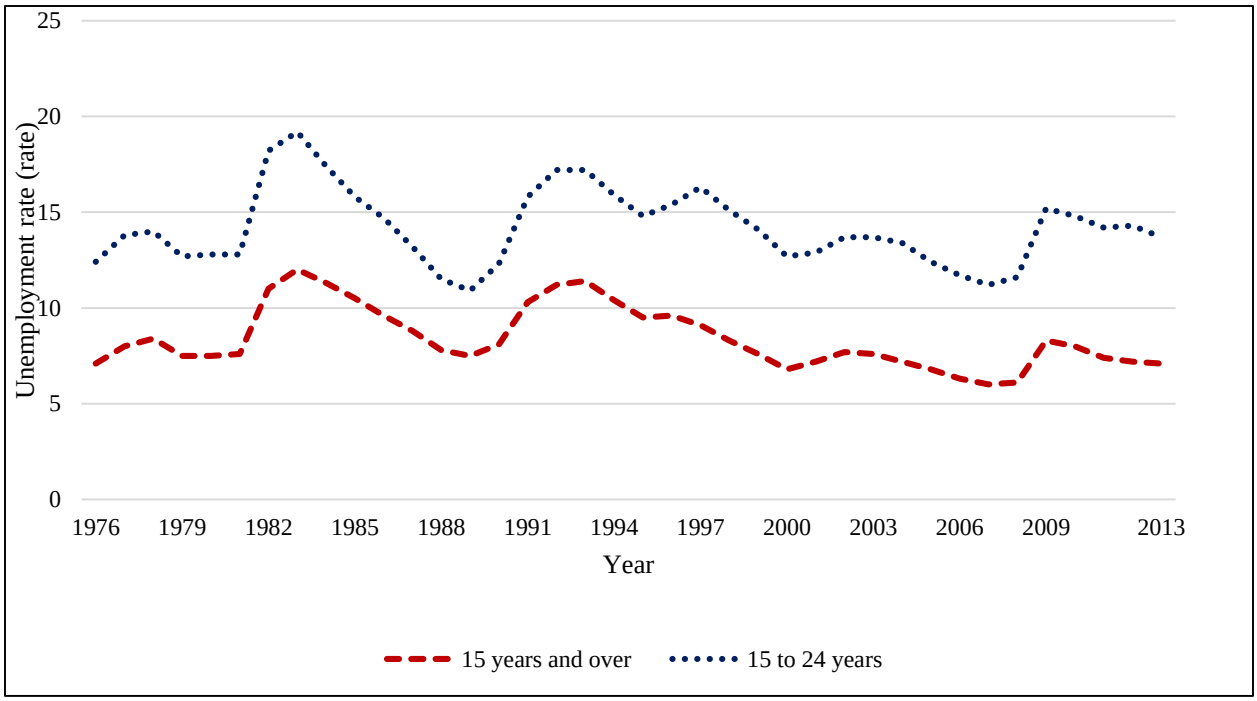
Appendix B

Figure 4.1.1 Total employment; 15 to 24 years



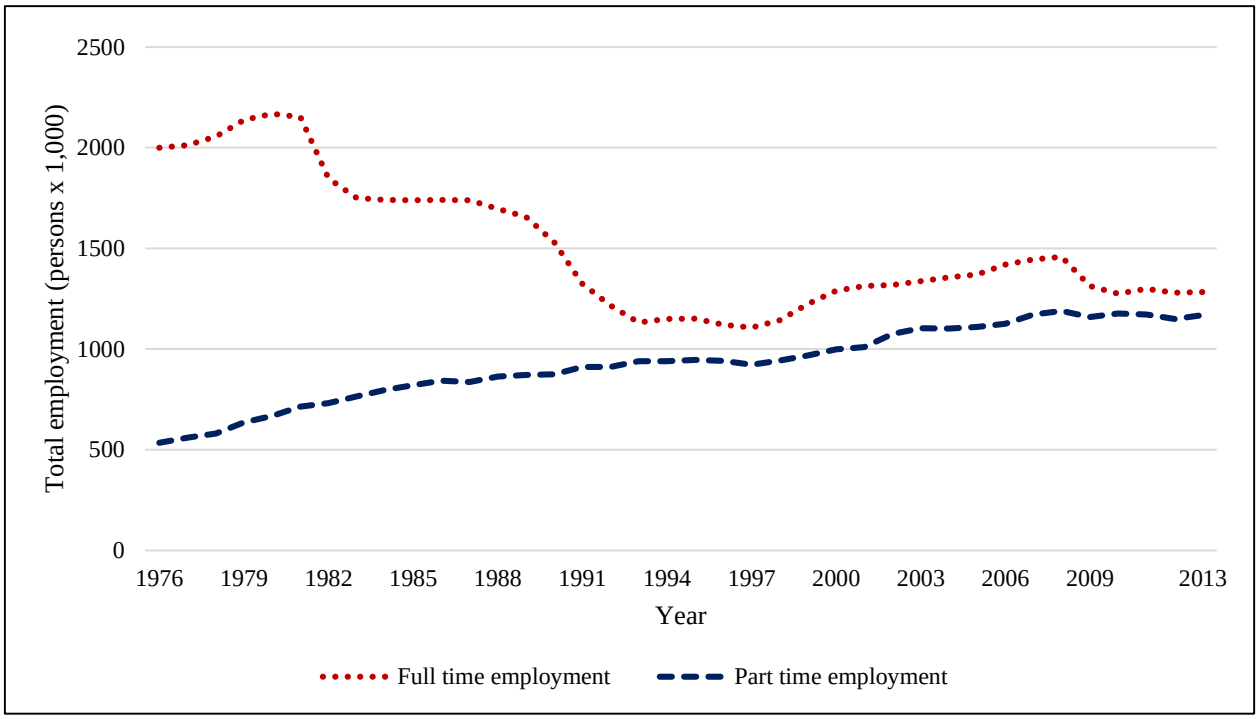
Source: CANSIM Table 282-0002

Figure 4.1.2 Unemployment rates; 15 years and over vs. 15 to 24 years



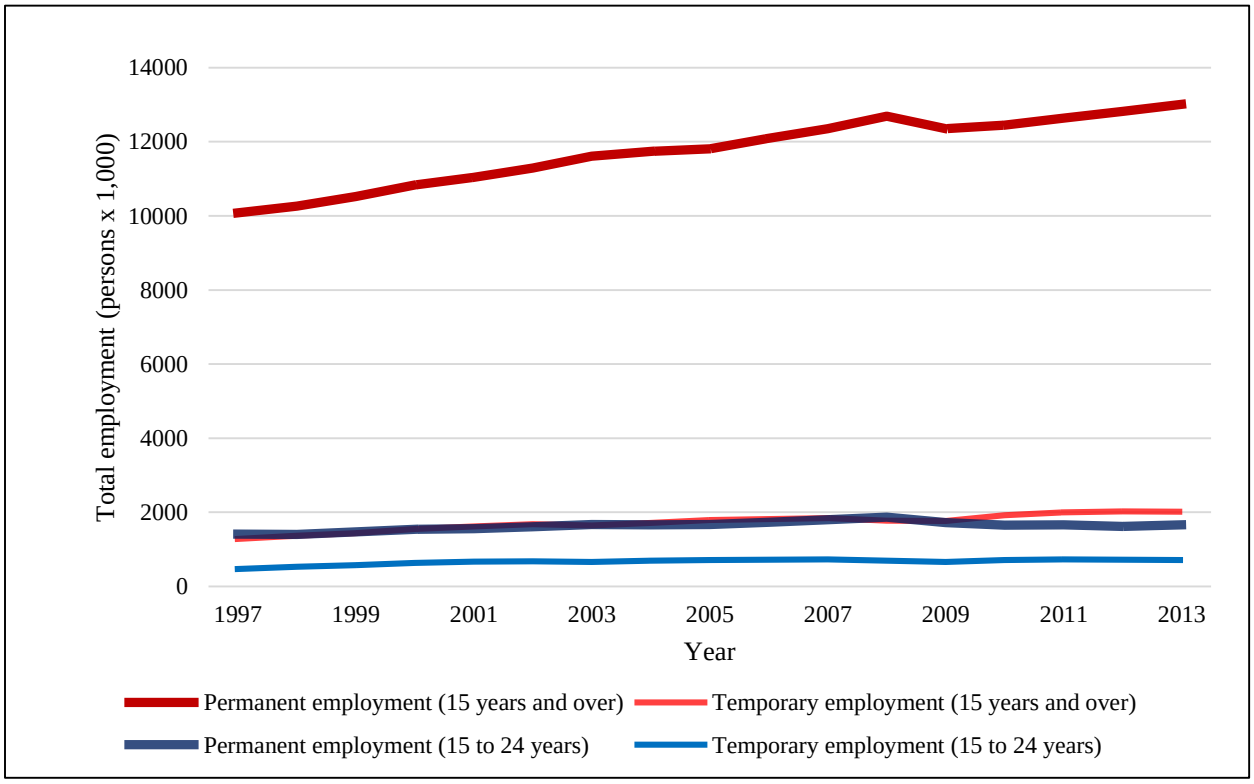
Source: CANSIM Table 282-0002

Figure 4.1.3 Full time vs. part time; 15 to 24 years



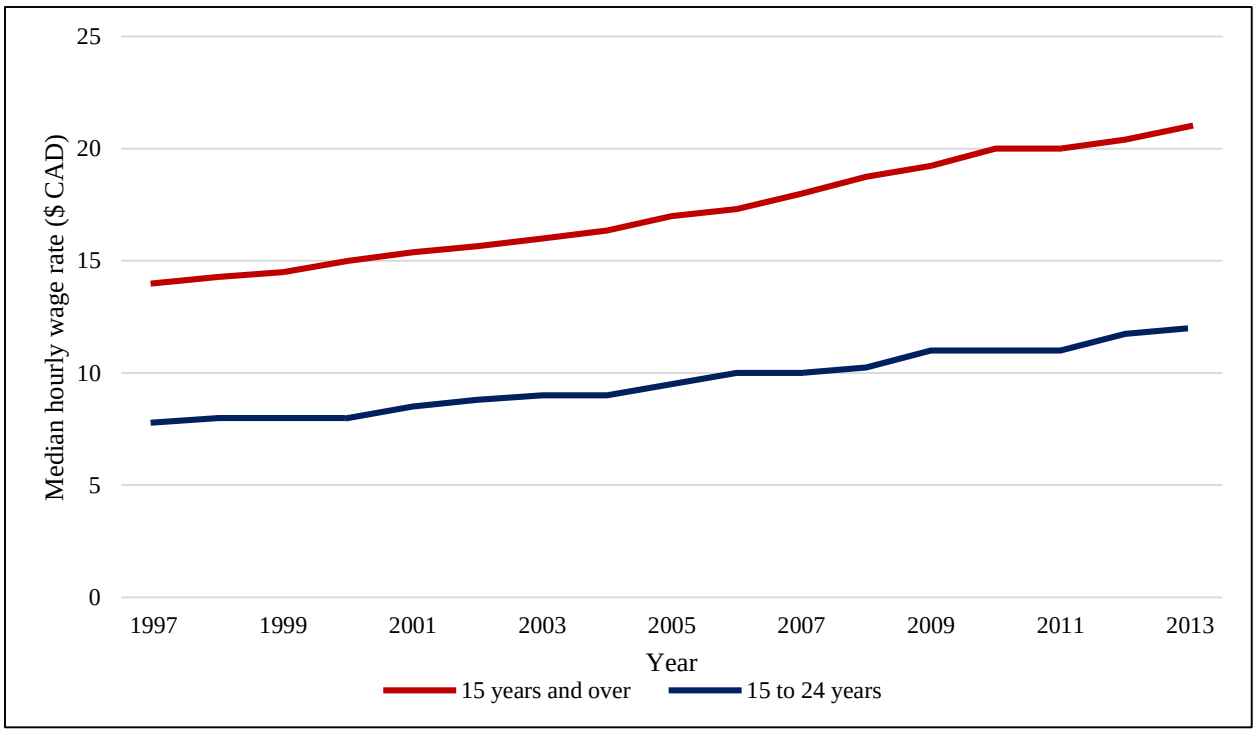
Source: CANSIM Table 282-0002

Figure 4.1.4 Permanent vs. temporary employment; 15 years and over vs. 15 to 24 years



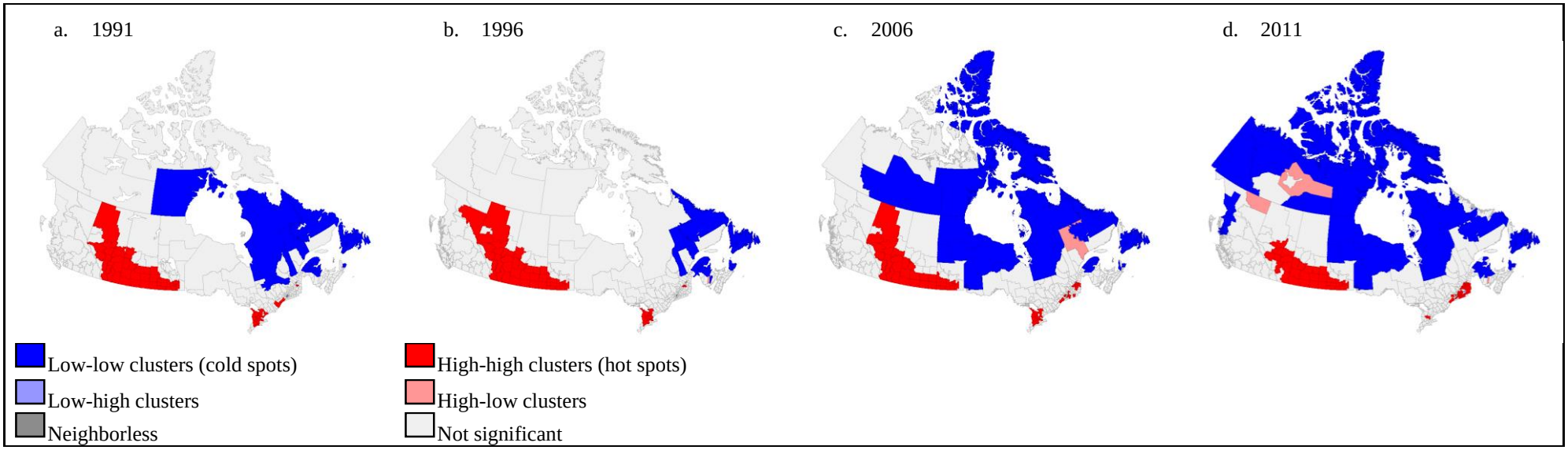
Source: CANSIM Table 282-0080

Figure 4.1.5 Median hourly wage rates; 15 years and over vs. 15 to 24 years



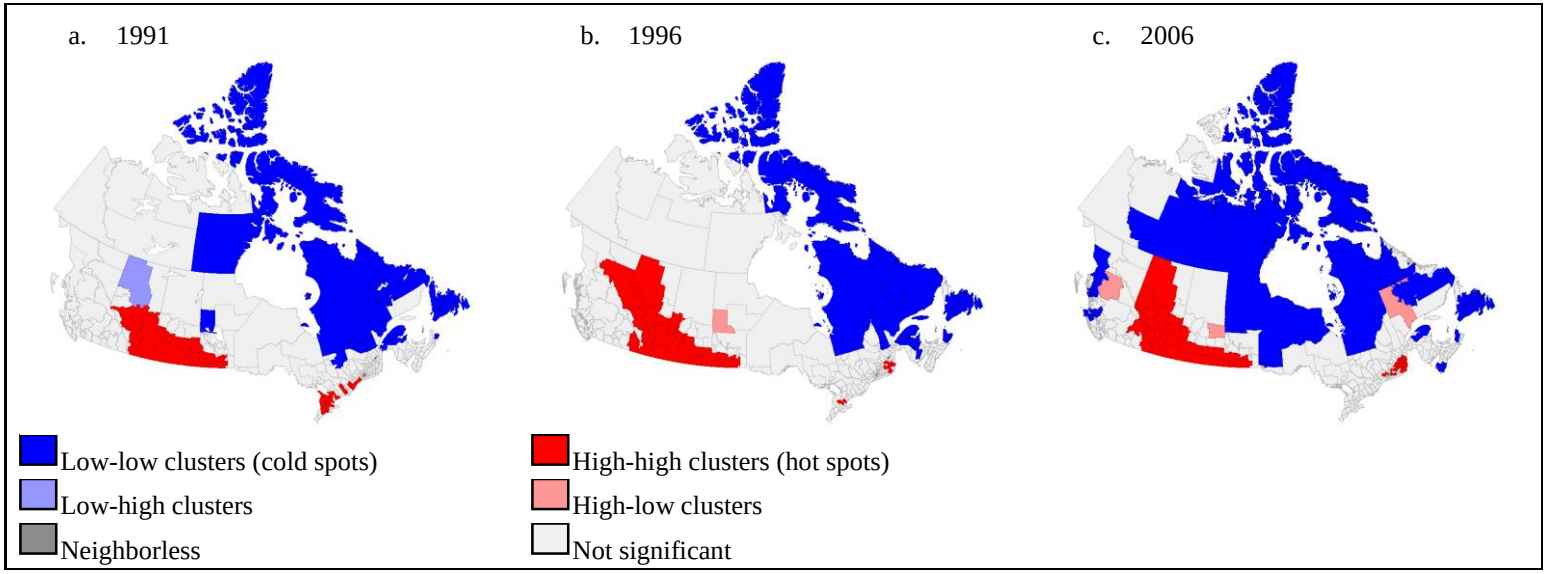
Source: CANSIM Table 282-0074

Figure 5.2.1 LISA maps of labour force employed (15 years and over)



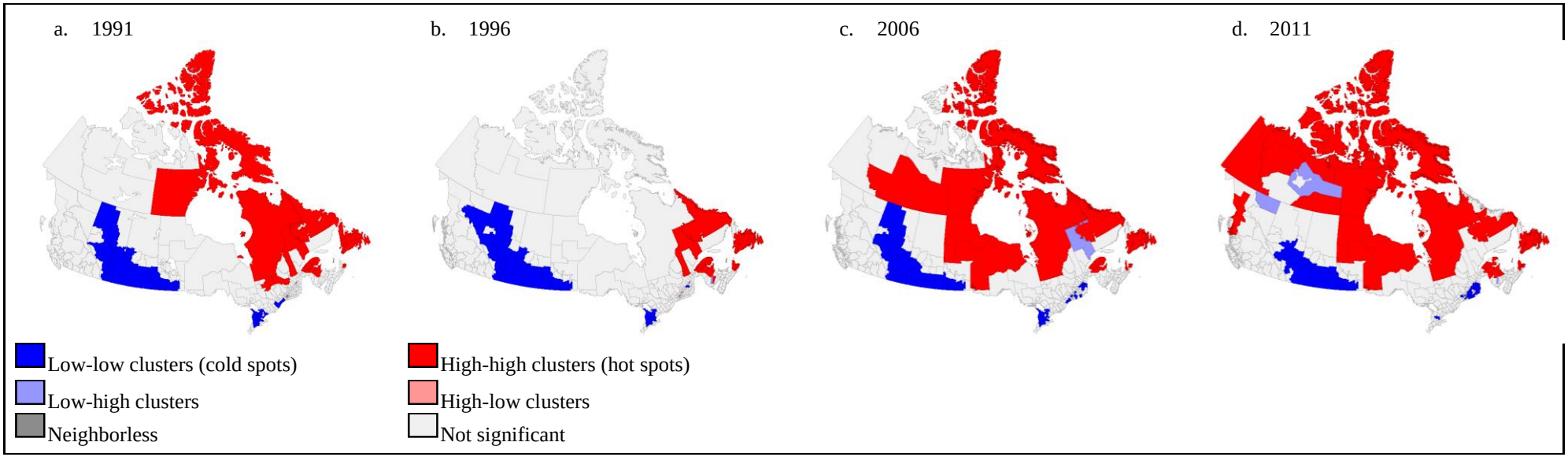
Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Figure 5.2.2 LISA maps of labour force employed (15 to 24 years)



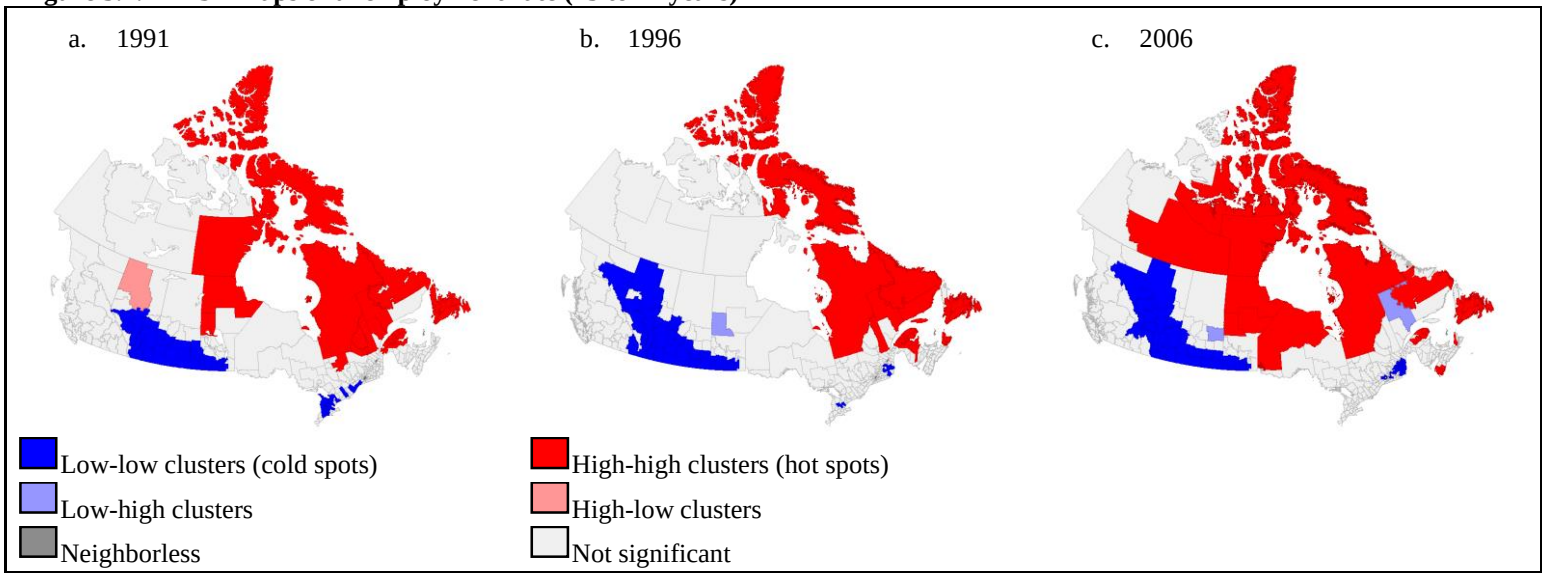
Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

Figure 5.2.3 LISA maps of unemployment rate (15 years and over)



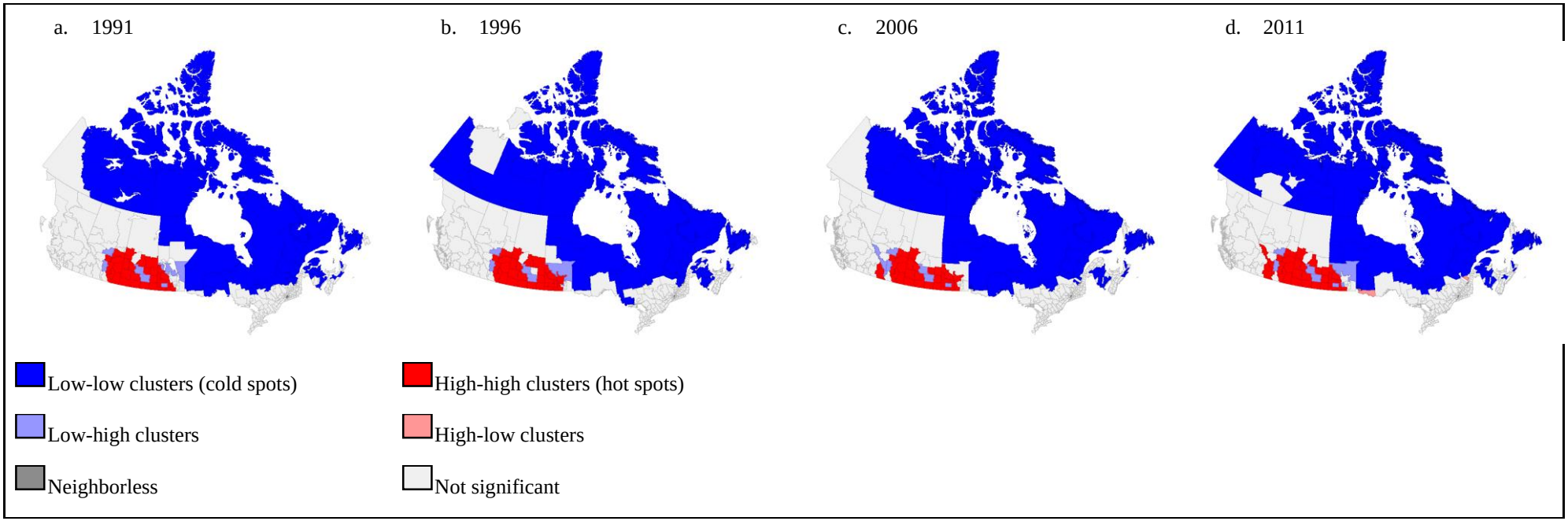
Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Figure 5.2.4 LISA maps of unemployment rate (15 to 24 years)



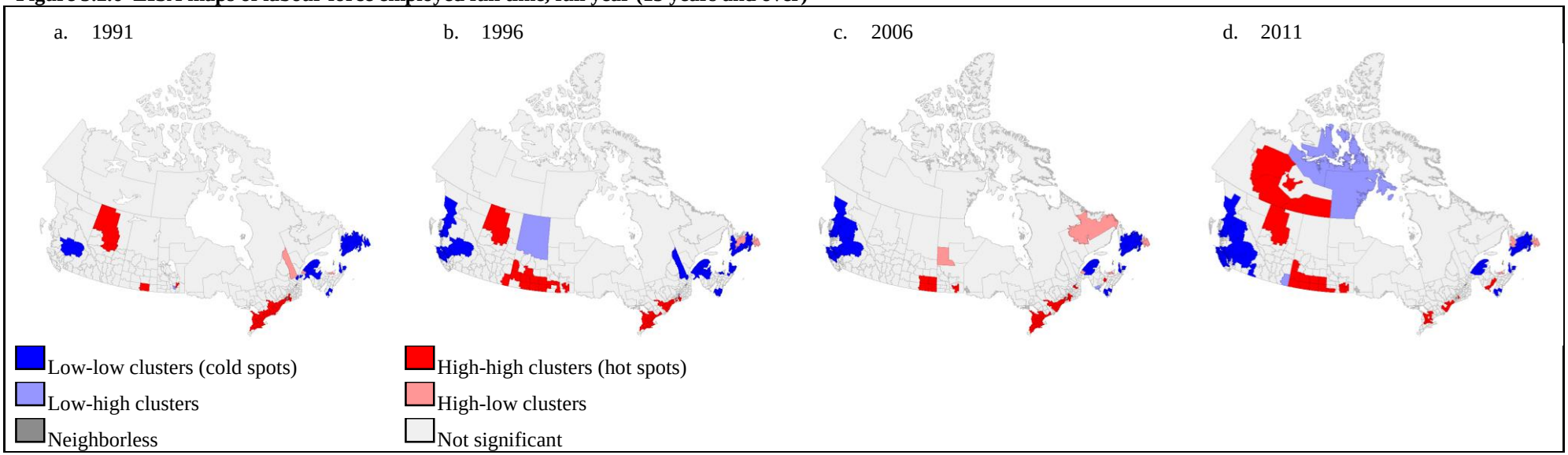
Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

Figure 5.2.5 LISA maps of labour force self-employed (15 years and over)



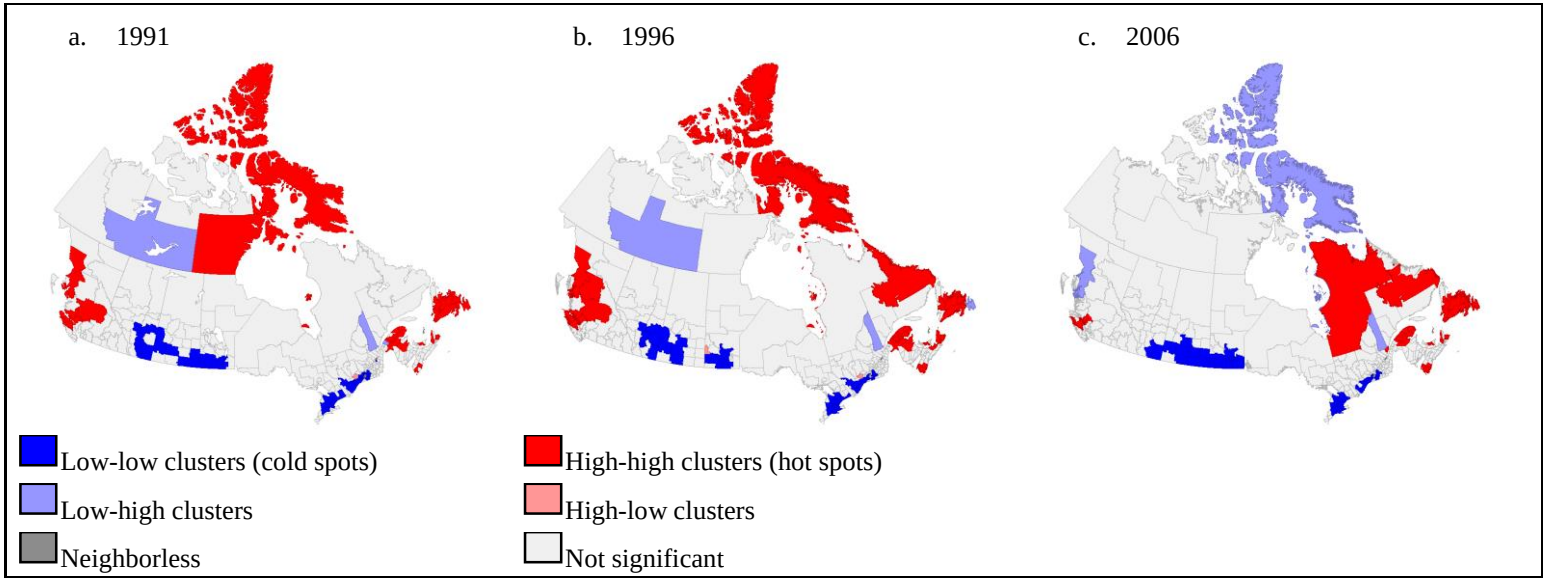
Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Figure 5.2.6 LISA maps of labour force employed full time, full year (15 years and over)



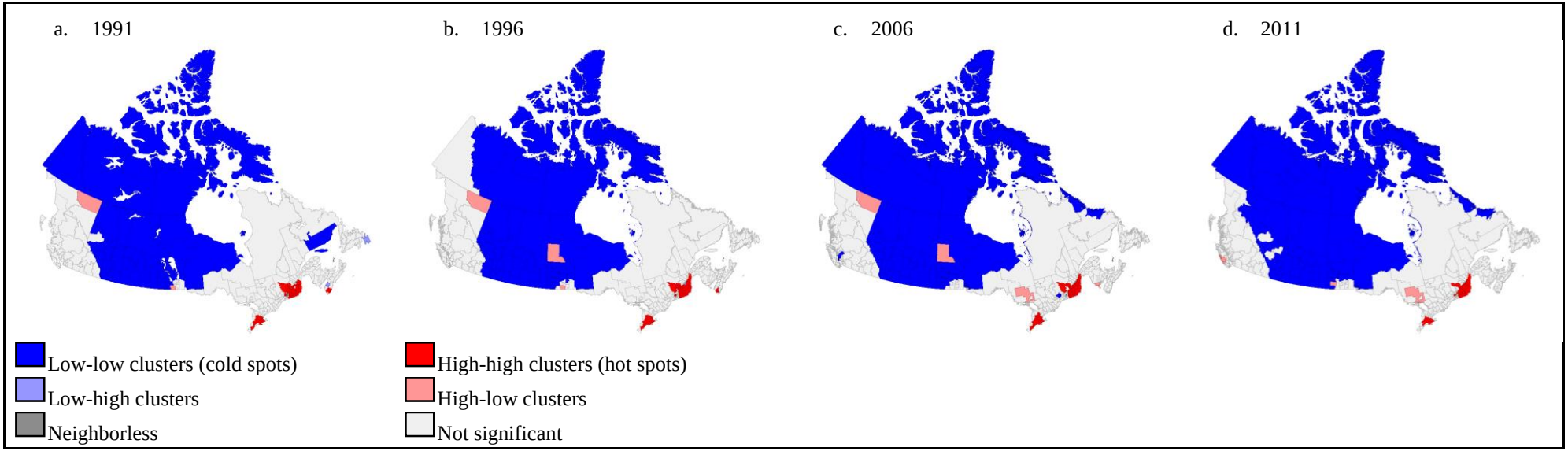
Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population

Figure 5.2.7 LISA maps of labour force employed part year or part time (15 years and over)



Sources: 1991, 1996 and 2006 (long-form questionnaires), Canadian Census of Population

Figure 5.2.8 LISA maps of labour force in manufacturing sector (15 years and over)



Sources: 1991, 1996 and 2006 (long-form questionnaires), 2011 (NHS), Canadian Census of Population