The Relationship between Immigration and Crime in Canada: 1976-2011

By:

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Abstract

This dissertation examines whether changes in immigration are associated with changes in crime rates at the macro-level over time in Canada. Specifically, I analyze this relationship in Canadian census metropolitan areas (CMAs) and provinces for the period 1976-2011. In general, the research on the relationship between immigration and crime has shown that they are either negatively associated or not related at all. However, most of this work has been conducted in the United States using cross-sectional designs and has focused on one type of crime, namely homicide. Differences between Canada and the United States in the extent and nature of both immigration and crime warrant a study of their relationship and its generalizability beyond the US. My dissertation adds to the literature by using a longitudinal design – which treats immigration as a process that unfolds over time – and extending the analysis beyond homicide to include violent, property, and crime rates. My findings show that, controlling for demographic and socioeconomic covariates, changes in immigration are either not significantly associated or negatively associated with changes in crime rates. These results lend support to the generalizability of the findings from studies of US cities to Canadian cities, to larger units of aggregation (i.e., provinces), and across different types of crime.
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Touted as a ‘country of immigrants’, Canada proudly heralds itself as a multicultural country in which immigration has played a formative and vital role in building Canadian society historically and in contemporary times (Citizenship Immigration Canada, 2013). In fact, in 2011, Canada had a foreign-born population of about 6.8 million people, representing close to 21% of the total population in Canada. This is the highest proportion among G8 countries, well above that in the United States, which was 13% in 2010 (Chui and Flanders, 2013). Outside of the G8 countries, Canada trails behind only Australia whose foreign-born population constituted about 27% of the country’s total population in 2010 (Chui and Flanders, 2013). According to demographic projections, the immigrant population in Canada could reach anywhere from 25% to 28% by 2031, if current levels of immigration continue (Statistics Canada, 2011).

Immigration of this magnitude could not be sustained without positive perceptions and attitudes about immigration. Canadians’ positive views about immigration are an exception to the negative attitudes about immigration in other leading immigrant-receiving countries (Reitz, 2011). However, even within this context of positive perceptions about immigration, there are debates about the merits and costs of immigration. One negative aspect that has been and is often raised in the popular press, some political discourse, and pockets of public opinion is the idea that immigration is linked to higher crime rates (Banting, 2010; Wortley, 2009). International research shows that in Austria, Germany, the Netherlands, Norway, Spain, Sweden, and the UK a high proportion of residents who believe that immigration increases the crime rate ranges between 40% and 60%. In contrast, only 27% of Canadian and US residents believe this to be the case (Simon and Sikich, 2007). The belief that immigration increases crime appears to be largely based on the assumption that
individual immigrants are more likely than native-born people to commit crime and endanger the community (Hagan and Palloni, 1999). This seems to resonate with certain parts of the public with anti-immigrant sentiments, even though immigrants are screened for criminal involvement as a prerequisite condition for gaining entry into Canada in the first place.

Particularly during times of increases in immigration or after exceptional events when the social, economic, and political context is more volatile, negative views about immigration as it relates to crime seem to be emphasized and become more firmly cemented in the broader public consciousness (Ismaili, 2010; Kelley and Trebilcock, 1998). Recently, there has been an intensification of discussion about the relationship between immigration and crime. With the recent attacks in Paris and California, sexual assaults in Germany during New Year’s celebrations for 2016, along with the arrival of Syrian refugees in Canada, the discussion about immigration and increased crime has gained more traction and the potential consequences are fervently discussed in the press and on social media. From Donald Trump’s pledge to ban Muslim immigration to the United States to the pepper spraying of Syrian refugees in Vancouver, the concern seems to focus on the idea that allowing more immigrants into the country will lead to higher crime and increasing social unrest to our communities.

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1In both Canada and the United States, speculation about immigrant crime tends to focus on immigrants from specific countries of origin. For example, there have been concerns about crime regarding Jamaican immigrants in Canada (see Wortley, Hagan, and Macmillan, 1997) and Mexican immigrants in the US (see Sampson, 2008). My thesis does not differentiate immigration based on source countries, nor does it examine the criminal behavior of immigrants. This is because: 1) it is difficult to measure backgrounds of immigrants consistently over time, e.g., the Canadian census grouped immigrants from India and China together earlier in the time period under examination but they are separately recorded in the later years; 2) in Canada, data on the immigrant background of individual offenders is not available; and 3) most theories regarding the relationship between immigration and crime focus on immigrants and immigration in general, not immigrants or immigration from specific countries.
The nature of the debate over immigration and crime has changed little over time. On the one hand, people argue that immigration does not increase crime rates. For example, the former Chief of the Toronto Police Service and current Liberal MP, Bill Blair, has said that “immigration is good for the crime rate” (CBC, 2013). On the other hand, people have argued that immigration will increase crime rates. Lee Richardson, a former Conservative MP, has said that “[p]articularly in big cities, we’ve got people that have grown up in a different culture, and they don’t have the same respect for authority or people’s person or property” (CBC, 2008).

The same kind of debate also flourished in the early twentieth century. For example, in 1929, J.C. McRuer, a Canadian lawyer and subsequently well-known judge and chair of the 1968 Royal Commission into Civil Rights, in his address to the Annual Congress of the American Prison Association in Toronto, made the observation that “[i]t is not the foreign born citizen that is responsible for the crime problem in Canada. I am convinced that the Crime Problem we have in this country is our own problem” (American Prison Association, 1929). In contrast, Theodore Bingham, the Police Commissioner of New York City in 1908 made this statement linking Italian immigration to New York with crime. “The Italian malefactor is by far the greater menace to law and order…there are fastened upon them a riffraff of desperate scoundrels, ex-convicts, and jailbirds of the Camorra and the Mafia, such as has never afflicted a civilized country in time of peace” (Bingham, 1908).

The relationship between immigration and crime and safety in our communities can be conceptualized as both a compositional and a contextual effect. A compositional effect would occur if individual immigrants are more/less engaged in criminal offending than native-born individuals; by virtue of growing numbers of immigrants, crime rates would increase/decrease at the aggregate level. A contextual effect would occur if immigration alters the social, economic, cultural, or political conditions of communities in ways that could affect criminal offending among both native-borns and
immigrants. Consequently, crime rates could rise or fall in those communities because of the contextual change. Establishing a relationship between immigration and crime rates at the aggregate level (e.g., in cities or provinces), on its own, does not tell us whether that relationship is due to a contextual or compositional effect (or both). Consequently, this relationship cannot be generalized to the individual-level to claim that immigrants are more/less engaged in criminal offending than native-borns. This would be an ecological fallacy. Either way, the nature of the question in this longstanding debate is about what happens to the safety of communities when immigration levels increase. Therefore, it is important to examine this relationship at the macro-level and over time.

In addressing the debate over the relationship between immigration and crime, empirical work only recently has begun to use longitudinal designs at the macro-level. Virtually all such studies have shown that, after controlling for a host of macro-level characteristics, increases in immigration are associated with decreases in crime rates in metropolitan areas in the United States (Ferraro, 2016; Chalfin, 2015; MacDonald, Hipp, and Gill, 2013; Martinez, Stowell, and Lee, 2010; Wadsworth, 2010; Ousey and Kubrin, 2009; Stowell, Messner, McGeever, and Raffalovich, 2009). A major limitation of this literature, however, is that it has rarely examined the relationship outside of the United States\(^2\). Because the policies, practices, context, and nature of immigration vary greatly among countries, little is known about whether the findings from U.S.-based research can be generalized to other countries.

Canada and the United States have similarities and differences in both immigration and crime that could either support or challenge generalizing US findings to Canada. For example, both countries experienced increases in immigration in the last forty years as well as decreases in crime rates since the early 1990s. Yet Canada and the United States differ substantially in their overall

\(^2\)For exceptions, please see Zhang (2014) and Andresen (2013) for Canada; Bell and Machin (2013) for the U.K.; Bianchi, Buonanno, and Pinotti (2012) for Italy; and Bircan and Hooghe (2011) for Belgium.
crime rates and in the nature of their immigrant populations, as well as in their political, social, and economic characteristics. These differences motivate the examination of the relationship between immigration and crime in a specifically Canadian context. To date, there have been only two Canadian studies examining the relationship between immigration and crime over time. Andresen (2013) found that increases in immigration were not associated with increases in homicide in Canadian provinces for the period 1986-2005. At a smaller level of aggregation, Zhang (2014) found that increases in immigrant concentration were associated with decreases in property crime rates in Canadian census divisions for the period 1981-2006. Both studies only examined one type of crime respectively, homicide for Andresen (2013) and property crimes for Zhang (2014). In addition, both studies do not address the relationship between changes in immigration and changes in crime rates for Canadian cities.

My dissertation examines whether immigration is associated with crime rates at the macro-level over time in Canada. Specifically, I examine whether changes in immigration are associated with changes in crime rates in Canadian census metropolitan areas (CMAs) and provinces for the period 1976-2011, controlling for demographic and socioeconomic covariates. My research builds on recent studies of the relationship between immigration and crime in four important ways. First, it adds to the few works in the emerging literature that examine the relationship between changes in immigration and changes in crime rates over time using a longitudinal design. Second, this study adds to the two Canadian studies on this question and also expands the time period under examination. Third, this study expands the scope of measures for immigration and crime that have been used in the literature. I examine not only the proportion of foreign-born persons but also the proportion of recent immigrants and the heterogeneity of birthplaces among residents. Similarly, rather than relying on a single measure of crime (e.g., homicide rates), I examine total, property, and
violent crime rates. Finally, I examine the relationship between immigration and crime at two levels of aggregation (i.e., the provincial and the CMA levels). My dissertation is structured as follows.

**Thesis Overview**

**Chapter 2: Immigration Policies and Patterns of Crime in Canada**

In the second chapter, I provide the background to my research, by discussing the immigration and crime debate in Canada, using examples drawn from public opinion studies, discussions in the popular press, and political debates. Next, I summarize historical changes in policies related to immigration in Canada as well as the current policy framework for immigration. This is followed by a discussion of changes in the characteristics of and emerging patterns in immigration in Canada, including facets such as settlement locations, source countries, and linguistic diversity. I also describe contextual differences between Canada and the United States in immigration, crime, and other structural factors that justify a Canadian examination of the relationship between immigration and crime. The chapter concludes with a description of trends in overall crime rates, property crime rates, violent crime rates, and homicide rates in Canada between 1976 and 2011, the time period of my study.

**Chapter 3: Literature Review**

In this chapter I outline the major theoretical perspectives that have been used to understand the relationship between immigration and crime. I outline the major tenets of the perspectives that posit a positive association between immigration and crime as well as those that posit a negative association between immigration and crime. I also highlight the similarities and differences among
and between these perspectives and their relevance for my research. I use this discussion to argue for the importance of the macro-level focus, longitudinal design, and wide array of covariates that characterize my analyses of the relationship between immigration and crime in Chapters 5 and 6. Finally, I summarize major findings from the research on the macro-level relationship of immigration and crime.

Chapter 4: Data and Methods

In the fourth chapter, I describe the data and methods used in my analyses. I discuss the immigration and contextual data drawn from the Canadian Census. I provide descriptions for the immigration measures I used as well as justifications for how I constructed them. I also detail the demographic and socioeconomic control variables derived from extant macro-level studies as well as the theoretical perspectives that justify the inclusion of these variables. One of the greatest challenges of my research was compiling crime data that is comparable at both the CMA and provincial levels over time, so I next discuss the crime data I collected from Uniform Crime Reports to construct my dependent variables. Because of the time period covered in this study, there were particular challenges with compiling CMA-level crime data, which I describe. Finally, I explain and justify the fixed effects models that I used in the analyses to examine within-unit changes over time.

Chapter 5: Census Metropolitan Areas (CMAs) Analysis

This chapter reports on the findings from the analysis of the 32 Canadian CMAs included in this study for the period 1976-2011. The findings pertain to whether within-CMA changes in immigration are associated with within-CMA changes in crime rates, controlling for other macro-
level factors. I discuss the consistent negative association between changes in immigration and changes in crime rates across total, property, violent crime rates as well as homicide rates.

Chapter 6: Provinces Analysis

This chapter reports findings from the analysis, as replicated from Chapter 5 at the level of CMA.s, but for the ten Canadian provinces.

Chapter 7: Summary and Conclusions

I bring together the main findings from Chapter 5 and 6 in this final chapter, discussing how my results are consistent with and expand upon the literature on the macro-level relationship between immigration and crime. Subsequently, I also highlight the limitations of my study and caveats related to the conclusions I have drawn. I conclude with recommendations for future research.
Chapter 2: Immigration Policies and Crime Patterns in Canada

This chapter discusses changes in immigration policies and crime patterns in Canada. This discussion is used to frame the research question of whether changes in immigration are related to changes in crime rates in Canada and to provide a background for the analyses in Chapters 5 and 6. The chapter begins with an overview of perceptions of and attitudes toward immigration in Canada. I then provide an overview of immigration policies and characteristics of immigration in Canada and how they have changed over the period under study, 1976-2011. Following this, I discuss the changes in crime in Canada for the study period. Both of these sections review the social and political debates and issues around the relationship between immigration and crime in Canada that accompanied these changes. Finally, I discuss the contextual factors in Canada that are relevant to an exploration of the relationship between immigration and crime, especially those that distinguish the Canadian context from that in the United States.

2.1 Perceptions and Attitudes about Immigration in Canada

In Canada, which is often touted as a “country of immigrants” by Canadians and others (Beach, Green, and Reitz, 2003, p.3), immigration is not identified as merely another policy portfolio but as an important part of the national identity (Winter, 2015; Bloemraad, 2012). In fact, Reitz (2012) has noted that the most distinctive feature of Canadian immigration, as much or more than any specific set of policies, is the national commitment to immigration itself, namely “the fact that Canadians want immigration and immigrants” (Reitz, 2012, p. 538). Consistent with this commitment, Canada has pursued a ‘mass immigration’ policy since the end of the Second World War, with the average annual intake steadily increasing to 200,000-250,000 in the 1990s (Reitz,
According to the 2011 National Household Survey, Canada had a foreign-born population of about 6,775,800 people, representing 21% of the total population, the highest proportion among G8 countries, and the highest level in almost eighty years (Chui and Flanders, 2013; Robert and Gilkinson, 2013).

Mass immigration of this magnitude could neither be easily achieved nor sustained without public support and positive perceptions and attitudes toward immigration. Canadians’ views about immigration are an exception to the negative attitudes toward immigration prevailing in many other developed countries with large immigrant populations such as the United States, France, and the United Kingdom (Reitz, 2011). According to the 2010 Environics Focus Canada opinion survey, a majority of Canadians support high levels of immigration (Reitz, 2012; Reitz, 2011). Similar findings have also been reported in Ipsos-Reid polls and Gallup polls (Reitz, 2011; Soroka and Robertson, 2010). Not only is there considerable support for immigration, this support has been sustained over time. For example, Gallup polls for the period 1975-2005 have shown that except for 1982, a recession year, a majority of the population either supported immigration levels or favoured increases in immigration levels throughout this time period (Reitz, 2012; Reitz, 2011). This support is also not limited to just one part of Canada. Instead, there is majority support in every major region of Canada according to Gallup polls from 1975-2005 (Reitz, 2011).

In other major immigrant-receiving countries, the opposite is true: there is less immigration in those countries than in Canada and the majorities in those countries favour a reduction in immigration levels (Reitz, 2012; Reitz, 2011; Wilkes, Guppy and Farris, 2007). Even the calls of immigration critics in Canada to reduce immigration levels (Collacutt, 2002; Stoffman, 2002) can still be seen as pro-immigration by international standards (Reitz, 2011). For example, Daniel Stoffman, a long-time critic of the immigration levels in Canada, has argued that annual immigration should be reduced by
about 100,000 to 150,000 newcomers per year (Stoffmann, 2002). However, even a more limited annual intake of 150,000 immigrants would still qualify Canada as one of the world’s top immigrant-receiving countries (Reitz, 2011).

This fairly sustained and consistent support for immigration is even more “strikingly positive” when the views of Canadian residents are compared with those living in other immigrant-receiving countries (Banting, 2010, p. 803). When respondents from Canada and eight other OECD countries were asked if they agreed with the statement “we should reduce immigration levels” in the 2003 International Social Survey, Canada ranked the lowest in terms of the proportion of respondents who agreed (32.2%) (Banting, 2010). In contrast, in the other eight countries (Austria, Germany, the Netherlands, Norway, Spain, Sweden, the UK, and the US), at least 50% of respondents agreed that immigration levels should be reduced (Banting, 2010). Similarly, based on national opinion poll data for 1995 and 2003, Simon and Sikich (2007) found that at least 50% of respondents in the US, the UK, France, Germany, and Japan favoured a reduction in immigration levels, whereas the majority of respondents in Australia and Canada did not. Indeed, Canadian respondents were the most likely to favour an increase in immigration among respondents from this set of countries (Simon and Sikich, 2007). This support for immigration stems largely from the belief that immigration contributes beneficially to the economy and to multiculturalism in Canada as a collective identity (Reitz, 2012; Tossutti and Esses, 2011; Banting, 2010; Gilkinson and Sauve, 2010).

2.2 Immigration Policies in Canada

In order to provide a better understanding of the debates around the relationship between immigration and crime in Canada, this section outlines the major changes in the framework of
legislation and policies that have governed immigration in Canada for most of the twentieth century and into the twenty first century, with a particular focus on the period under examination, 1976-2011.

**Discrimination in Early Twentieth Century Immigration Policies of Canada**

As ‘strikingly positive’ as Canada seems in terms of the support for immigration (Banting, 2010), Canadian immigration policies, for a large part of the twentieth century, were discriminatory and exclusionary. Immigration policies in the first half of the twentieth century were built on notions of “preferred groups” and “prohibited persons” that were largely informed by racialized stereotypes of different groups (Kelley and Trebilcock, 1998, p. 152). This is not to say that immigration policies were solely based on these notions. In fact, there has been a longstanding tendency of policymakers in Canada to link immigration policies to the particular stage of economic development and labour market needs in Canada (Reitz, 2005). At the beginning of the twentieth century, for example, when agriculture was the focus of economic activity, Canada recruited immigrants for settling the Prairies (Knowles, 2007; Troper, 2000). However, the type of immigrants sought and admitted to promote these economic objectives was very much determined by racialized and discriminatory standards until legislative reform in the 1960s and 1970s (Somerville and Walsworth, 2011; Knowles, 2007).

At the beginning of the twentieth century, Canada promoted immigration only from certain areas, particularly the British Isles and Northern and Western Europe (Troper, 2000). This was based on the idea that members of these groups were easier to assimilate than other populations and would not threaten the racial composition of Canada (Troper, 2000). A hierarchy of preferred groups informed the selection of immigrants into Canada, with immigrants from the British Isles and the United States at the top, Northern and Western Europeans next, Eastern and Southern Europeans following, and Asians and Blacks slotted at the bottom (Troper, 2000). Consider, for example, this
statement by the Minister of Trade and Commerce James Malcolm in the Canada Year Book 1927-1928 about the type of immigrants wanted in Canada:

Canadians generally prefer that settlers should be of a readily assimilable type...[t]he great bulk of preferred settlers are those who speak the English language—those coming from the United Kingdom or the United States. Next in order of readiness of assimilation are the Scandinavians and the Dutch, who readily learn English, and are acquainted with the working of free democratic institutions. Settlers from southern and eastern Europe, however desirable from the purely economic point of view, are less readily assimilated, and the Canadianizing of the people from these regions who came to Canada in the first fourteen years of this century is a problem both in the agricultural Prairie Provinces and in the cities of the East. Less assimilable still, according to the general opinions of Canadians, are those who come to Canada from the Orient (Canada Year Book, 1927-1928).

While restrictions and exclusions of particular groups based on race, ethnicity, or nationality were not explicitly enumerated in the Immigration Act of 1906, the legislation provided the cabinet with discretionary powers to exclude any class of immigrants whenever necessary or expedient (Immigration Act, 1906). In fact, these powers were further expanded with the Immigration Act of 1910 which enhanced the discretionary powers of the government to make admission decisions and provided for a specific clause that the government could prohibit “immigrants belonging to any race unsuited to the climate or requirements of Canada” (Immigration Act, 1910).

Based on the idea that “we cannot assimilate the yellow, brown, or black races” (Carrothers, 1929, p. 520), Asian immigration was tightly controlled and blacks were effectively barred from Canada (Troper, 2000). For example, in trying to attract immigrants from the United States to settle the Canadian Prairies, the immigration branch only recruited white farmers and applications from black farmers were rejected on dubious grounds such as lack of climate suitability, burden of African
ancestry, and low standard of life (Knowles, 2007). With Asians, there were fears that the “yellow peril” would engulf Canada with diseases such as smallpox, cholera, leprosy, and venereal disease along with vices such as opium smoking, gambling, rape, prostitution, and violence (Anderson, 1991; Hawkins, 1991). In order to restrict Asian immigration, the Canadian government revised the Gentlemen’s Agreement of 1907 in 1928 to restrict Japanese immigration, imposed hefty head taxes and landing money requirements on Chinese immigrants, and implemented the continuous journey rule to choke off immigration from India and Japan (Knowles, 2007; Troper, 2000). Although the government abolished the head tax on Chinese immigrants in 1923, it instituted a new Chinese Immigration Act in the same year with exclusionary provisions so broad that it virtually suspended Chinese immigration to Canada until its repeal in 1947 (Knowles, 2007).

The broad discretionary powers conferred on the cabinet in the Immigration Act of 1910 were also used in 1919 to exclude entry of Doukhobors, Mennonites, Hutterites, as well as persons who were, or during the war had been or were perceived to be, enemy aliens (Knowles, 2007). In addition to broad discretionary powers, amendments made to the immigration legislation in 1919 explicitly stipulated a list of inadmissible immigrants: those who fought against Canada during the war, political dissidents, and those suspected of espionage and treason (Knowles, 2007). This broadened the already long list of explicitly stipulated inadmissible immigrants that included the illiterate, alcoholics, those suffering from tuberculosis, mentally or physically defective persons, individuals of

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Continuous journey regulations stipulated that immigrants were required to purchase a direct ticket to Canada, without any stops in between, from the country in which they were citizens. Otherwise, they were denied entry. This essentially choked off the route for Japanese immigration via Hawaii. There was one shipping company offering direct trips from India to Canada, the Canadian Pacific. However, the government prohibited the sale of direct tickets to Canada for Indian immigration after the passage of the continuous journey rule (Troper, 2000).
“chronic psychopathic inferiority”, and criminals (1919 Amendments to the Immigration Act of 1910).

These immigration provisions and practices remained until reforms in the 1960s and 1970s. Although there was a new Immigration Act passed in 1952, the legislation was not significantly different from the Immigration Act of 1910 and the amendments in 1919. Similar to the Immigration Act of 1906 and 1910, the Immigration Act of 1952 was essentially a ‘gatekeeper’s act’ reiterating the kinds of people who should be refused entry into Canada instead of a statement of the standards that should guide who should be let into Canada. In the spirit of being a ‘gatekeeper’s act’, the 1952 Act lacked a statement of fundamental principles that should govern and guide the selection of immigrants in the future (Knowles, 2007). However, with the change in the nation’s economic base from a primarily agricultural focus to a labour market focusing more on industry and service (Verbeeten, 2007; Reitz, 2005), along with social and political movements for civil rights (Knowles, 2007), the need for a new framework of immigration legislation and policies became more pressing.

Implementation of the Points System and the Immigration Act of 1976

By the 1960s, government officials as well as the general public expressed concerns that the immigration framework based on the 1952 Immigration Act was outdated and required a serious overhaul (Knowles, 2007). In the context of the civil rights movement in the 1960s and the Bill of Rights enacted in 1960, it became untenable for the federal government to justify selecting immigrants on the basis of race or national origin (Knowles, 2007). Furthermore, the federal government could not maintain these practices given that provincial governments were legislating against discrimination (Knowles, 2007). Within this social and political environment, the Canadian public expressed concern about the de facto “colour bar” in Canadian immigration that essentially
limited Asian and African immigration “down to a trickle” under the antiquated 1952 immigration framework (The Globe and Mail, January 22, 1962, p. 6). There were calls for a change towards a more transparent and accountable immigration selection system such that:

> [t]he change should go a long way to clear Canada of the reproach of practicing racial discrimination in its immigration policy. Henceforward no one will be considered legally inadmissible because of nationality, racial background, or color of skin. Everyone will be judged by the same standard—what he can contribute to Canada (The Globe and Mail, January 22, 1962, p. 6).

Furthermore, there were economic concerns about labour shortages in key manufacturing and industrial labour markets, such as in the construction, automotive, and steel industries, and it was deemed by many that the domestic labour force, in and of itself, could not effectively address these shortages without the boost from immigration (The Globe and Mail, August 20, 1965, p. 7). Coupled with emigration rivalling immigration and the declining fertility rate during the 1960s and early 1970s (Dion, Caron-Malenfant, Grondin, and Grenier, 2015), the need for a modernized immigration system addressing these social, economic, and demographic issues became pertinent. For example, this statement was made in a news story: “If Canada is to survive, to grow and be prosperous, its first requirement is more people, and they can come in time only through immigration” (The Globe and Mail, January 22, 1962, p. 6).

Instead of promoting or rejecting immigrants based on national origin or racial/ethnic background as a primary selection criterion, the government implemented regulations to eliminate racial discrimination from selection standards in 1962. With this, Canada joined the other two largest immigrant-receiving countries, the United States and Australia, by changing its discriminatory immigration policies (Knowles, 2007). Furthermore, Canada structurally formalized the link between economics, labour, and immigration by establishing the Department of Manpower and Immigration in
1966 (Knowles, 2007). However, the overhaul of the immigration policies, called for by the public and promised by the government, still needed to address what the objectives of immigration are and what immigration should entail in a modern industrial state (Hartley, The Globe and Mail, January 24, 1974, p. 5).

In response, the 1966 White Paper on Immigration was released, noting that immigration had made major contributions to population and economic growth and that in order to continue those contributions, focus should be placed on increasing the levels of independent economic immigrants rather than family members brought through sponsorship (Knowles, 2007). In 1967, the federal government implemented the points system by assigning scores for different criteria such as: having arranged employment, knowledge of English and/or French, having a relative in Canada, the area of intended settlement, education, training, occupational demand, professional skills, and age. Furthermore, by setting different weights to these factors and making the selection criteria publicly known, the points system also sought to curb and confine some of the discretionary powers given to immigration officials and the cabinet in the past (Kelley and Trebilcock, 1998).

Before enacting the Immigration Act of 1976, the federal government published the 1974 Green Paper, based on the national discussion that transpired in fifty public hearings in twenty-one cities, along with a stream of letters sent from citizens to Ottawa. Although the 1974 Green Paper did not discount the important role of immigration in benefitting the economy and stimulating population growth, there was a distinct acknowledgement of concern and doubt about the capacity of Canada to absorb an influx of immigrants from non-traditional source countries (Hawkins, 1975). In fact, the 1974 Green Paper was criticized for its negative view of immigration by many. For example, an

In addition, the vestiges of racialized stereotypes of particular immigrant groups from the earlier part of the twentieth century resurfaced, especially among the letters sent from citizens to Ottawa. As noted above, earlier policies attempted to justify restrictive immigration standards against groups, such as Chinese, by linking them to the idea that their immigration would compromise public health with diseases and corrupt Canadian society with criminal activity (Troper, 2003; Anderson 1991). A similar link between increases in immigration and increased crime was drawn again, with almost 1400 letters to the parliamentary committee on immigration, many of them espousing views that increasing immigration of people from non-white backgrounds endangered Canadian identity by letting in people who “are prone to crime and … causing a deterioration in Canada’s moral climate” (The Globe and Mail, September 25, 1975, p.7). Other sentiments expressed were more explicit in linking immigration to crime. For example, one letter writer was “appalled at the generosity and laxity of an immigration, deportation and re-entry system that, to say the least, appears to invite criminals to Canada” and that “Toronto risks the loss of its present status as one of the few large cities in the world where crime is under relatively good control…due to Canada’s liberal immigration laws” (The Globe and Mail, February 16, 1974, p.1).

Against the idea that immigration would increase crime rates, the Solicitor-General’s Department published a study that showed that “Canadian citizens are much more criminally inclined than landed immigrants to Canada are” (The Globe and Mail, September 25, 1975, p.9), based on convictions data showing that “crime among immigrants occurs at half the rate of native Canadians” (Johnson, The Globe and Mail, February 6, 1975, p.7). Other viewpoints positively affirmed the diversity of immigration brought on by the removal of national origin as a selection criterion and the
in Institution of the points system: “if immigration is to be non-discriminatory, Canada will increasingly represent a cross-section of the world, a world that is overwhelmingly and increasingly non-white...[t]he population of the future will largely be determined by immigration, unless Canada decides to build against the world” (Johnson, The Globe and Mail, February 6, 1975, p.7).

Amidst the conflicting viewpoints in the public dialogue, a special committee was appointed to examine the green paper and to hold further public consultation. The committee made 65 recommendations for new immigration legislation. Nearly all recommendations were incorporated into the Immigration Act of 1976. Once implemented, the Immigration Act of 1976 received broad support from parliamentary parties, public and private interest groups, the media, and academics as exemplifying positive progress in Canadian immigration policy (Knowles, 2007).

Unlike previous legislation, the Immigration Act of 1976 clearly set out the objectives of immigration, including family reunification, non-discrimination, fulfilling Canada’s international obligations regarding refugees, and promoting Canada’s demographic, economic, cultural, and social goals (Immigration Act, 1976). Under the new law, three classes of admissible immigrants were recognized: independent immigrants selected using the points system; a family class; and refugees (Immigration Act, 1976). In contrast to the previous laws, the problematic list of prohibited persons was replaced by broader categories of exclusion based on concerns over public health, criminality, and fraudulent immigration claims (Immigration Act, 1976).

A key feature of the 1976 legislation was also the requirement of the federal government to work in close cooperation with the provinces to plan for and manage immigration. In fact, the call for provincial input in the selection process of immigrants under section 109 of the 1976 Act is the first time that the concurrent jurisdiction of the federal and provincial governments stipulated in the Constitution Act of 1867 was formally and substantially recognized (Kelley and Trebilcock, 1998).
Under section 95 of the Constitution Act (1867), immigration is a concurrent responsibility shared by the federal government and the provincial/territorial governments. However, in the first half of the twentieth century, the provinces were virtually left out of immigration policy-making, with the federal government taking the paramount role in determining and implementing immigration policies. With the affirmation of provincial roles in immigration under the 1976 Act came an end to an era in immigration of “federal dominance and provincial avoidance” (Paquet, 2014, p. 521).

Although the 1976 Act was applauded as progressive by removing discriminatory selection criteria from immigration policies, whether the points system actually removed differential impact from Canada’s immigration laws has been questioned (Kelley and Trebilcock, 1998; Reitz, 1988). While the new admission criteria opened up the possibility for non-European migrants to gain admission to Canada, the likelihood of meeting the criteria of admissibility was low (Reitz, 1988). Essentially, the points system still favoured ‘good’ countries because immigrants from industrialized countries were viewed as more skilled and more likely to meet the admissibility criteria than immigrants from less developed countries (Borjas, 1991).

Immigration and Refugee Protection Act (IRPA) of 2002

Following the implementation of the Immigration Act of 1976, immigration in Canada, along with ethnic and linguistic heterogeneity, increased (Boyd, 2002). With these increases, debates about immigration and crime resurfaced. For example, in 1984, Conservative immigration critic James McGrath linked the new points system to increasing organized crime by claiming that the new points system makes it “easier for people with money to immigrate to Canada but the rules have created a problem because they are opening the door to organized crime” (Cleroux, The Globe and Mail, June 4, 1984).

4In 1970 (before the affirmation in the 1976 Act), there were changes that gave Quebec a greater role in the selection of immigrants in order to better accord with Quebec’s distinct cultural and social characteristics (Knowles, 2007).
4, 1984, p. 3). With the settlement of new immigrants rising in major Canadian cities, there were fears that growth fuelled by immigration would result in growth in crime rates, such as in Toronto suburbs like Scarborough (Hess, The Globe and Mail, September 1, 1993, p. A12). The debate about the linkage between immigration and crime intensified even further after the Just Desserts shooting in Toronto in 1994, for example, with Reform Party leader Preston Manning stating that “Jamaicans are partly responsible for Toronto’s rising crime rate” (The Globe and Mail, March 15, 1994, p. A4).

Similar to the debates surrounding the 1974 Green Paper on immigration, there was also opposition to the view that immigration causes crime rates to go up. In the context of increasing immigration to Toronto and the link made to higher crime rates, then-mayor Art Eggleton stated that “I just don’t believe crime is relevant to color. It has a lot more to do with poverty” (Valpy, The Globe and Mail, June 11, 1990, A8). Again, similar to the 1975 study from the Solicitor-General’s office, the Department of Immigration released a report stating that “if current trends continue, bringing more immigrants into Canada may actually help reduce the crime rate”, because foreign-borns made up 20.2% of the Canadian population but only accounted for 10.3% of penitentiary inmates in 1989 (The Globe and Mail, July 14, 1994, p. A8).

With the renewal of this debate on the link between immigration and crime, particularly after the Just Desserts shooting, there were calls in editorials and media outlets to toughen up immigration laws (The Globe and Mail, February 7, 1995, p. A3A). These calls for tougher immigration laws were echoed each time a new ‘crisis’ emerged in immigration, such as the arrival of Roma refugee claimants and Chinese boat people. For example, police in Canada stated that unless Roma refugee

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2On April 5, 1994, three young black men held up a Toronto café called Just Desserts and killed a young white woman named Vivi Leimonis. The incident galvanized debates about immigration, as the suspects were black immigrants from the Caribbean to Canada. In the extensive media coverage of the incident, arguments linking violent crime to immigration led to calls for the need for a tougher immigration system and harsher deportation policies, along with the need to limit immigration from selected countries (Wortley, Hagan, and Macmillan, 1997).
claimants are carefully screened, “there is a risk that Canada could be importing crime unawares” (Hess, The Globe and Mail, August 20, 1997, p. A6). In addition, “[t] he arrival of Chinese boat people last year rekindled old fears that immigrants cause the crime rates to increase, put local workers out of jobs and place extra pressure on social programs” (Drohan, The Globe and Mail, July 19, 2000, p. B11).

Particularly after the events of 9/11, immigration was brought to the centre of Canadian national security concerns, accompanied by an increasing conflation between being an immigrant and being a terrorist (Kruger, Mulder, and Korenic, 2004). The connection between immigration and crime became so firmly cemented in the broader public consciousness (Ismaili, 2010) that a new vernacular, such as ‘crimmigration’, was developed to refer to the convergence of immigration and crime policies (Stumpf, 2006).

In the context of the renewed debate about immigration and crime and the calls for tougher immigration laws, the federal government enacted the Immigration and Refugee Protection Act (IRPA) in 2001, which replaced the Immigration Act of 1976. The Immigration Act of 1976 shaped immigration for the first 26 years of the period under study in this dissertation. The period 2002-2011 was shaped by the IRPA. The IRPA retained the overall emphasis on labour market and humanitarian criteria from the 1976 Act but placed more of a focus on border enforcement and national security, given the volatile social and political context surround the passage of the new law. This increased focus on enforcement can be seen particularly in the increased powers of detention and deportation, broadened categories of inadmissibility based on national security concerns, and restricted appeals procedures (Roach, 2009). In addition, as a response to concern over refugees, the IRPA also entrenched the Safe Third Country Agreement in 2003, which requires refugees to seek
asylum in the first safe country they enter after leaving their country of origin in order to prevent ‘shopping’ for more favourable countries (Goldring, Berinstein, and Bernhard, 2009).

However, the IRPA did not solely focus on enforcement. The IRPA also streamlined the points system and reduced the number of factors included in the criteria. The IRPA focuses on scoring independent economic-class immigrants on six factors in total: education, proficiency in English and/or French, occupational experience, age, arranged employment in Canada, and adaptability. In comparison with the 1976 Act, the IRPA reforms to the points system strengthened language and education requirements and stressed flexible skills rather than intended occupations (Picot and Sweetman, 2012; Knowles, 2007; Reitz and Somerville, 2004). In addition to the changes to the points system made by the IRPA, a new category of immigrants was added to the selection system called the ‘Canadian Experience Class’ in 2008, which allowed temporary immigrants who have two years of education/work experience in Canada to apply for permanent resident status (Picot and Sweetman, 2012).

**Provincial Nominee Program**

The role of provinces in immigration, recognized in the 1976 Act, was reaffirmed and strengthened under the IRPA. Currently, all provinces and territories, except for Nunavut, have some form of formal agreement with Citizenship and Immigration Canada on how to share and manage the responsibility for immigration matters according to the unique needs and goals of each province or territory. Each agreement is negotiated separately to reflect the particular concerns of each province or territory. Some agreements are more comprehensive than others, covering a wide variety of immigration issues including provincial nominees, international students, temporary foreign workers, reception of refugees, and settlement programs (Citizenship and Immigration Canada, 2010). Yukon,
British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, Nova Scotia and Prince Edward Island have this type of agreement with the federal government. However, with each province, the specific immigration issue on which more emphasis is placed differs from agreement to agreement. For example, whereas the Canada-Ontario Immigration Agreement of 2005 places most of its emphasis on promoting economic growth and effective economic integration of immigrants with virtually no emphasis on the reception of refugees, the 2003 agreement that Manitoba has with the federal government places a more explicit emphasis on its plans to receive a share of refugees to be resettled in the province.

Since 1998, most provinces have also negotiated Provincial Nominee Programs (PNPs) with the federal government. PNPs allow provinces to directly select a limited number of immigrants to the province to more specifically meet the province’s labour market and other objectives (Paquet 2014; Reitz, 2012). Potential immigrants apply directly to the provinces to which they intend to immigrate and are first vetted by provincial officials, then Citizenship and Immigration Canada determines whether each nominee fulfills federal admissibility requirements regarding health, security, and criminality (Carter, Padney, and Townsend, 2010). PNPs provide incentive to immigrants to immigrate to smaller provinces by offering selection criteria that can be more easily met than the federal selection criteria and also by offering expedited processing times (Carter, Padney, and Townsend, 2010).

2.3 Changes in Immigration, 1976-2011

With the changes in immigration policies for the period under examination, the levels and characteristics of immigration have also changed. At the turn of the twentieth century, between 1896, when Canada’s population was about 5 million, and 1914, when Canada’s population was about 7.9
million, Canada experienced one of the largest immigration influxes in its history, with about 3
million people immigrating during this period (Kelley and Trebilcock, 1998). With this immigration
flow, Canada recorded its highest proportion of foreign-born population in 1931—22% (Chui, Tran,
and Maheux, 2007). In terms of source countries, most of the immigrants were of British (38% of
admissions), U.S. (34%), or Northern/Western European origin (25%), in accordance with the
preferred groups reflected in Canada’s immigration policies noted above (Troper, 2003; Kelley and
Trebilcock, 1998). In contrast, immigration from Asian countries, such as Japan, China, and India,
constituted less than 2% of the total immigration flow in the first two decades of the twentieth century
(Kelley and Trebilcock, 1998). With this influx of immigrants, the Prairies, in particular, experienced
a “spectacular” population gain with close to one million immigrants settling in the west to buy farms

With the changes to immigration policies in the 1960s and 1970s outlined above, the level of
immigration and characteristics of immigration began to change as well. From 1976 to 2011, the
population of Canada increased from 23 million to 33 million. The proportion of the immigrant
population increased from about 13% in 1976 to almost 21% in 2011 (Chagnon, 2013; Manpower
and Immigration, 1977). On an annual basis, the number of incoming immigrants increased from
about 150,000 in 1976 to 280,700 in 2010 (Chagnon, 2013; Manpower and Immigration, 1977).

In addition to the increase in immigration, there was a major change in source countries of
immigration during this period. According to the National Household Survey in 2011, 78% of
immigrants who came to Canada before 1971 were from Europe (Chui and Flanders, 2013).
However, the share of European immigrants in subsequent periods has declined steadily, with Asia
becoming the main source region of immigrants for the period 1976-2011 (Chui and Flanders, 2013).
In 2001-2006, about 60% of Canada’s immigrants came from Asia, compared to 16% from Europe,
with the Philippines, China, and India being the top source countries (Chui and Flanders, 2013; Murdie, 2008). Figure 2.1, (taken from Chui and Flanders, 2013), shown below, demonstrates these changes in source countries.

**Figure 2.1 Region of Birth of Immigrants by Period of Immigration, Canada, 2011**

This change in source countries has also contributed to the increased linguistic diversity in Canada, with 70.2% of the foreign born population, and 80% of recent immigrants, speaking a mother tongue other than English or French, and nearly 150 different languages being reported as a mother
tongue among the foreign-born population, at the time of the 2006 Census (Chui, Tran, and Maheux, 2007; Corbeil and Blaser, 2007). In addition, the change in source countries has also contributed to increases in the visible minority population in Canada, with the proportion of the population identifying themselves as visible minorities steadily increasing from the 1980s (4.7%) to 13.4% in 2001 (Statistics Canada, 2001). In fact, with immigration as the primary driver of population growth in recent years, Statistics Canada projects that the visible minority population will continue to grow, with about 30% of the population being part of the visible minority population by the year 2031 (Malenfant, Lebel, and Martel, 2010).

In addition to the shift in source countries of immigration, there has also been a shift in the category of immigrants admitted to Canada for the period 1976-2011. With the institution of the points system and the emphasis on economic immigrants over family reunification, the proportion of economic immigrants has steadily increased during the 36-year period, with economic immigrants now making up 66.6% of all immigrants admitted to Canada in 2010 (Alboim and Cohl, 2012). With the increasing proportions of economic immigrants, proportions of immigrants with university degrees also rose throughout the period, from 20.8% in 1994 to 45.6% in 2001 (Reitz, Curtis, and Elrick, 2014). Within the economic class category of immigrants, the proportion with university degrees increased from 39% in 1994 to 77.7% in 2001 (Reitz, Curtis, and Elrick, 2014).
Not only has the proportion of immigrants with high levels of education increased, immigrants admitted to Canada after 1970 have education levels that are significantly higher than those of the general Canadian population (Reitz, 2001). Moreover, new immigrants to Canada tend to be younger and more likely to be in the core working age group of 25-54 than native-borns (58.6% of immigrants who immigrated from 2006-2011), with a median age of 31.7 years compared to 37.3 years for native-borns (Malenfant, Lebel, and Martel, 2011). However, despite the high levels of education and being more likely to be in prime working years, immigrants tend to have lower rates of labour force participation and lower levels of earnings compared to native-born Canadians (Clarke and Skuterud, 2016; Reitz, 2001).

In fact, the gap for entry-level earnings between immigrants and native-borns grew from the 1970s to 1990s (Aydemir and Skuterud, 2005). Some researchers have speculated that this deterioration may be linked to both the change in education levels of native-borns as well as the shift in source countries. In terms of educational levels of native-borns, Reitz (2001) has argued that although the skill-based selection of immigrants through the points system initially created an immigrant advantage in educational attainment, which subsequently aided economic integration, native-born educational levels increased more rapidly during the twenty-year period from 1971 to 1991 than those of immigrants (Reitz and Somerville, 2004; Reitz, 2001). Other researchers have suggested that the shift in source countries from Europe to Asia has reduced the transferability of immigrants’ human capital because of potential barriers in language and discrimination (Nadeau and Seckin, 2010). In fact, labour force participation and employment rates were consistently higher for immigrants educated in western systems than those from Asia, after controlling for other factors (Mata, 2008).
Not only have the characteristics of immigration and immigrants changed, patterns of immigrant settlement have also changed over the period 1976-2011. Immigration has not affected all regions of Canada equally. In fact, the geographical distribution of immigrant settlement is very much skewed towards particular provinces and mostly large urban centres. The vast majority of the immigrant population lives in four provinces: Ontario, British Columbia, Quebec, and Alberta (Knowles, 2007). The Atlantic provinces have been virtually untouched in terms of the increases in immigration and accompanying increasing ethnocultural diversity throughout the period (Beshiri and He, 2009) and some regions, such as Manitoba and Saskatchewan, actually experienced a decrease in immigration from the late 1970s until the late 1990s (Pruegger and Cook, 2010). Only Ontario, British Columbia, and Quebec have experienced general increases in the proportion of immigrants within their population over the study period. Figure 2.2 shows these changes in the proportion of immigrants in each province for the period 1976-2011⁶.

**Figure 2.2 Changes in Proportion of Immigrants, 1976-2011, by Province**

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Immigrant settlement during this period has become increasingly and disproportionately an urban phenomenon (Chui, Tran, and Maheux, 2007; Walks and Bourne, 2006). For example, 91% of the country’s immigrant population lived in one of Canada’s 33 CMAs, compared to 63.3% of native-borns, according to the 2011 National Household Survey (Chui and Flanders, 2013). Immigrant settlement has also become increasingly concentrated in the three largest Canadian census metropolitan areas (CMAs), Toronto, Vancouver, and Montreal, over the study period. In 1981, 58% of immigrants who arrived in the previous ten years lived in the three largest Canadian census metropolitan areas (CMAs); in 2001, the proportion had increased to 73% (Hou, 2004).

Although the shift in source countries has mostly affected large urban areas, this shift is also not reflected equally among all CMAs. As noted above, the Atlantic provinces have been largely untouched by this change, with immigrants in these provinces citing countries such as the US and the UK as their country of origin which is more consistent with the characteristics of immigration prior to the 1970s (Beshiri and He, 2009; Malenfant, 2007). Even amongst the three largest CMAs that receive the lion’s share of new immigrants, Montreal attracted the largest proportion of immigrants from Europe, the fewest from Asia, and many from Africa, whereas Toronto’s recent immigrant population comes primarily from South Asia and Vancouver’s recent immigration is mainly from East Asia (Murdie, 2008).

There were also interesting changes in immigration policy towards the end of the study period, especially in the early 2000s. Attempts for a more even geographical distribution of immigrants – i.e., away from Toronto, Vancouver, and Montreal – has been a policy goal of Citizenship and Immigration Canada since the 1990s (Bonikowska, Hou, and Picot, 2015). In fact, since Provincial Nominee Programs (PNPs) were implemented beginning in the late 1990s, an explicit goal has been to use these programs to foster a better geographic distribution of immigrants.
from the major immigrant receiving cities to traditionally less popular regions, such as the Atlantic provinces and the Prairies (Bonikowska, Hou, and Picot, 2015).

Partly due to PNPs, the percentage of immigrants intending to settle in Toronto decreased from 48% to 33% between 2000-2010 (Bonikowska, Hou, and Picot, 2015). Furthermore, Atlantic provinces and provinces in the Prairies have all experienced an increase in the share of new immigrants coming to Canada between 2000-2010, with Manitoba increasing its share from 2% to 5.6%, Saskatchewan with an increase from 0.8% to 2.7%, and the Atlantic provinces increasing their share from 1.3% to 3% (Bonikowska, Hou, and Picot, 2015). Although there is still a disproportionately large number of immigrants settling in the traditionally attractive provinces, such as Ontario, and CMAs, such as Toronto, there has been a dispersal even within southern Ontario. For example, with the rise of CMAs such as Hamilton, London, and Oshawa, each with easy accessibility and close proximity to Toronto and growing job creation capacity, there was a slight spatial dispersal of immigrants in the 1996-2001 period away from Toronto (Xu, 2011).

2.4 Summary of Key Changes in Immigration, 1976-2011

This section has outlined some major changes in immigration for the period, 1976-2011. Overall, immigration has increased over this period and the source countries of immigration have shifted from Europe to Asia. Immigration settlement is largely concentrated in a few provinces and in large urban centres. With the focus on economic immigrants, the educational levels of immigrants have increased. In addition, immigrants are more likely to be younger and in their prime working years than the native-born population. However, the gap for entry-level earnings between immigrants and native-borns has increased over the same period.
Given these key changes in the immigration context, the characteristics of the immigrant population during the period 1976-2011 may give rise to some expectations about how these changes may be related to changes in crime. For example, the educational level of immigrants during this period increased which may translate into lower crime rates (see Lochner, 2004). However, at the same time, the gap between the entry level earnings of immigrants and native-borns also increased, which may be related to higher crime rates (see Patterson, 1991). Immigrants have also tended to be younger than native-borns, which may also be associated with a higher crime rates (see Farrington, 1986). Overall, because Canada (relative to the US) has so few undocumented immigrants, a greater proportion of immigrants, higher levels of education among immigrants, and a greater diversity of source countries, it could be argued that immigration may have a larger positive effect in reducing crime in Canada than it has in the United States. These particular characteristics of immigration during this period 1976-2011 inform the ways in which the analyses presented in Chapters 5 and 6 need to be interpreted.

2.5 Changes in Crime Rates, 1976-2011

This section outlines the changes in crime rates in Canada for the period 1976-2011. According to Statistics Canada, total rates of crime (excluding traffic offences) increased steadily from about 7265 incidents per 100,000 to 9955 incidents per 100,000 in 1991, then began to decline steadily through the 1990s. By 2001, at 6012 incidents per 100,000, the total crime rate had decreased to below 1976 levels (Dauvergne, 2008). This amounts to a decrease of 26% from 1991 to 2001 at an average of about 2% each year (Pottie Bunge, Johson, and Balde, 2005). The total crime rate continued to decline to 4520 incidents per 100,000 in 2011. The steady increase and then decline
in the total crime rate for Canada is shown in Figure 2.3. Along with the trends in the total crime rate, Figure 2.3 also plots the trend in immigration for Canada as well.

**Figure 2.3 Proportion of Immigrants and the Total Crime Rate in Canada, 1976-2011**

The greatest reductions in the total crime rate were largely due to the reductions made in property crimes, especially among young offenders (Pottie Bunge, Johnson, and Balde, 2005). Because property crimes tend to constitute a large share of the total crime rate, the trends for property crime rates for the period, 1976-2011, is similar to that for the total crime rate. The property crime rate increased steadily from 4650 incidents per 100,000 in 1976 to 5892 incidents per 100,000 in 1991. Similar to the total crime rate, from 1991, the property crime rate decreased to 4064 incidents per 100,000 in 2001, which is below the level in 1976. For the ten-year period from 1991 to 2001, the property crime rate fell by 34% (Pottie Bunge, Johnson, and Balde, 2005). The property crime continued to decline to 2657 incidents per 100,000 in 2011. Figure 2.4 illustrates the trends in the property crime rate along with the trends in immigration.
The rate of violent crime follows a similar trend as the total and property crime rates, with a steady increase until 1991 and then a decline after 1991. From 1976, the violent crime rate increased steadily from 587 incidents per 100,000 to 1038 incidents per 100,000 in 1991. After 1991, the violent crime rate decreased to 859 incidents per 100,000 in 2011. However, unlike the total and property crime rates, the violent crime rate did not fall below 1976 levels in 2001. The downward trend in violent crime was not as dramatic as for the total and property crime rates, with a reduction of 9% over the ten-year period from 1991 to 2001 (Pottie Bunge, Johnson, and Balde, 2005). Figure 2.5 presents the trends in the rate of violent crime and immigration for the study period.

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7Definitions and recording practices for violent crime changed over this time period. The trends depicted here are based on corrected data as to avoid an artificial increase in the rate of violent crime due to the definitional and recording changes. Chapter 4 on data and methods further explains these changes as well as the correction procedures.
Unlike the steady increase towards the early 1990s and then declines seen in the rates of total, property, and violent crimes, there has been a general decline in the homicide rate during the period 1976-2011. Figure 2.6 shows this trend for the homicide rate.
Declines in crime rates starting in the 1990s have been the subject of much debate and speculation. These declines co-occurred with many demographic, economic, social, and policy changes and potential explanations have been explored including changes in age structure, unemployment rates, and family structure (Pottie Bunge, Johnson, and Balde, 2005; Ouimet, 2002). In terms of age structure, there was a decrease, since the 1990s, in the proportion of the population most at risk for criminal offending, young people aged 15-24 (Pottie Bunge, Johnson, and Balde, 2005; Ouimet, 2002). Unemployment rates were also high during the 1980s and 1990s when the crime rate increased to its peak (Pottie Bunge, Johnson, and Balde, 2005; Ouimet, 2002). With regard to family structure, the divorce rate increased until the late 1980s and then declined (Pottie Bunge, Johnson, and Balde, 2005).

Similar to Canada, the United States also experienced a decrease in crime rates over the same period. A great deal of research on the 1990s crime drop in the U.S. has considered factors such as increased police capacity, new policing strategies, gun control measures, and increased incarceration rates (Blumstein and Wallman, 2000; Conklin, 2003; Zimring, 2007). Interestingly, Canada did not experience similar changes in these factors but still experienced parallel drops in crime rates for the same period (Zimring, 2007; Pottie Bunge, Johnson, and Balde, 2005; Ouimet, 2002). What is common to both the U.S. and Canada is that during the 1990s levels of immigration were at their highest since the early twentieth century (Sampson, 2008; Wadsworth, 2010; Levett, Badets, and Chard, 2003; Statistics Canada, 2001). Although this inquiry into the role of immigration in the crime drop since the early 1990s has begun to be addressed in the US (e.g., Wadsworth, 2010; Stowell, Messner, McGeever, and Raffalovich, 2009), such inquiries have not yet been undertaken in Canadian research.
2.6 Contextual Differences between the United States and Canada

As noted above (and to be discussed further in Chapter 3), research on the relationship between immigration and crime has been much more prevalent in the United States than in Canada. Certainly, there are sufficient similarities between Canada and the United States that could lead to the expectation that the relationship between immigration and crime may be similar in the two countries. However, there are important contextual differences that could shape the relationship between immigration and crime in specific ways in Canada. This section outlines the differences in the histories, characteristics, and policies of immigration between the United States and Canada.

The notion of extending American findings on the relationship between immigration and crime to Canada is attractive because of the similarities between the two countries. The United States and Canada are both fairly politically stable, predominantly English-speaking democracies, occupying vast North American land areas, and with developed and modernized industries and economies (Goldberg and Mercer, 1986). Both countries have also experienced declines in fertility rates to such a degree that they require immigration to maintain population growth (Adsera, 2004). Both nations also saw increases in immigration between 1976 and 2011, particularly in the 1990s (Kaushal and Lu, 2015). Furthermore, immigrants to both countries tend to settle in urban locations (Chui and Flanders, 2013; Shihadeh and Barranco, 2010). As noted above, both countries have also experienced decreases in their crime rates since the 1990s (Zimring, 2007; Pottie Bunge, Johnson, and Balde, 2005).
Even with these similarities, there are important differences between the two countries that are relevant to the examination of the relationship between immigration and crime in Canada. One basic but fundamental difference between the two countries is the geographic isolation of Canada. Canada is geographically isolated from every other country except for the United States, which has limited illegal immigration to a greater extent in Canada than is the case in the United States (Reitz, 2012). In fact, the border the US shares with Mexico is the source of a significant level of illegal immigration inflows (Reitz, 2011). The preoccupation with undocumented migrants from Mexico in the United States has been cited as a major reason for the more negative view of immigration in the United States than in Canada (Reitz, 2011).

This relative lack of illegal immigration in Canada has not only been an important factor in sustaining the political perception of Canadian immigration as being controlled by the government for the national interest (Reitz, 2012), but it has also allowed for economic considerations to be prioritized in Canadian immigration policy to a larger extent than is the case in the US (Costigan, Lehr, and Miao, 2016; Reitz, 2011). Furthermore, the geographical isolation also influences the ways in which border enforcement practices are undertaken. In comparison with the US, the focus of the Canada Border Services Agency (CBSA) is more about the illegal entry of goods rather than illegal entry of people (Goldring, Berinstein, and Bernhard, 2009). In fact, illegal entry of people is understood as more of an irregularity in Canada than a pervasive structural feature of immigration as is the case in the US (Goldring, Berinstein, and Bernhard, 2009).

These positive implications of geographical isolation have also translated into the ability to promote a relatively larger immigration program in Canada. On a per capita basis, the Canadian immigration program is about twice the size of the American immigration program, even with illegal immigration from Mexico included (Reitz, 2012). Although the US is the largest immigrant
receiving country in the world, with about a 45% share of the world’s immigrants, immigrants form a greater part of the population in Canada (21%) than in the US (13%) (Woroby, 2015).

In addition to the size of the immigration program, the focus of the immigration program is different between the two countries. In the United States, the focus is much more heavily placed on family reunification, whereas in Canada, the focus is more on economic immigration based on skill level (Kaushal and Lu, 2015; Woroby, 2015). For example, in the early 2000s, about two thirds of immigrants entering the US were allowed entry based on family reunification, whereas in Canada, the same proportion was allowed entry as economic immigrants (Woroby, 2015). This focus on economic immigration in Canada has also shaped the educational and employment characteristics of immigrants in Canada in different ways from the US.

With the focus on economic immigration, the educational level of Canadian immigrants has increased since the institution of the points system, while the reverse is true for US immigrants, largely because of the focus on family reunification, especially for Mexican immigrants, in the U.S. (Woroby, 2015). Since the points system explicitly assesses knowledge of English and/or French, it is not surprising that Canadian immigrants also tend to have higher levels of English fluency than do immigrants to the US (Antecol, Cobb-Clark, and Trejo, 2003). This difference in education and English fluency also shapes labour market outcomes for immigrants in the two countries. Compared to skilled immigrants in Canada, skilled immigrants to the US have lower relative earnings (Reitz, 2012). This may also be related to the differences in economic and social environment shaping labour force participation in Canada which has stronger unions and higher minimum wages than in the US (Kaushal, Lu, Denier, Wang, and Trejo, 2015).
In addition to education and economic outcomes, characteristics of immigration also has differed in the two countries in terms of source countries, particularly in the 1990s during which both countries experienced a sustained increase in immigration. Until the 1960s, both countries favoured the same countries as sources for immigrants. Immigrants from Western and Northern Europe were preferred due to the notion that these groups were less foreign, easier to settle and assimilate; as a consequence, immigrants from these regions made up a substantial portion of the pre-1960 immigrants to both countries (Somerville and Walsworth, 2011).

However, source countries of immigration have diverged significantly since then. The rise in the number and proportion of immigrants in the 1990s in the US was dominated by growth in Latino immigrants, particularly from Mexico (Feldmeyer and Steffensmeier, 2009; Sampson, 2008). This has not been the case in Canada. In Canada, there has been an increase in immigration from Asia for the same period (Chui and Flanders, 2013). This divergence in source countries of immigration has intensified since the 1990s, with the US continuing a “Hispanicization” of immigration while Canada continued an “Asianization” of immigration (Woroby, 2015, p. 433). By the early 2010s, more than half of the new immigrants to the US came from Latin America and more than half of the new immigrants to Canada came from Asia (Woroby, 2015).

In terms of immigrant settlement, immigrants tend to settle in large urban areas in both countries, however, the extent of concentration in the largest urban areas differs. For example, the two largest metropolitan areas of the US, Los Angeles and New York City, account for one third of all immigrants in the US (Kasinitz, Mollenkopf, and Waters, 2002), whereas the three largest metropolitan areas in Canada, Toronto, Vancouver, and Montreal, account for more than two thirds of

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8 In fact, the presence of Latinos and the presence of immigrants are often conflated both in popular discourse and academic research, with most studies of immigration and crime in the US using proportion of Latinos as coextensive with the proportion of immigrants (e.g., Martinez, Stowell, and Lee, 2010; Stowell and Martinez, 2007).
all immigrants in Canada (Malenfant, 2007). The contexts of the large urban centres in which immigrants settle also differ for the two countries. Immigrant settlement in urban neighbourhoods tends to be more dispersed and less exclusionary in Canada (Balakrishnan and Hou, 1999; Walks and Bourne, 1996). There is greater residential segregation along racial and ethnic lines in US cities than in Canadian cities (Hou, 2004; Fong, 1996).

This may be partly influenced by the history of race relations particular to the US. In the US, a large minority population of blacks, forming an urban underclass, has been noted as an important feature of American society and urban experience (Boyd, 2002; Goldberg and Mercer, 1986). This urban context has been shaped by institutions of slavery, Jim Crow laws, and economic systems underwritten by exploitation of blacks (Boyd, 2002). These kinds of institutions and histories were not replicated to the same extent in Canada (Boyd, 2002). This is not to suggest that Canada does not have a history of racial tension and discriminatory treatment of minorities but rather that Canada lacks a readily identifiable racial group with a similar structural location in society in comparison with the US (Boyd, 2002).9

The differing contexts of settlement also influence the integration of immigrants in both countries, with differences in one of the key indicators of integration, namely the naturalization of immigrants. Gaining citizenship is an important indicator of integration and provides one of the most important facets of civic engagement in democracies, namely participation in elections (Banting and Kymlicka, 2010). Traditionally, in Canada, immigrants have been viewed as ‘citizens in waiting’ (Alboim and Cohl, 2012). Accordingly, the rate of naturalization of immigrants is among the highest

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9It has been noted that Aboriginals in Canada come closest to the American black population in terms of historical marginalization but the size of the off-reserve Aboriginal population in urban areas has been deemed to be not large enough to be likened to the large minority population of blacks in American cities (Boyd, 2002).
in the world (Banting and Kymlicka, 2010). According to a 2005 study, naturalization of eligible immigrants was 84% in Canada versus 40% in the US (Trans, Kustec, and Chui, 2005).

However, this was not always the case. In the 1970s, the naturalization rate was at about 68% for both the US and Canada (Picot and Hou, 2011). However, in 2006, the rates had diverged significantly, with naturalization increasing to about 80% in Canada and declining in the US to about 45%, even when accounting for the rising numbers of illegal immigrants in the US who are not eligible for citizenship (Picot and Hou, 2011).

The high rate of naturalization in Canada can be understood in the context of the official policy of multiculturalism in Canada. Unlike the US and many other countries, Canada has an official policy of multiculturalism which was introduced in 1971, embedded in the Constitution Act of 1982, and implemented more specifically through legislative mandate in the Multiculturalism Act of 1988 (Reitz, 2012). Putting aside the question of whether having an official policy on multiculturalism is any different from or better than having a de facto policy without the official declaration, multiculturalism has taken on a significance that exceeds its affirmation in official laws and policies (Banting, 2010; Banting and Kymlicka, 2010). Immigration and pluralism have been argued to be an essential part of national building and identity in Canada (Winter, 2015; Bloemraad, 2012). In fact, it would be ‘political suicide’ to be, at least openly, opposed to immigration or multiculturalism given the size of the immigrant population who naturalize at a very high rate and subsequently gain voting powers (Winter, 2015). Not surprisingly, there is a paucity or virtual absence of debate on immigration during Canadian elections (Reitz, 2012). This is very much a different context from US elections, where immigration issues precipitate controversial debates along partisan lines and among election candidates (Reitz, 2011).
2.7 Conclusion

This chapter has discussed the changes in the framework of immigration policies and changes in crime patterns in Canada. Immigration policies have become much less discriminatory with the implementation of the points system entrenched in the Immigration Act of 1976. With the growing complexities presented by economic shifts, arrival of refugees, and events such as 9/11, immigration policies became more focused on enforcement and entailed a certain level of suspicion about immigrants with the institution of the IRPA in 2002. Accompanying these changes were resurfacing discussions and debates about the link between immigration and crime which seem to become more salient during more volatile political and social contexts. However, overall, immigration is very much favoured in Canada, perhaps even to an exceptional extent, especially when compared with other countries. With the shift in source countries of immigration, increasing diversity of the immigrant population, changes in the role of provinces in immigration, as well as the changes taking shape in the geographical distribution of immigrant across Canada, this chapter has attempted to provide a background for immigration in Canada. Furthermore, this chapter has summarized contextual differences between the US and Canada relevant to the immigration and crime relationship. Overall, this chapter has attempted to outline the specific and relevant Canadian context within which this study on the relationship between immigration and crime is situated and with which the analyses on CMAs and provinces in Chapters 5 and 6 can be more meaningfully appreciated. The following chapter, Chapter 3, outlines the major theoretical perspectives that have been used to understand the relationship between immigration and crime, major findings from the research on immigration and crime, and the relevance of both for key aspects of my research, including the macro-level focus, the longitudinal design, and the theoretical covariates included in the analyses in Chapters 5 and 6.
Chapter 3: Theoretical Perspectives and Literature Review

This chapter provides an overview of the theoretical perspectives that have been used to understand the relationship between immigration and crime, as well as the major findings from research on this relationship. There are no specific theories that directly pertain to immigration and crime (Thomas, 2011; Mears, 2001). Instead, theoretical perspectives from criminology and sociology have been used to examine this relationship, with each theoretical perspective offering a specific and somewhat distinct set of mechanisms to explain it.

Broadly, there are four theoretical perspectives that predict a positive association between immigration and crime and three theoretical perspectives that posit a negative association between immigration and crime. Those that predict a positive association between immigration and crime are: 1) strain and opportunity perspectives; 2) segmented assimilation theories; 3) cultural theories; and 4) social disorganization theories. The theoretical perspectives that posit a negative association between immigration and crime are: 1) the immigrant revitalization thesis; 2) the immigrant enclave thesis; and 3) ‘moral booster shot’ perspectives.

The chapter is organized as follows: I begin with a discussion of these theoretical perspectives, including their similarities and differences both in the direction of the relationship between immigration and crime they expect, and in the mechanisms they hypothesize are responsible for it. I also highlight their relevance for key aspects of my research, i.e., its macro-level focus, its longitudinal design, and the theoretical covariates I include in my analytic models. The final section of the chapter provides an overview of the justifications for and the major findings from the research on the macro-level relationship between immigration and crime.
3.1 Theoretical Perspectives that Predict a Positive Association between Immigration and Crime

As noted above, theoretical perspectives that posit a positive association between immigration and crime can be grouped into four categories: 1) strain and opportunity perspectives; 2) segmented assimilation theories; 3) cultural theories; and 4) social disorganization theories.

Strain and Opportunity Perspectives

Strain and opportunity perspectives, as applied to the relationship between immigration and crime, rely heavily on individual-level processes that are expected to aggregate up to produce macro-level relationships. This ‘compositional’ approach is based on the assumption that geographical places with greater numbers of individuals experiencing strain and lack of legitimate opportunities will be characterized by higher crime rates, because those individuals will commit more crime.

Many strain and opportunity perspectives are based on the work of Merton (1938), who focused on how people who are economically disadvantaged relative to other members of a society respond to their situation. Although he did not examine the relationship between immigration and crime, his ideas can be applied to address how increases in immigration may be related to increases in crime rates. Merton posited that most members of a society share a common frame of aspirational reference consisting of culturally defined goals and purposes; in capitalist societies, a predominant goal is the accumulation of wealth and the status that comes with it (Merton, 1938)\(^\text{10}\). In such societies, some individuals will lack access to legitimate means of achieving these goals, such as a good education and stable, well-paid employment. To the extent immigrants face barriers to these goals,\(^\text{10}\) this relies on the assumption that immigrants also share these same goals. Some scholars have pointed out that goals of immigrants, especially recent immigrants, may not be defined by the culture of the host society but their home countries (e.g., Morenoff and Astor, 2006).
prerequisites for achieving success legitimately, they may resort to alternative means, including illegal or criminal means (Merton, 1938). As a consequence, according to this approach, areas with greater or increasing numbers of immigrants should have higher or increasing crime rates.

Cloward and Ohlin (1960) further developed Merton’s work and suggested that individuals must have opportunities and access to appropriate environments and techniques to pursue culturally valued goals, whether through legitimate or illegitimate means (Cloward and Ohlin, 1960). In poor and disadvantaged neighbourhoods, there are likely to be more illegitimate than legitimate opportunities available to residents. Although the extent of personal access to legitimate or illegitimate opportunities may differ based on friendship and social networks, poor and disadvantaged neighbourhoods are likely to provide more access to and opportunities for criminal behavior on the whole (Cloward and Ohlin, 1960). Applied to the relationship between immigration and crime, the expectation would be that if immigrants are more likely to settle in economically and socially disadvantaged areas with more access to deviant opportunity structures, they will commit more crime; consequently, areas with more immigrants should have higher crime rates.

Agnew (1992) built on the work of Merton as well as Cloward and Ohlin to develop what he termed ‘General Strain Theory’. Agnew emphasized that it is not just the deprivation of access to legitimate opportunities but a sense of being unjustly deprived that creates strain and pushes people to engage in illegal behaviour. For Agnew, strain is expected to be greatest when there is a disjuncture between expectations about just or fair outcomes and actual outcomes. To the extent that immigrants leave their home countries to pursue better economic opportunities and success, they may experience blocked access to legitimate opportunities as an unjust outcome, feel more strain, and thus have more drive to engage in criminal behavior in order to escape negative situations. Therefore, areas with greater numbers of or increases in immigrants may have a larger pool of individuals with the potential
to experience strain and with more opportunities for criminal behaviour, which would translate into higher crime rates for the area.

Overall, when aggregated to the macro-level, strain and opportunity structure models suggest that immigration may increase crime rates by changing the structure of local labour markets (Reid, Weiss, Adelman, and Jaret, 2005; Mears, 2001). By creating a surplus of low-skilled workers within a set of limited opportunities, immigration may increase unemployment and economic deprivation, which may lead to higher crime rates (Reid, Weiss, Adelman, and Jaret, 2005; Butcher and Piehl, 1998). Furthermore, immigrants may face economic strains that are specific to them, including linguistic barriers, workplace discrimination, challenges in the transferability of foreign experience, and eligibility for work depending on immigration status, e.g., whether they are asylum seekers or economic immigrants (Reitz, Curtis, and Elrick, 2014; Zhang, 2014; Bell, Fasani, and Machin, 2013; Robert and Gilkinson, 2013; Sabina, Cuevas, and Schally, 2013; Aoki and Todo, 2009). Therefore, places with a greater number of or increases in immigrants experiencing these kinds of immigrant-specific strains may have higher crime rates.

Given the emphasis on strain, economic deprivation, and differential opportunity structures, strain and opportunity perspectives may be expected to better explain potential increases in instrumental crimes involving economic gains, i.e., property offences, rather than expressive crimes that do not necessarily involve economic gains (Bircan and Hooghe, 2011; Hagan and Palloni, 1999). However, Agnew has also stressed that anger “is the most critical emotional reaction for the purposes of the general strain theory” (Agnew, 1992, p. 59). The experience of anger due to strain typically creates a desire to take corrective actions, which may include aggression and violent crime, not just property crime (Agnew, 1992). Moreover, this also provides the justification in incorporating covariates, such as educational achievement, unemployment, income inequality, labour force
participation rate, low income, and economic disadvantage in analyses of the relationship between immigration and crime (Salmi, Kivivuori, and Aaltonen, 2015; Skardhamar, Aaltonen, and Lehti, 2014; Zhang, 2014; Bell, Fasani, and Machin, 2013; Bircan and Tooghe, 2011; Martinez, Stowell, and Lee, 2010; Aoki and Todo, 2009).

**Segmented Assimilation Theories**

Segmented assimilation theories do not explicitly examine crime\(^\text{11}\). However, they do examine processes of immigration and assimilation, as well as differential outcomes of immigrants, such as educational attainment and employment, that may be relevant to understanding the relationship between immigration and crime. Although not explicitly acknowledged by those who focus on the concept of segmented assimilation, Merton’s idea of blocked opportunities has also shaped segmented assimilation approaches. Segmented assimilation theories posit that there can be different outcomes for immigrants based on the specific structures of opportunities and barriers they face (Alba and Nee, 1997; Rumbaut, 1997; Zhou, 1997; Portes and Zhou, 1993). Similar to strain and opportunity perspectives, segmented assimilation approaches are also ‘compositional’ in that individual-level mechanisms are used to predict macro-level crime rates based on the idea that geographical places with greater numbers of individuals experiencing negative assimilation outcomes will also be characterized by higher crime rates because these individuals commit more crime.

Segmented assimilation theories emphasize that immigration and settlement are not straight linear processes that unfold in a sequence of generational steps, with each successive generation of

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\(^{11}\text{Because segmented assimilation theory was developed to understand assimilation in the US context, its applicability to the Canadian context has been debated (Boyd, 2002). This was also noted in Chapter 2 in my discussion of the contextual differences between the US and Canada. The theory has been used to outline the possibility that Caribbean immigrants may be incorporated into the black underclass in the US (Portes and Rumbaut, 2001). As noted in Chapter 2, the presence of a persistent urban black underclass has not been replicated to the same extent in Canada (Boyd, 2002).}
immigrants representing a new stage in the positive progress of adaptation into the host society (Alba and Nee, 1997). Rather than a straight-line assimilation into a monolithic host society, segmented assimilation theories recognize that the receiving country is shaped by systems of stratification according to socioeconomic status, class, and race (Zhou, 1997; Portes and Zhou, 1993). According to this perspective, immigrants are absorbed into these systems of stratification by assimilating upward, downward, or selectively (i.e., upward in some areas, downward in others, and/or upward by adopting biculturalism), depending on a complex set of factors, including the contexts of exit and reception, economic and social capital, modes of incorporation, family structures, and community networks and resources (Kasinitiz, Mollenkopf, Waters, and Holdaway, 2008; Zhou and Xiong, 2005; Boyd, 2002; Portes and Rumbaut, 2001). Therefore, the likelihood of engaging in crime, which can be considered an indication or outcome of downward assimilation (Zhou and Xiong, 2005), depends on the particular means of incorporation and the specific set of opportunities and barriers different immigrant groups face (Engbersen, van der Leun, and de Boom, 1997).

Segmented assimilation theories can help to explain why different immigrant groups may have different levels of criminal involvement by emphasizing the complex set of factors that shape and influence the settlement of each particular group into the receiving country. By disaggregating the category of ‘immigrants’ into different groups by nationality and/or ethnicity as well as by time or the historical period of immigration and reception, these approaches emphasize that not all immigrants face the same set of disadvantages and/or resources that shape the likelihood of criminal offending (Kasinitiz, Mollenkopf, Waters, and Holdaway, 2008; Zhou and Xiong, 2005; Boyd, 2002; Portes and Rumbaut, 2001). In fact, research has shown that disaggregating homogenized notions of ‘immigrant’, and further disaggregating pan-ethnic classifications such as ‘Latino’ or ‘Asian’ into finer-grained groups by ethnicity, language, or national origin, can be useful in demonstrating the
systematic within-category variations in crime outcomes of different groups (DiPietro and Bursik, 2012; Nielsen and Martinez, 2011; Stowell and Martinez, 2009)\textsuperscript{12}.

In addition to different immigrant groups, different generations of immigrants may face different sets of opportunities and barriers that may influence the likelihood of their criminal offending. In contrast to straight-line assimilation approaches, segmented assimilation theories posit that the length of time spent in the host country or the extent of acculturation and assimilation into the host country does not necessarily translate into successful outcomes. For example, segmented assimilation theories posit that better adjustment to the dominant culture can lead to negative outcomes. Research has shown that assimilation into American culture is often associated with negative outcomes in the areas of mental health, diet, birth outcomes, youth violence, academic performance, and substance abuse (Sabina, Cuevas, and Schally, 2013; Cook, Algeria, Lin and Guo, 2009; Peguero, 2009). Based on this, segmented assimilation theories would predict that, depending on the particular dynamics involved for particular groups of immigrants, recent or first generation immigrants who are less assimilated into the dominant culture of the receiving society should have lower rates of criminal offending in comparison with second- or third-generation immigrants (Vaughn, Salas-Wright, Maynard, Qian, and Terzis, 2014; Sabina, Cuevas, and Schally, 2013; Almeida, Johnson, McNamara, and Gupta, 2011; Morenoff and Astor, 2006). In this way, segmented assimilation theories would expect that areas with greater numbers of recent immigrants could have lower rates of crime, depending on the context of reception and incorporation. On the other hand, areas with greater numbers of second- or higher-generation immigrants may have higher rates of crime, especially if those immigrants have settled in disadvantaged urban areas with the ‘underclass’.

\textsuperscript{12} For example, DiPietro and Bursik (2012) found that children of immigrants from Cuba, Nicaragua, Colombia, and Dominican Republic (usually combined into a single category of ‘Latino’) differed significantly in levels of human capital, family structure, contexts of reception and incorporation, and extent of criminal offending.
Again, the type of outcome depends on the context of reception and incorporation (Morenoff and Astor, 2006; Boyd, 2002; Portes and Rumbaut, 2001).

The context of reception and assimilation is therefore a key factor for segmented assimilation theories. For example, if particular immigrants settle in marginalized, poor, urban neighbourhoods, they are at a greater risk of downward assimilation with negative economic, social, and health outcomes (Portes, 2007), and by extension, negative outcomes with respect to criminal offending, by increasing the potential for discrimination, and decreasing formal sources of support (Thomas, 2011; Rumbaut and Ewing, 2007; Portes and Rumbaut, 2001).

With their emphasis on different types of assimilation and contexts of reception, segmented assimilation theories point to the importance of examining disaggregated categories of immigrants by nationality/ethnicity, generation status, and length of time spent in the host country. In addition, this perspective also identifies covariates such as economic disadvantage, community context, extent of political and civic participation, and community demographics as important when examining the relationship between immigration and crime.

Cultural Theories

Cultural theories emphasize the importance of cultural differences between immigrant groups and the receiving country in explaining crime. This is one of the primary perspectives put forward by those who think that immigration is linked to increased crime and that immigration is a threat to the national culture (e.g., see example of Lee Richardson noted in Chapter 1). According to this perspective, conflicts between cultures, rather than socioeconomic inequalities or differential
opportunities, explain crime\textsuperscript{13}. Sellin’s work on cultural conflict posits that crime can result from a contrast between two or more normative systems (Sellin, 1938). The laws of a receiving country represent the conduct norms and values of the dominant cultural and/or ethnic group. These conduct norms may differ from the conduct norms of subordinate groups, such as immigrant groups. The conduct norms of subordinate groups that conflict with the mainstream society’s norms may be labelled as deviant or criminal (Wolfgang and Ferracuti, 1967).

As receiving societies become more culturally heterogeneous with increasing immigration, cultural theories predict that crime should increase. Not only are there more cultures (and, hence, values and norms) that can conflict with each other, but more importantly, there are more potential conflicts with the conduct norms of the dominant majority in the receiving society (Thomas, 2011). According to this perspective, because of cultural differences and conflicts, the behaviour of some immigrant groups may become criminalized. As for the criminal behaviour of subsequent generations of immigrants, this perspective would predict a decline in criminal behaviour as subsequent generations become more familiar with the conduct norms of the dominant majority in the receiving society. Therefore, cultural theories would posit that areas with greater numbers of recent immigrants who have not had time to become more familiar with the conduct norms of the dominant majority would have higher crime rates. In other words, the prediction is a compositional one. Where there are more recent immigrant groups who may behave in ways that are consistent with their own norms and values, there may be greater or more frequent conflicts with the laws of the host country, where there are different norms and values. However, cultural theories also highlight a contextual

\textsuperscript{13}Cultural perspectives do not rule out the role of socioeconomic inequalities and differential opportunities in producing different behavioural norms and values. For example, Cohen (1955) and Miller (1958) drew upon field observations to identify a core set of oppositional values held by those embedded in criminal social networks. They saw violent crime as a by-product of an alternative set of values held by individuals within a specific socioeconomic designation, particularly those who were more socioeconomically disadvantaged.
effect. For example, the behaviours of immigrants may not be defined as criminal, but conflicts between immigrants and native-borns over certain norms and values may lead to members of one group committing crimes against members of the other group. For example, if native-borns believe that particular immigrant groups engage in practices that are foreign to natives, e.g., dietary differences, religious practices, etc., this could lead to natives attacking members of immigrant groups or people in places where immigrant groups gather\textsuperscript{14}. Therefore, crime rates could increase not just because of the individual behaviours of immigrants but because of greater conflict among groups in an area that could affect the behavior of immigrants and native-borns.

Perhaps not surprisingly, cultural theories have been highly controversial to the extent they are seen as blaming and stigmatizing different cultures. Critics point out that although the non-immigrant majority may also engage in certain types of criminal behaviour, such as gambling, drug use, and the use of violence, specific immigrant cultures can be blamed and stigmatized by being linked to these crimes (Stowell and Martinez, 2009; Anderson 1991). Based on this, critics point out that the increases in crime predicted by theories of cultural conflict may reflect the over-policing of immigrant groups based on the types of crimes with which some immigrant groups may be associated, rather than solely reflecting actual increases in crime (Wortley, 2009).

By emphasizing the increases in cultural heterogeneity and potential for cultural conflict that accompany immigrant groups, this perspective highlights the need to examine covariates such as ethnic or birth place heterogeneity in analyses of the relationship between immigration and crime. Furthermore, as noted above, since recent immigrants are viewed as a group that has not had time to

\textsuperscript{14} In fact, research on hate crimes against immigrant groups in the US has found that hate crimes are often influenced by the perceived belief that particular immigrant groups engage in different practices, regardless of whether they actually do or not (Shively, Subramanian, Drucker, Edgerton, McDevitt, Farrell, and Iwama, 2014).
become familiar with norms and values of the dominant society, the size of the recent immigrant population should also be examined when studying the relationship between immigration and crime.

Social Disorganization Theories

While not denying the role of differential opportunity structures and cultural conflicts, the social disorganization perspective suggests that crime is a function of the differing degrees to which communities are socially disorganized. Disorganized communities have weakened community cohesion and social institutions that make it difficult for residents to develop common goals and solutions to community problems, leading to increased levels of crime (Shaw and McKay, 1942). In particular, disorganized communities are characterized by rapid residential turnover, economic disadvantage, and cultural heterogeneity (Shaw and McKay, 1942; Thomas and Znaniecki, 1984). According to social disorganization theories, immigrants are often selected into these disadvantaged and disorganized neighbourhoods because they lack educational and occupational resources to settle elsewhere (Martinez and Stowell, 2012; Stowell and Martinez, 2007). Rather than seeing immigration as a direct cause of crime *per se*, social disorganization theories emphasize the structural characteristics of communities in which immigrants may settle, and the ways in which immigration may change the communities in which they settle, that may be related to crime. As a major source of population change, residential instability, and cultural heterogeneity, immigration may increase crime rates by breaking down local social ties, networks, and institutions (Sampson, Raudenbush, and Earls, 1997; Sampson and Groves, 1989; Bursik, 1988; Kornhauser, 1978; Shaw and McKay, 1942).

In studying the neighbourhoods of Chicago, Shaw and McKay’s findings demonstrated that social disorganization in communities is associated with the distribution of delinquency across space and time (Shaw and McKay 1942). Regardless of the ethnic or immigrant group that moved into a
specific inner-city neighbourhood, the neighbourhood showed consistent rates of delinquency over time (Shaw and McKay 1942). However, when immigrants moved out of these neighbourhoods, their levels of criminal involvement fell, while crime rates in the neighbourhoods they left behind remained relatively stable (Shaw and McKay 1942). In this way, Shaw and McKay argued for a contextual effect rather than a compositional effect of immigration on crime rates, by highlighting the community context as being pertinent to the influences on crime rates, rather than the composition of immigrants (Shaw and McKay, 1942). Accordingly, social disorganization theories emphasize the importance of neighbourhood characteristics and processes in shaping crime rates, rather than seeing immigrants as a cause of crime themselves. However, this emphasis does not rule out a compositional effect in that these community characteristics may increase criminal offending among the residents who live in these communities, including native-borns and immigrants.

Contemporary contributions to social disorganization theories have reformulated the original model into a more systemic model that emphasizes a number of additional neighbourhood characteristics (such as social ties and collective efficacy) and their relationship to crime rates (Bursik, 2006; Sampson, Raudenbush, and Earls, 1997; Bursik and Grasmick, 1993). For example, some have suggested that collective efficacy may mediate the relationship between residential instability and measures of violence and crime (Sampson, Raudenbush, and Earls, 1997). Collective efficacy refers to the role of formal and informal ties in promoting common goals, values and solutions to community issues (Bursik 2006; Sampson, Raudenbush, and Earls 1997; Sampson, 1991). By promoting common goals and ties to others who reside in the community, collective efficacy may foster means of social control and regulation of community members in ways that reduce crime (Bursik 2006; Sampson, Raudenbush, and Earls 1997).
Social disorganization theories have informed most macro-level studies on immigration and crime conducted in the United States (e.g., Kubrin and Desmond, 2015; MacDonald, Hipp, and Gill, 2013; Martinez, Stowell, and Lee, 2010; Wadsworth, 2010; Akins, Rumbaut, and Stansfield, 2009; Chavez and Griffiths, 2009; Graif and Sampson, 2009; Ousey and Kubrin, 2009; Velez, 2009; Stowell and Martinez, 2007; Martinez, Lee, and Nielsen, 2004; Lee and Martinez, 2002; Lee, Martinez, and Rosenfeld, 2001). However, empirical findings from these studies do not support the prediction of social disorganization theories that immigration increases crime rates. Instead, these studies have shown that there is either no association between immigration and crime rates or that there is a negative association (Kubrin and Desmond, 2015; MacDonald, Hipp, and Gill, 2013; Martinez, Stowell, and Lee, 2010; Wadsworth, 2010; Akins, Rumbaut, and Stansfield, 2009; Chavez and Griffiths, 2009; Graif and Sampson, 2009; Ousey and Kubrin, 2009; Velez, 2009; Stowell and Martinez, 2007; Martinez, Lee, and Nielsen, 2004; Lee and Martinez, 2002; Lee, Martinez, and Rosenfeld, 2001).

Regardless, the structural processes of social disorganization have been recognized by many scholars as relevant for analyzing the relationship between immigration and crime. The mechanisms and variables emphasized by social disorganization perspectives have determined the ‘standard’ block of covariates examined in immigration and crime research; these covariates include low economic status (e.g., Stowell and Martinez, 2009, 2007; Ousey and Kubrin, 2009); residential instability, (e.g., Lee and Martinez, 2002; Wadsworth, 2010); and racial/ethnic heterogeneity (e.g., Graif and Sampson, 2009).

Although the four groups of theories just reviewed each predict a positive relationship between immigration and crime, none has been consistently supported by empirical evidence, as will be discussed in the final section of this chapter. Some scholars have suggested that this may be partly
due to the fact that some of these theories, particularly social disorganization theories, have been developed inductively from contextually specific data from the United States in the earlier half of the twentieth century (Thomas, 2011; Martinez, Stowell, and Lee, 2010). Particularly, scholars note that these theoretical perspectives were all developed out of mostly European immigration and domestic black migration to urban areas of the United States (Thomas, 2011). As such, the context within which characteristics of immigration, crime, and communities are embedded for contemporary research cannot be assumed to be fundamentally similar to those studied earlier (Thomas, 2011; Wadsworth, 2010).

3.2 Theoretical Perspectives that Predict a Negative Association between Immigration and Crime

The lack of strong support for perspectives predicting a positive relationship between immigration and crime has spurred the development of conceptual frameworks that could explain a negative relationship between the two. The following three perspectives posit a negative association between immigration and crime: 1) immigrant revitalization thesis; 2) immigrant enclave thesis; and 3) ‘moral booster shot’ perspectives.

Immigrant Revitalization Thesis

In response to lack of support for predictions of social disorganization theories, the immigrant revitalization thesis has been applied in research that suggests that immigration need not contribute to social disorganization and increased crime rates. The immigrant revitalization thesis does not challenge the assumption that economic deprivation, residential instability, and ethnic heterogeneity
may be markers of social disorganization. In fact, the immigrant revitalization thesis also considers these factors as important channels through which community levels of crime vary. More importantly, the immigrant revitalization thesis also does not deny that immigration may increase economic deprivation, residential instability, and ethnic heterogeneity. Where it departs from social disorganization theories is in the prediction that immigration will increase crime rates even if immigration increases economic deprivation, residential instability, and ethnic heterogeneity. Instead, the immigrant revitalization thesis suggests that influxes of immigration may foster new forms of social control, civic organization, community institutions, and adaptive social structures that may mediate some of the negative effects of economic disadvantage, residential instability, and cultural heterogeneity (Lee and Martinez, 2009; Stowell, 2007; Martinez and Lee, 2000). In this way, the immigrant revitalization thesis predicts a contextual effect of immigration in reducing crime rates. However, it also does not negate a compositional effect, in that individuals who are more civically integrated—by being involved in civic organizations and community institutions—may offend at lower rates (Uggen, Manza, and Thompson, 2006; Mahoney, Stattin, and Magnusson, 2001).

In addition, the immigrant revitalization thesis also challenges the prediction of strain and opportunity models that immigration will increase crime rates. Rather than increasing crime through economic deprivation, strain, and negatively altering labour markets, immigrant revitalization perspectives suggest that immigration may also help to redevelop and revitalize stagnating urban areas, which may help to reinvigorate local economies by creating and sustaining economic niches (Lee and Martinez, 2009; Martinez and Lee, 2000; Portes and Stepick, 1993).

Challenges to both social disorganization theories and strain and opportunity perspectives are underwritten by the idea that immigration may lead to demographic and economic renewal at the community level. For example, new immigrants to the United States, from mid-century onwards,
tended to settle and repopulate stagnating urban areas that had lost population due to out-migration linked to deindustrialization and suburbanization (Hwang, 2016; Lee and Martinez, 2009). Immigrants settled in these neighbourhoods because these areas offered more affordable housing options and vacant storefronts that could be reoccupied (Hwang, 2016; Winnick, 1990). By reoccupying these areas, immigration can stabilize and spur on local economic growth by creating demand for local services, establishing new enterprises, as well as renewing the demand for local housing markets (Hwang, 2016).

Directly in contrast to strain and opportunity perspectives, the immigrant revitalization thesis does not see the influx of immigrants into these disadvantaged urban areas as creating unfavourable labour markets, although it does challenge the claim that immigration may increase the pool of low-skill workers. However, where this perspective differs from strain and opportunity perspectives is in predictions about the effects of these changes on crime rates. For example, Logan, Alba, and McNulty (1994) argue that immigrants often fill important roles in niche economies geared toward ethnic services or products. To the extent that the low-skill economy is able to absorb workers through these niche markets, communities need not experience higher levels of under- or un-employment (Wadsworth, 2010). Despite the higher levels of economic disadvantage predicted by strain and opportunity perspectives, the niche markets that are often created through immigrant settlement and revitalization may offer higher than expected levels of employment and stronger than expected ethnic job markets (Reid, Weiss, Adelman, and Jaret, 2005; Martinez, 2002).

As these stagnating urban areas are revitalized, the immigrant revitalization thesis suggests that new forms of social control, civic organizations, and adaptive social structures emerge, such as the establishment of ethnically-based community organizations, youth groups, charities, civic associations, and churches (Kubrin and Desmond, 2015; Tsang, 2015; Boddie, Hong, Im, and Chung,
2011; Martinez, 2002). In turn, these organizations and structures may help to reduce the criminogenic effects of economic disadvantage, residential instability, and cultural heterogeneity (Martinez, 2002; Kubrin and Desmond, 2015). These externalities of immigrant revitalization can help to increase the density of positive social networks and levels of social support (Kubrin and Desmond, 2015; Portes, 1995; Portes and Stepick, 1993), both of which are critical for the development of community social capital and collective efficacy (Kubrin and Desmond, 2015). Communities characterized by increased community social capital, sets of mutual obligations and interdependencies, and social networks can facilitate the control and supervision of young people, help residents work towards common goals, and provide a buffer against crime (Kubrin and Desmond, 2015; Martinez, 2002). Therefore, according to the immigrant revitalization perspectives, communities with greater influxes of immigration should have lower rates of crime.

Similar to strain and opportunity models as well as social disorganization theories, immigrant revitalization perspectives emphasize covariates such as economic disadvantage, labour markets structures, residential instability, and cultural heterogeneity. However, immigrant revitalization perspectives also stress that the types of community organizations and niche markets that are established within immigrant communities should also be examined in the relationship between immigration and crime. Moreover, the immigrant revitalization thesis particularly highlights the need to examine the effects of immigration over time with longitudinal designs and analytic models that examine changes within locations. This is partly because the disorganizing or revitalizing effects of immigration may be temporally contingent. With initial increases in immigration, particularly in areas lacking prior experience with immigrant settlement and incorporation, immigration may disorganize communities in the short-term but as immigrants settle, build community structures, and revitalize communities over time, immigration may have crime-reducing benefits in the long-term
Accordingly, controlling for covariates such as the size of recent immigration would be important for immigrant revitalization perspectives.

**Immigrant Enclave Thesis**

Similar to the immigrant revitalization thesis, the immigrant enclave thesis is a response to the predictions of a positive relationship between immigration and crime by social disorganization theories. Also similar to the revitalization thesis, the immigrant enclave thesis argues that increased immigration may be associated with lower crime rates. The immigrant enclave thesis does not challenge the claims that immigration can lead to the establishment of new forms of social control, networks, and niche markets, as suggested by immigrant revitalization perspectives. Where it differs from immigrant revitalization perspectives is that it highlights the role of immigrant concentration in a given geographical area, whether a neighbourhood or a city.

According to this perspective, large concentrations of immigrants, particularly where immigrants share common linguistic, cultural, and/or ethnic backgrounds, may protect communities from social disorganization and in turn from crime (Desmond and Kubrin, 2009; Feldmeyer, 2009; Stowell and Martinez, 2007). The mechanism through which crime may be lowered, however, has not yet been fully and systematically specified. Some have suggested the concentration of immigrants is important because of the ways in which an enclave may preserve old world mechanisms of social control through network formation, information sharing, and symbolic representations of shared identities from the source country. These, in turn, are expected to buffer

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15 There is a lack of consensus on how sizable the immigrant concentration needs to be in a community that shares linguistic or cultural ties for it to be considered to be an immigrant/ethnic enclave. Further work is needed to delineate the analytic and definitional thresholds of what constitutes an immigrant/ethnic enclave.
communities from crime (Bell and Machin, 2013; Kubrin and Ishizawa, 2012; Chiswick and Miller, 2005; Taft, 1933). Others have suggested that ethnic enclaves may foster collective efficacy and reduce social disorganization through the promotion of collective identity, common experiences of immigration and settlement, and the pursuit of common goals based on linguistic and/or cultural ties (Desmond and Kubrin, 2009; Walks and Bourne, 2006). The presence of co-ethnic ties and networks in ethnic enclaves has also been found to provide for employment opportunities that may negate potential increases in economic disadvantage (Zhou, 1992).

In addition to the concentration of immigrants who share linguistic and/or cultural backgrounds, the ways in which an enclave is formed affect whether this concentration protects communities from crime, according to some scholars. Some argue that ethnic enclaves that are geographical expressions of deliberate and voluntary choices to settle with others of similar linguistic and/or cultural backgrounds should be differentiated from immigrant-concentrated areas that are formed as “ghettos” of last resort due to segregation, economic deprivation, and/or social exclusion (Walks and Bourne, 2006; Qadeer, 2003; Logan, Zhang, and Alba, 2002). The assumption is that those communities that are reflections of deliberate choices are more likely to have better community cohesion, collective efficacy, social capital, and community engagement, which may protect against crime (Walks and Bourne, 2006; Qadeer, 2003; Logan, Zhang, and Alba, 2002).

Given that the immigrant enclave thesis highlights the extent of the concentration of immigrants and the sharing of co-ethnic or cultural ties, evaluating its contextual predictions requires measures of the relative size of immigrant concentration and its relative cultural/linguistic homogeneity for a given geographic area. Moreover, the emphasis on immigrant settlements based on common or shared co-ethnic, cultural, or linguistic ties, is consistent with the social
disorganization perspectives in terms of cultural heterogeneity being a negative catalyst for increased crime.

‘Moral Booster Shot’ Perspectives

The “Moral Booster Shot” perspective, in some ways, is a reworking of the tenets of early cultural theories. Recall that early cultural theories argue that immigration may bring cultural values and conduct norms that dilute and conflict with the conduct norms of the receiving society (Sellin, 1938). The “Moral Booster Shot” perspective acknowledges this possibility, but differs from early cultural theories in arguing that the dilution of the receiving society’s conduct norms does not necessarily have negative implications. With regard to the U.S. context, Sampson (2008) has argued that competing non-violent conduct norms that immigration may bring could attenuate some of the violence-inducing norms in the U.S., such as the inner city “code of the street” described by Anderson (1999) or the honour culture of the South (Cohen, Nisbett, Bowdle, and Schwarz, 1996).

This perspective argues that immigrants, particularly those who have recently settled and whose values and norms differ more from the receiving society than those of more settled immigrants, work like a booster shot of morality injected into the host society (Ousey and Kubrin, 2009; Sampson, 2008). This perspective is partially informed by research showing that recent immigrants to the U.S. have more pro-marriage orientations, higher marriage rates, more intact families, and greater emphasis on traditional family arrangements (Casey and Feldmeyer, 2015; Ousey and Kubrin, 2009; Fukuyama, 1993). Although no one has assessed changes in cultural orientations due to immigration at the aggregate-level, some have found that immigrant

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16 The name ‘moral booster shot’ was initially coined by New York Times columnist David Brooks in his March 30, 2006 column “Immigrants to be Proud of” in which he argued that “immigrants themselves are like a booster shot of traditional morality injected into the body politic”. The name has been co-opted by researchers and scholars to denote the perspectives discussed in this section.
neighbourhoods can enforce norms and practices that support parental authority and that discourage family disruption, substance abuse, and other forms of deviance, which protect neighbourhoods from crime (Graif and Sampson, 2009). Moreover, individual-level research shows that immigrant youth are more likely to accept the legitimacy of parental authority norms and commitments to parents and family (Dinovitzer, Hagan, and Levi, 2009) and that intact two-parent families and extended families common to some immigrant groups help to bolster social control through increased supervision of children in the community (Ousey and Kubrin, 2009). Moreover, this perspective argues that many immigrants have high levels of ambition for achievement, a solid work ethic, and an orientation for conventional success, and so they immigrate precisely to improve their employment opportunities and the life chances for their children (Martinez, Stowell, and Cancino, 2008). In this way, immigration may bolster support for familial control and conventional non-criminal behaviour norms in the receiving society. A thorough investigation of ‘moral booster shot’ perspectives would entail the examination of the cultural orientation of immigrants and the shifts in cultural norms within the receiving community, something that researchers have not yet attempted.

In sum, the ‘moral booster shot’ perspective predicts that immigration will have both compositional and contextual effects in reducing crime. In areas with larger immigrant populations, the assumption is that there will be more individuals who are more likely to accept legitimate authority coming from more intact families, characteristics that are associated with lower rates of offending (Casey and Feldmeyer, 2015; Ousey and Kubrin, 2009). Contextually, the influx of immigrants may also alter the community context by increasing supervision of children in the community (Ousey and Kubrin, 2009).

Each of the theoretical perspectives highlighted in this section posits that immigration should be associated with lower crime rates. The overall prediction about the relationship between
immigration and crime run counter to the expectations of the theoretical perspectives that posit a positive association between immigration and crime. However, the mechanisms highlighted by these three perspectives are not inconsistent with those perspectives that posit a positive association. Rather, they are reformulations or additions to those theoretical perspectives that posit a positive association between immigration and crime.

3.3 Implications of Theories on the Relationship between Immigration and Crime: Summary

Each of the theoretical perspectives reviewed in the previous two sections emphasizes different mechanisms linking immigration and crime. They also differ in the relative weight placed on compositional and contextual effects of immigration on crime. At the same time, they all share a focus on changes in both immigration and crime, i.e., on how crime changes with changes in immigration. The focus of most research testing these theories, however, has been narrower in that it has been on how levels of crime co-vary with levels of immigration. Nevertheless, both the theories and the research about this relationship point to the importance of using longitudinal designs. Furthermore, all of the perspectives reviewed are relevant to the macro-level relationship between immigration and crime, regardless of whether they emphasize individual- or aggregate-level mechanisms, and compositional or contextual effects\(^\text{17}\). Thus, analytic strategies that can assess within-unit changes in immigration and crime over time are appropriate. This informs the type of data and analysis outlined in Chapter 4 and the analyses in Chapters 5 and 6.

\(^{17}\) Some of the perspectives, e.g., social disorganization theories, the immigrant revitalization thesis, the immigrant enclave thesis, cannot be appropriately evaluated solely with individual-level data.
3.4 Review of Macro-Level Studies on Immigration and Crime

Research on immigration and crime has tended to support the predictions of the theoretical perspectives that suggest that immigration and crime are negatively correlated. This final section of the chapter provides an overview of the major findings from the research on the macro-level relationship between immigration and crime. This discussion distinguishes between cross-sectional, macro-level studies and longitudinal, macro-level studies. However, whether cross-sectional or longitudinal, most studies have found that immigration is either not associated with crime rates or, if there is an association, is negatively associated with crime rates. This relatively consistent set of findings forms what has been called ‘an emerging scholarly consensus’ that is quickly becoming the ‘new conventional wisdom’ (Lee and Martinez, 2009; Sampson, 2008), at least with regard to the US context.

Cross-Sectional Studies

Most macro-level studies on immigration and crime are based on cross-sectional designs. Because cross-sectional studies examine the relationship between the proportion of immigrants in a given area and crime at one point in time, they cannot assess whether changes in immigration are followed by changes in crime nor can they consider the short-term and long-term effects of immigration as it unfolds over time as a process (Tonry, 1997). However, these studies are an important starting point for investigating the relationship between immigration and crime.

Cross-sectional studies conducted in the U.S. have consistently found that the proportion of immigrants is not associated with violent crimes in neighbourhoods or cities when controlling for a host of factors, such as the presence of young males, poverty levels, and unemployment (Feldmeyer, 2009; Martinez, Stowell, and Cancino, 2008; Stowell, 2007; Stowell and Martinez, 2007; Lee,
Martinez, and Rosenfeld, 2001; Butcher and Piehl, 1998). Where there is a relationship between immigration and crime, cross-sectional studies have found that immigration is negatively associated with crime rates (Martinez, Iwama, and Stowell, 2015; Schnapp, 2015; Stansfield, 2014; Lyons, Velez, and Santoro, 2013; Wright and Benson, 2010; Akins, Rumbaut, and Stansfield, 2009; Chavez and Griffiths, 2009; Feldmeyer and Steffensmeier, 2009; Graif and Sampson, 2009; Ousey and Kubrin, 2009, Reid, Weiss, Adelman, and Jaret, 2005). Even though these studies have examined different periods of time, different regions of the United States, different levels of analysis (e.g., census tracts, neighbourhoods, census places, cities, counties), and data from different sources (e.g., arrest data, coroner’s data), their findings are remarkably consistent.

In Canada, cross-sectional, macro-level studies on immigration and crime are more limited. Statistics Canada has released a series of reports on the relationship between neighbourhood characteristics and crime rates in different Canadian cities. Most of these studies have found that the proportion of foreign-born people in neighbourhoods is not associated with crime rates (e.g., Charron, 2009; Savoie, 2008). Similarly, a study of the spatial distribution of lethal violence in Toronto neighbourhoods has found that the proportion of residents who are immigrants is not related to homicide rates in neighbourhoods (Thompson, 2009).

Only a handful of macro-level studies have been conducted in other countries and most of them use cross-sectional designs. Their findings parallel those in the U.S. and Canada; i.e., the proportion of immigrants is either not associated with higher crime rates or associated with lower crime rates. For example, in pooling recorded crime data from British police forces from 2004-2010, Bell and Machin (2013) found that crime was significantly lower in neighbourhoods with higher concentrations of immigrants. Bianchi, Buonanno, and Pinotti (2012) examined 95 Italian provinces (comparable to U.S. counties) by pooling crime data from Italy’s National Institute of Statistics and
found no relationship between the proportion of immigrants and crime rates. Bircan and Hooghe (2011), in analyzing Belgian national crime statistics pooled over the period 2001-2006, also found no association between proportion of immigrants and crime.

Cross-sectional studies have also identified some of the mechanisms that may be responsible for the negative association between immigrant populations and crime. Consistent with segmented assimilation theories, Lyons, Velez, and Santoro (2013) found that the negative relationship between immigrant concentration and violent crime was further enhanced in cities with positive immigrant political opportunities by bolstering social organization, trust, and social control. Bell and Machin (2013) found some support for immigrant enclave perspectives in their study of English neighbourhoods. The negative association between the proportion of immigrants and crime was greater in immigrant enclaves, defined as neighbourhoods in which more than 30% of the residents were foreign born; this relationship was also stronger in neighbourhoods where the enclave was composed of immigrants from the same ethnic background (Bell and Machin, 2013).

Cross-sectional studies have also begun to specify the specific contexts within which a relationship between immigrant populations and crime rates may exist. For instance, there is a new line of research comparing the relationship in ‘traditional’ immigrant destinations with that in new or emerging immigrant destinations (Painter-Davis, 2016; Harris and Feldmeyer, 2013; Ramey, 2013; Shiahdeh and Barranco, 2013; Carr, Lichter, and Kefalas, 2012; Shihadeh and Winters, 2010; Crowley and Lichter, 2009). Many of these studies argue that the negative association between immigrant populations and crime may be context-specific, such that it exists in established immigrant destinations but not in emerging destinations that have not traditionally been popular for immigrant settlement (Painter-Davis, 2016; Harris and Feldmeyer, 2013; Ramey, 2013; Shiahdeh and Barranco, 2013; Carr, Lichter, and Kefalas, 2012; Shihadeh and Winters, 2010; Crowley and Lichter, 2009).
As noted, cross-sectional studies have contributed important evidence about the relationship between immigrant populations and crime rates, by identifying some of the mechanisms responsible for this relationship and by demonstrating that the relationship can be context-specific. However, because public concerns as well as theoretical perspectives about the relationship between immigration and crime are about change over time, i.e., what happens to the safety of our communities when immigration increases or decreases over time (please see section 3.3 in this chapter), longitudinal studies are needed to study immigration as a process that unfolds over time and to determine if the findings from cross-sectional studies hold when examining change over time. Longitudinal studies are also particularly important for examining the theoretical mechanisms thought to be responsible for any relationship and the context-specificity of the relationship.

**Longitudinal Studies**

Compared to the number of cross-sectional studies on the relationship between immigration and crime, there are fewer studies that have undertaken longitudinal analyses of the macro-level relationship between immigration and crime. These studies have shown that increases in immigrant populations are associated with decreasing crime rates over time in metropolitan areas in the United States, controlling for a host of macro-level factors (Ferraro, 2016; Chalfin, 2015; MacDonald, Hipp, and Gill, 2013; Martinez, Stowell, and Lee, 2010; Wadsworth, 2010; Ousey and Kubrin, 2009; Stowell, Messner, McGeever, and Raffalovich, 2009).

Similar to the state of cross-sectional research on immigration and crime in Canada, the longitudinal research on immigration and crime in the Canadian context is limited. To date, only two Canadian studies have examined the relationship between immigration and crime over time. Andresen (2013) examined homicides in Canadian provinces from 1986 to 2005 using data from
Statistics Canada and found that increases in immigration were not associated with increases in homicide rates over this period. In his analysis of Uniform Crime Report (UCR) data and census data for 281 census-division levels in Canada for the period 1981-2006, Zhang (2014) found that increases in new immigrants in these census-divisions were not associated with increases in property crime rates.

3.5 Empirical Implications: Summary

In summary, cross-sectional macro-level research on immigration and crime finds that the percentage of immigrant populations in a given geographical area is either: 1) not associated with crime rates; or 2) if there is an association, it tends to be a negative one. Longitudinal research shows that increases in immigrant populations are associated with decreasing crime rates over time in metropolitan areas in the United States. Although these findings are important components of the “emerging scholarly consensus” (Lee and Martinez, 2009, p.3) about the relationship between immigration and crime, the research has some important limitations that should be addressed in future research.

First, as noted above, most macro-level research on crime is cross-sectional, and as a consequence, it cannot capture how immigration unfolds as a social process and how it is related to changes in crime over time. More longitudinal research is needed to better address and investigate the relationship between immigration and crime, particularly in Canada.

Second, many (if not most) macro-level studies solely measure immigration by the percentage of foreign-born people in a given area. The handful of Canadian studies referred to above also have measured immigration this way. Although this is an important starting point, measures of
immigration should also include proportions of recent immigrants in a given area. In fact, studies that have employed measures of both the percentage of foreign-born residents and the percentage of residents who are recent immigrants have found important differences that highlight the need to consider whether variations in the length of time the immigrant population has spent in an area are related to variations in crime trends (e.g. Chavez and Griffiths, 2009; Graif and Sampson, 2009). For example, Chavez and Griffiths (2009), in a study of immigration and homicide patterns in Chicago, found that the percentage of residents who were foreign born was not associated with neighbourhood homicide rates; however, neighbourhoods with higher concentrations of recent immigrants had the lowest levels of homicides rates in Chicago. Incorporating measures of recent immigrants would help to more effectively examine the theoretical predictions about immigration and crime particularly from cultural theories and the immigrant revitalization thesis.

In addition, studies need to include more accurate measures of heterogeneity within the immigrant population. Often times in US studies, the presence of Latinos and the presence of immigrants are conflated and treated as measures of diversity or heterogeneity of a given geographical area (e.g., Martinez, Stowell, and Lee, 2010; Stowell and Martinez, 2009). Concentrations of immigrants and concentrations of Latinos do not mean the same thing, certainly not in the Canadian context as outlined in Chapter 2. Furthermore, proportions of immigrants are not accurate measures of diversity or heterogeneity if the population of immigrants is made up of individuals from the same ethnic, linguistic, or national backgrounds. In fact, this is the precise difference that has been highlighted by the immigrant enclave thesis, i.e., that immigrant concentration and ethnic compositions are distinct constructs (Walks and Bourne, 2006). Therefore, studies of the relationship between immigration and crime should include measures of birthplace or linguistic heterogeneity in addition to the proportion of immigrants.
Third, there are also limitations with measures of crime that should be addressed. Many macro-level studies tend to focus on rates of serious violent crime, particularly homicide (e.g., Akins, Rumbaut, and Stansfield, 2009; Chavez and Griffiths, 2009; Graif and Sampson, 2009; Ousey and Kubrin, 2009; Lee, Martinez, and Rosenfeld, 2001). This choice tends to be informed by both pragmatic and policy considerations. Pragmatically, data on serious violent crimes, particularly homicide, are deemed more reliable and less subject to differences in policing and recording practices both within and across jurisdictions compared to less serious types of violent crime and non-violent property crime (Thomas, 2011; Mears, 2001). Furthermore, in terms of policy, the public tends to be more concerned about serious forms of violence (Martinez, Stowell, and Cancino, 2008). However, findings based on only one crime, namely homicide, or even violent crimes, cannot necessarily be generalized to other types of crime. Using only one type of crime to investigate the relationship between immigration and crime does not allow for the generalization of these patterns to the relationship between immigration and crime (Stowell and Martinez, 2007).

Fourth, there needs to be more non-US research on the relationship between immigration and crime. Because the nature of immigration and immigration policies are so distinctive across countries, even between Canada and the US as noted in Chapter 2, there needs to be more non-US research that examines the relationship between immigration and crime. This will allow for the specific contexts of each country to be taken into account and help to better determine the extent of generalizability of the US findings. Another implication of the research dominated by the American context is that almost all of the longitudinal studies have been done in areas and during periods where immigration is increasing. However, this does not allow for the examination of whether the negative relationship observed in these studies is symmetrical. In other words, research needs to examine
whether the negative relationship between immigration and crime remains in areas where and during periods when immigration is decreasing.

Finally, there is extensive debate over the most appropriate geographical area for investigating the relationship between immigration and crime. Most studies on the relationship between immigration and crime have been conducted at the neighbourhood- or city-level. A number of researchers have claimed that neighbourhoods are the optimal areal unit for examining the social ecology of crime, because neighbourhoods have more ‘ecological integrity’. In other words, neighbourhoods are seen as more closely linked to the processes assumed to produce a relationship between immigration and crime, compared to larger units of aggregation, such as cities, counties, and states (e.g., Kubrin and Weitzer, 2003; Sampson and Lauritsen, 1994; Bursik, 1988). Cities have also been a particular focus in the immigration and crime literature because of the fact that recent immigrants tend to settle in urban areas (Chui and Flanders, 2013; Shihadeh and Barranco, 2010).

However, some researchers argue a wider range of geographical areas, including larger units of aggregation, such as counties and states, should be studied to more fully examine and establish the robustness and generalizability of findings on the relationship between immigration and crime (Shihadeh and Barranco, 2010; Feldemeyer and Steffensmeier, 2009). Moreover, immigration researchers have found that the benefits and costs of immigration may be accrued and incurred at different levels. For example, Putnam (2007) has noted that benefits of immigration often emerge at the national level in terms of increased scientific creativity and fiscal dividends, while costs associated with immigrant settlement related to health, education, and housing are often concentrated at the local level. As such, there may be different effects of immigration in different geographical units that should be explored. The need to examine larger units of aggregation, in addition to neighbourhoods and cities, may be particularly important in Canada, since immigration is a
concurrent responsibility of the federal government and the provinces. The different contexts of immigration and settlement in provinces have been outlined in Chapter 2.

3.6 Conclusion

This chapter has outlined the seven major theoretical perspectives that have been used to understand the relationship between immigration and crime. Those that predict a positive association between immigration and crime are: 1) strain and opportunity perspectives; 2) segmented assimilation theories; 3) cultural theories; and 4) social disorganization theories. The theoretical perspectives that posit a negative association between immigration and crime are: 1) the immigrant revitalization thesis; 2) the immigrant enclave thesis; and 3) ‘moral booster shot’ perspectives. Although each perspective varies in its hypotheses about the mechanisms responsible for the relationship between immigration and crime and the weight attached to the contextual or compositional effect of immigration on crime, all of them can inform a macro-level approach to understanding this relationship. Furthermore, they all emphasize the need for a longitudinal examination of the question, since all of these theoretical perspectives are about changes in immigration and changes in crime rates.

In reviewing the research, this chapter has provided a summary of the research, both cross-sectional and longitudinal, that has found that immigration and crime are negatively associated, a finding that is not consistent with the theoretical perspectives that expect a positive association between immigration and crime. In highlighting the limitations of the research, this chapter has provided justifications for: the importance of non-US research; the inclusion of immigration measures beyond just the proportion of immigrants; the inclusion of measures of crimes beyond just homicide or violent crime; the need to examine different levels of aggregation, particularly in Canada with the
special role of provinces in immigration; and the need to examine areas and periods in which immigration was not increasing. Chapter 4 on data and methods explain the ways in which these limitations have been addressed in the current study.
Chapter 4: Data and Methods

Informed by the literature on immigration and crime discussed in Chapter 3, this chapter provides an overview of the data and methods used to examine the relationship between immigration and crime over the period 1976-2011 in Canadian census metropolitan areas (CMAs) and provinces. This chapter describes and explains the sources of data, data cleaning procedures, and analytic methods used in this study. In preparation for the analyses discussed in Chapters 5 and 6, I collected macro-level data from official sources aggregated to the respective geographical settings. I drew data for the measures of immigration and contextual independent variables from the Canadian Census and the National Household Survey, and crime data from the Uniform Crime Reporting (UCR) Survey conducted by the Canadian Centre for Justice Statistics (CCJS).

4.1 Immigration and Contextual Data

I compiled data on immigration and other contextual data for my analysis from the Canadian Census. The census is conducted every five years by Statistics Canada. The basic (short form) census is sent to everyone, but one in five households receives the so-called long form of the census. Completion of the survey is mandatory. It is designed to collect demographic information and provide a statistical portrait of Canada. Questions on age, sex, marital status, and mother tongue are asked to 100 percent of the sample, whereas additional questions on immigration, ethnocultural diversity, education, labour, mobility, income and housing are acquired on a 20% sample basis. Weighting procedures are used to project the information gathered from the 20% sample to the entire sample. Census data are available at the levels of analyses required for this study, namely, the provincial and Census Metropolitan Area (CMA)-levels.
Census data are available for the following years during the period under examination, 1976-2011: 1976\(^{18}\), 1981, 1986, 1991, 1996, 2001, 2006, and 2011\(^{19}\). I accessed data for census years 2011, 2006, 2001, and 1996 directly through the Statistics Canada website. For earlier census years, I accessed these data through CANSIM which is Statistics Canada’s key socioeconomic database. Access to CANSIM is available through Computing in the Humanities and Social Sciences (CHASS) at the University of Toronto as well as through the Data Library Service at the University of Toronto, which is part of the Data Liberation Initiative\(^{20}\). In cases where all of the necessary information was not available through CANSIM, I also used the Census Analyzer through CHASS as well as Census data products on various topics available through the Data Library Service at the University of Toronto.

**Immigration Measures**

There are several different questions available in the Census to measure immigration. The most basic one is place of birth which delineates the proportion of residents of the relevant population unit that was born in Canada and the proportion born outside of Canada. The proportion of the total

\(^{18}\) Detailed information on immigration was not available from the 1976 Census. Instead, I extrapolated immigration information from the 1971 Census for the 1976 data.

\(^{19}\) The Conservative government cancelled the mandatory long-form census in 2011, citing privacy concerns. In its place, the Conservative government implemented a mandatory short form census and inaugurated the National Household Survey (NHS). Unlike the long-form census, the National Household Survey is a voluntary survey. This has been the focus of much controversy and even prompted the resignation of Canada’s chief statistician. Many experts have suggested that the voluntary household survey would not be compatible or as accurate as the mandatory long-form census. Clearly, my reliance on the 2011 data introduces an indeterminate amount of error into the data. Had there been an overlap in 2011 of the long-form census as well as the voluntary household survey, I could assess the extent of the incompatibility or error. However, since this was not done, I cannot estimate the exact extent of the error that has been introduced except to state that there is likely to be error in my data due to this. Fortunately, the new Liberal government under Prime Minister Justin Trudeau is re-introducing the mandatory long-form census for 2016. For 2011, information on population, age, sex, families, households, marital status, and language were taken from the short-form Census of Population. Information on immigration, ethnocultural diversity, education, labour, mobility, migration, income and housing were taken from the National Household Survey.

\(^{20}\) The Data Liberation Initiative (DLI) is a partnership between post-secondary institutions and Statistics Canada for improving access to Canadian data resources.
population that was born outside of Canada is used to measure the percent of the immigrant population in this analysis. This measure refers to all individuals who were born outside of Canada, regardless of how long they have been settled in Canada.

Another Census measure that can be used to measure immigration is the size of population whose mother tongue is not one of Canada’s two official languages (English and French). Mother tongue refers to the first language learned at home in childhood and that was still understood at the time of the census (Statistics Canada, 2011). The proportion of those who speak non-official languages is so highly correlated with the immigrant population that the 2011 Census refers to them as “immigrant languages”, defined as languages other than English, French and Aboriginal languages whose presence in Canada is originally due to immigration (Statistics Canada, 2011). From the counts of those who speak a non-official language, I derived the percentage of the population that speaks a mother tongue other than one of the official languages.

For my primary immigration measure, I created an immigration index that combines these two measures: the proportion of the population born outside of Canada and the proportion of the population with a mother tongue other than English or French for each CMA and province. Because the two variables are highly correlated (e.g., for CMAs: $r=0.9257$, $p<0.001$), including each of them separately in regression models could result in multicollinearity. To create the index, I conducted a principal component analysis and found that each of the variables loaded heavily (.981

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21 The foreign-born population does not include non-permanent residents, who are persons in Canada on employment or student authorizations, or are refugee claimants. The foreign-born population also excludes persons born outside Canada who are Canadian citizens by birth. The latter are considered part of the Canadian-born or non-immigrant population. (Statistics Canada, 2001)

22 Because of this, I also collected data on recent immigration which I discuss below.

23 This is similar to the immigration index measures used in US research in which % linguistic isolation or % Spanish speaking are combined (e.g., Ousey and Kubrin, 2009).

24 Multicollinearity diagnostics were performed on the complete set of independent and dependent variables. No multicollinearity issues were detected. All tolerance values were above .1 and all variance inflation factor (VIF) values were below 10.
for each) on a single dimension. I then standardized the factor scores for these two variables and combined them into one measure based on how much each contributed to the common dimension. With Cronbach’s alpha of .961, it is an internally consistent index measure.

Another option I considered was to use the single ethnic origin data from the Census to create a percent non-white measure that could be included in the index measure with percent foreign-born and percent other mother tongue. In the end, I decided not to do this for both pragmatic and theoretical reasons. Pragmatically, although there are detailed ethnic origin data especially for the later census years, this is not the case for earlier census years. There are ethnic categories that are included in the later census years that are not included in earlier census years. Furthermore, the ethnic origin data that do exist for the earlier census years do not necessarily have meaningful categories that are comparable. For example, in the 1970s, populations of Japanese and Chinese origin were combined in a single category, whereas they are listed separately in later census years. Even if consistent data on ethnic origin were available over time and specific groups could be categorized as non-white, (which is problematic and challenging to do in its own right), there is an additional theoretical issue. Conceptually, it would be inaccurate to equate percent non-white with percent immigrant, since non-white individuals do not necessarily reflect immigration. Therefore, my immigration index measure does not include this.

As noted in my discussion of the literature in Chapter 3, recent immigration may be a distinct aspect of immigration, apart from the total size of the foreign-born population (Chavez and Griffiths, 2009). Furthermore, as outlined in Chapter 3, cultural theories and the immigrant revitalization thesis also emphasize the role of recent immigration, albeit in different ways, as important to the

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As discussed in Chapter 2, because of the increasing “Hispanicization” of American immigration (Woroby, 2015), non-white populations are sometimes conflated with Hispanic and/or immigrant population in discussions of immigration in the US research (e.g., Martinez, 1997).
relationship between immigration and crime. Therefore, I include recent immigration as another measure of immigration.

The Census provides data on the period of immigration. Most of the census years provide counts of the number of individuals who immigrated in five or ten years prior to the census year. However, for some census years, the count for those who immigrated in the previous five years is not always available. For example, for the census years prior to 1996, there were counts for those who immigrated in the previous three years, but not the previous five years. To ensure consistency in my measures of recent immigration, I opted to use the counts for those who immigrated in the last ten years rather than the last five years. From these counts, I have derived the percent of recent immigrants, which refers to the proportion of the immigrant population that arrived in Canada within the ten years prior to the respective census year.

Another immigration-related measure available from the Census is information on the birthplaces of immigrants. This measure also allows me to examine whether birthplace heterogeneity, as a different dimension of immigration, has a distinct relationship to crime, as suggested by some studies (e.g., Graif and Sampson, 2009), and by cultural theories, social disorganization theories, and the immigrant enclave thesis. This is also why birthplace heterogeneity is not included in the overall immigration index. This measure is based on the top 40 birthplaces outside of Canada that are classified in the 2011 National Household Survey. Many of the places listed in the 2011 Census can be traced back through earlier census years. There are fewer categories

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26 Including this as a separate control variable did not create any multicollinearity issues as indicated by tolerance and VIF scores.
27 They are: India, China, UK, Philippines, US, Italy, Hong Kong, Vietnam, Pakistan, Germany, Poland, Portugal, Sri Lanka, Jamaica, Iran, Korean, the Netherlands, France, Guyana, Romania, Lebanon, Haiti, Russia, Mexico, Trinidad, Greece, Taiwan, Ukraine, Colombia, Morocco, Algeria, Egypt, Iraq, Bangladesh, El Salvador, Afghanistan, South Africa, Croatia, Hungary, and Bosnia.
in the earlier census years, which is understandable because the range of countries from which immigrants originated was less diverse in earlier years, but the problem was not as severe as it was for ethnic origin data described above.

The measure is calculated using the Herfindahl formula: \( L_c = 1 - \left( \sum \prod r^2 \right)_c \); where \( c \) refers to a particular CMA or province, \( r \) refers to the particular birthplace, and \( \prod \) is the proportion of the CMA or provincial population with that birthplace. The index, which takes into account both the number of different birthplaces represented in the population of the CMA or province and the size of each birthplace group, indicates the probability that two randomly selected individuals from a CMA will have been born in different countries. Higher scores on this measure indicate more birthplace heterogeneity. I include this measure to test the expectation of cultural conflict theories, social disorganization theories, and the immigrant enclave thesis that as CMAs and provinces become more heterogeneous in the birthplaces of their residents, their crime rates will increase.

Having different measures of immigration included in the analysis allows me to better address whether there are different aspects of changes in immigration—whether it be the size of the immigrant population, recent immigration, or diversity of the immigrant population—that are related to changes in crime rates.

Control Variables

The Census data also provide a number of demographic and socioeconomic measures commonly included in macro-level analyses of immigration and crime. To measure demographic transition explanations, I included four different measures. The first is a measure of the total population of the CMA or province. The volume of crime has been shown to be related to a city’s population, although support for the prediction that the relationship between the crime rate and
population size has been less clear (see Nolan, 2004). The second is population density, defined as the number of persons per square kilometre. Population density has been theorized to be related to crime (see, e.g., Shaw and McKay, 1969), although the empirical support for this prediction is mixed. The third measure, percent of the population who are young males aged 15 to 29, is included to account for changes in the population most at risk of engaging in crime (Steffensmeier and Streifel, 1991; Sutherland, 1924). The fourth, proportion of the population 15 years and over that is divorced, is used to measure changes in family structure. This is used to test the expectations of the ‘moral booster shot’ perspective. As noted in Chapter 3, the ‘moral booster shot’ perspective predicts that to the extent immigrants have more familistic and pro-nuptial cultural orientations than native-born individuals, this may increase social control and fortify social networks against crime (Ousey and Kubrin, 2009; Fukuyama, 1993).

As explained in Chapter 3, socioeconomic factors are emphasized by three of the four theoretical perspectives that posit a positive association between immigration and crime: strain and opportunity structure models, segmented assimilation models, and social disorganization theories. To capture different dimensions of socioeconomic status, I include five control variables. First is the labour force participation rate. All three theoretical perspectives predict that increases in the labour force participation rate should be associated with lower rates of crime, since the labour force participation is expected to decrease levels of economic disadvantage. In the Census, the labour force participation rate refers to the proportion of individuals aged 15 and older who are participating

\[ \text{Labour force participation rate} = \frac{\text{Number of individuals aged 15 and older who are participating}}{\text{Total number of individuals aged 15 and older}} \]

However, changes in the labour force participation rate may also be related to increases in crime rates through changes in routine activities. As suggested by Cohen and Felson (1979), with increases in labour force participation, people spend more time outside of the home, which may increase property crime rates since homes are without effective guardians during work hours. In addition, increased labour force participation also increases contact between people outside of the home.
in the labour force. The second measure of socioeconomic status is the percentage of the population living below the low income mark set by Statistics Canada. This is to account for the longstanding correlation between poverty and crime rates shown in the research (Kovandzic, Vieratis, and Yeisley, 1998), as well as the mechanisms related to economic disadvantage highlighted in the three theoretical perspectives discussed earlier.

To control for the effects of population change and residential stability on crime rates, as suggested by social disorganization theories, I include percent home ownership (percent of households that owned their dwelling) as well as percent non-movers (percent of the population aged 5 and older not living in the same residence as five years ago) in the models. Finally, percent of the population aged 15 years and older who graduated from university with a certificate, diploma or degree is included as a measure of level of education. This is done to take account of the emphasis placed on strong educational and professional backgrounds in the points system for Canadian immigration policies as discussed in Chapter 2.

4.2 Crime Data

I drew all of the crime data used for my dissertation analysis from the Uniform Crime Reporting (UCR) Survey collected by the Centre for Justice Statistics (CCJS). Designed to measure the incidence and characteristics of crime in Canada, the UCR is based on an annual survey of all

29 I have chosen to include labour force participation rate instead of the unemployment or employment rate for the following reasons. For employment or unemployment, the denominator is not the proportion of individuals aged 15 and older but those who are in the labour force. Employment and unemployment rates can vary, based on whether people consider themselves part of the labour force rather than on the availability of jobs, I therefore chose to include the labour force participation rate in the models presented in Chapters 5 and 6. The same models were run with labour force participation rate substituted by the employment rate or the unemployment rate yielded similar results, however, the model R-squareds were higher when including labour force participation rate.
crimes known to and substantiated by police services. Currently, the survey is administered as part of the National Justice Statistics Initiative (NJSI) which is a cooperative initiative between the federal, provincial, and territorial deputy ministers responsible for the administration of justice in Canada, along with the Chief Statistician at Statistics Canada, to provide information to the justice community and the public about criminal and civil justice matters in Canada. Because these crime statistics are processed and reported according to a nationally approved set of common crime categories and definitions since 1962, these data are appropriate for examining changes in crime rates over time for the period under examination. Moreover, these data are generally available at the CMA-, provincial, and national levels.

There are two versions of the UCR collection instrument that operate simultaneously: UCR Aggregate Survey (UCR 1.0) and UCR 2 Incident-based Survey. I have used UCR 1.0, the aggregate-level survey. Not only does it have summary data for nearly 100 separate criminal offences dating back to 1962, unlike UCR 2 which was developed in the mid-1980s, UCR 1.0 also reports crime data at the macro-level aggregations of CMAs, provinces, and Canada. UCR 1.0 covers the range of crimes that I am interested in examining for this research.

The UCR survey covers both the number of incidents and rate per 100,000 for the crime categories I examined in this research: total Criminal Code offences (excluding traffic), property

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30 Not all data at the CMA and provincial levels are available from 1962. For provinces and most CMAs, crime data are available from 1977.

31 A complementary source of information on crime is the General Social Survey (GSS), which is based on self-report data from a sample of Canadians, 15 years or older, who report on having been victimized by a crime. There are disparities between the UCR and the GSS with the GSS reporting higher rates of criminal victimization, which suggests that official police-reported crime rates may be undercounting the number of criminal victimization incidents. However, for the purposes of this research, the GSS is not necessarily appropriate. The GSS collects data only on eight offences, 5 property crimes and 3 violent crimes. Because it is a victimization survey, the GSS cannot collect information on other violent crimes in which the victim cannot be part of the survey because they are deceased, such as murder and manslaughter. Moreover, other violent crimes, such as aggravated assault, aggravated sexual assault, and abductions are not covered by the GSS. These violent crimes are measured and reported by the UCR.
offences, crimes of violence, and homicide. For all four types of crimes, I collected both the total numbers and the rate. The dependent variables used in the analyses are the rates of total crimes, property crimes, violent crimes, and homicides. As noted in Chapter 3, examining different types of crimes allows me to address the shortcoming of focusing on just homicide in the literature on immigration and crime.

Property crimes are defined by Statistics Canada as unlawful acts to gain property—such as break and enter, theft, and fraud—but do not involve the use of threat of violence against the person (e.g., robbery). Violent crimes are defined by Statistics Canada as crimes against the person involving the use or threatened use of violence against a person. This includes robbery, because it is differentiated from theft or other property crimes due to the use or threat of violence. Homicides are defined by Statistics Canada as an occurrence when a person directly or indirectly, by any means, causes the death of a human being. Non-culpable homicides such as deaths caused by criminal negligence, suicide and accidental or justifiable homicide are not considered as a homicide offence and are not included in this category by Statistics Canada. Homicide therefore only includes those incidents classified by the police as being first or second degree murder, manslaughter, and infanticide.

I was able to access the UCR data through CANSIM which is Statistics Canada’s key socioeconomic database. Access to CANSIM is available through Computing in the Humanities and Social Sciences (CHASS) at the University of Toronto as well as through the Data Library Service at

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32 Initially, I also collected data on drug crime rates but not surprisingly, there was tremendous variation from year to year, perhaps indicating these data reflect not just drug crimes, but enforcement practices that can greatly affect the validity of the data.
the University of Toronto. Because of the differences in the coverage of time periods in CANSIM tables, I drew from a number of CANSIM tables, rather than a single table, to build my dataset.

Generally, for all geographical levels (CMAs, provinces, and Canada), I used CANSIM Table 2520013 for the period 1977-1997. For the period 1998-2011, I used CANSIM Table 2520051. Data on actual number of incidents and rate per 100,000 for total Criminal Code offences, property crimes, violent crimes, and homicides were culled and entered into a SPSS (Statistical Package for Social Sciences) dataset. For the provinces and Canada, these two tables provided sufficient information for constructing provincial-level and national-level datasets. However, for CMAs, there were challenges in collecting crime data to span over the entire time period, 1977-2011.

Issues with CMA-Level Crime Data

Despite pragmatic challenges to collecting crime data at the CMA-level for the entire period under examination, doing so was crucial in order to meaningfully address the relationship between changes in immigration and changes in crime rates. As noted in my discussion in Chapter 2, the settlement pattern of recent immigration, particularly for the period under examination, has become increasingly and disproportionately an urban phenomenon in both Canada and the United States (Chui and Flanders, 2013; Walks and Bourne, 2006). Accordingly, the focus on urban areas has been reflected in the immigration and crime literature especially from the United States, as discussed in Chapter 3 (e.g., Ousey and Kubrin, 2009; Stowell, Messner, McGeever, and Raffalovich, 2009). Therefore, examining CMAs is also important for determining the generalizability of the findings from city-level research from the United States.

33 Crime data for the geographical levels being examined were only available from 1977.
Apart from census metropolitan areas (CMAs), there are other geographical units outlined by Statistics Canada that could be used to represent ‘cities’ or urban areas. For example, urban areas (UAs) or census agglomerations (CAs) can be used to represent ‘cities’. An urban area (UA) refers to an area with a population of at least 1,000 and no fewer than 400 persons per square kilometre. A census agglomeration (CA) refers to one or more adjacent municipalities that centre on a large urban area with a population of at least 10,000, with a high degree of integration with the central urban areas. However, these census boundaries do not necessarily map on to policing boundaries. This is problematic since it is individual police forces that submit data to the UCR survey. Further complicating this matter is the fact that individual police forces patrol very different areas. For example, the Montreal police force represents 29 municipalities of both urban and suburban environments, whereas the Vancouver police force largely patrols the urbanized core (Leonard, 1997).

Because of these concerns, the Canadian Centre for Justice Statistics (CCJS) has adopted the Census Metropolitan Area (CMA) as the standard geographical unit for urban crime reporting (Leonard, 1997). A CMA refers to an urbanized core of at least 100,000 people in population and includes adjacent areas and municipalities that have a high degree of economic and social integration. Because more than one police force can be responsible for law enforcement within the boundaries of a CMA, the CCJS organizes the crime data to ‘fit’ within the boundaries of a CMA. This also explains why Oshawa, Ontario, is not included in the analyses presented in this chapter. Oshawa has been routinely excluded by the reports released by the Canadian Centre for Justice Statistics because of incongruities and disparities between police jurisdictional boundaries (which in this case include some rural areas which are not suburbs of Oshawa) and geographical CMA boundaries (Leonard, 1997). In discussing crime data, I use the terms CMA and city interchangeably (Leonard, 1997).
As of 2011, there were 32 CMAs in Canada\textsuperscript{34}. In addition to the 24 CMAs that existed for the bulk of the time period being examined, eight were recognized as CMAs towards the end of the time period, from 2001 onwards. All 32 CMAs are included in the analysis. The 24 core CMAs are St. John’s, Halifax, Saint John, Saguenay (Chicoutimi-Jonquiere), Quebec City, Sherbrooke, Trois-Rivieres, Montreal, Ottawa-Gatineau (ON-QC collectively), Toronto, Hamilton, St. Catharines-Niagara, Kitchener, London, Windsor, Sudbury, Thunder Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver, and Victoria. The other 8 CMAs that were added later are: Moncton (2006), Kingston (2001), Peterborough (2006), Brantford (2006), Guelph (2006), Barrie (2006), and Abbotsford (2001).

For crime data on the 32 CMAs for the period 1998-2011, I was able to use CANSIM Table 2520051, the same table used for the provinces and Canada for the same time period. For the period 1977-1997, I also used the same CANSIM table 2520013 that I used for the provinces and Canada. However, the crime data were available for the CMAs only from 1991 to 1997, but not for the period prior to 1991. In other words, there were no crime data available at the CMA level for the period 1977-1990. After inquiries to the Data Library Service at the University of Toronto and Statistics Canada, I was informed that CMAs did not statistically exist for the purposes of crime data prior to 1991.

In order to examine crime data for CMAs for the same time period as the provinces and Canada, I had to create CMA-level crime data for the period 1977-1990 based on aggregated crime data for the component municipalities of the CMAs for that period. Through the University of Toronto Data Library, I located UCR data for municipal police services for the period 1977-2007 and

\textsuperscript{34} Including Oshawa, there are 33 CMAs. However, as noted above Oshawa is not included in these analyses because of incongruities in policing jurisdictions (Leonard, 1997).
1998-2011. I also compiled a list of the component municipalities and/or census subdivisions within CMAs according to Census Canada. This list was verified against the list of municipalities and their police service identification numbers in the 1977-2007 crime statistics dataset. The complete list of the component municipalities included for creating the CMA-level crime data prior to 1991 is included in the appendix.

There is an overlap in the time period of 1991-2011 covered by both the CANSIM tables (1991-1997; 1998-2011) and the UCR data for municipalities (1977-2007; 2008-2011). This allowed me to compare the total number of Criminal Code offences (excluding traffic), property crimes, violent crimes, and homicides for the CMAs as denoted by Statistics Canada after 1991 and my aggregated compilation of municipality-level data to represent CMAs. There is a bit of a difference in the total crime numbers for the years 1997-2007. However, given that I do have CMA-level data from Statistics Canada from the CANSIM table for the years 1997-2007, where there is a difference only for total crime rates, I believe this is a relatively minor issue.

The total crime numbers for 1991-1996 and 2008-2011 were essentially similar. Furthermore, the property crime and violent crime data are very similar for the period 1991-2011 for both the CMAs as denoted by Statistics Canada and my aggregated compilation of municipality-level data to represent CMAs. Therefore, I used my aggregated compilation of municipality-level data to represent CMAs for the period prior to 1991 when CMAs were used for crime data by Statistics Canada, namely 1977-1990. For convenience, I refer to both the CMAs from 1991 and the CMA-equivalents created by aggregating municipality-level data as CMAs in this analysis.
Changes in Definitions and Recording Practices of Offences

During the period 1977-2011, the CCJS made changes in the definitions and recording practices of offences. Some offences were added to crime categories which created an artificial hike in the numbers of offences when the change took place. This was particularly visible with violent crimes because the violent offices with non-trivial rates, such as uttering threats and harassment, were added to the category of violent crime. In order to have consistent measures of crime over time, I adjusted for these changes by subtracting the numbers of these added offences from the data. I performed these adjustments for CMAs, provinces, and Canada. Crime rates referred to in the analysis are these “corrected” rates (i.e., estimates for the more recent period using the ‘old’ definitions).

4.3 Analytic Strategy

After collecting my data from the Canadian Census and the UCR, I merged the two SPSS datasets. Because the census is conducted every five years, while crime data are available annually, I initially kept them in two separate datasets. In merging the two datasets together, data for each census year were paired with the average of three consecutive years of UCR data. Rather than using the crime rate data for a single year, the use of three year averages is routinely done to create more stable estimates of crime rates (e.g., Ousey and Kubrin, 2009; Stowell, Messner, McGeever, and Raffalovich, 2009). For example, for the year 2006, I have census data for that year paired with the averaged crime rate data for 2005 to 200735.

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35 For beginning and end points of the time period, I averaged three consecutive years but slightly differently. For 1976, because crime data were only available from 1977 for the geographical levels I am examining, I averaged data from 1977 through 1979 crime data. For 2011, because collection of crime data was done only up to 2011, I used 2009-2011 crime data.
The unit of analysis is CMA* year for the CMA-level analysis and province*year for the provincial analysis\textsuperscript{36}. These are the appropriate units of analyses because my interest is in the explanation of how within-unit (within-CMA or within-province) changes in immigration are associated with within-unit changes in crime rates over time. For the CMA-level analysis, there are 32 CMAs and eight time points. Theoretically this should yield 256 CMA*years. However, because eight CMAs (those newly added after 2001) did not have data for all eight time points and because some data were missing for some of the CMAs for some years, the number of CMA*years was reduced to 182 for the analysis. For the province-level analysis, there are ten provinces and eight time points. Therefore, the number of province*years was 80.

Since my interest is in the nature and explanation of the longitudinal relationship between immigration and crime rates, as informed by the theoretical perspectives outlined in Chapter 3\textsuperscript{37}, I estimated a fixed-effects linear regression models using the \textit{xtreg} procedure in Stata 14\textsuperscript{38}. Fixed-effects (FE) models are one of the several methods of analyzing panel data; others include random-effects models (RE), panel negative binomial regression models (PNBR), and generalized estimating equation models (GEE) (Rabe-Hesketh and Skrondal, 2012). Broadly, all of these models are preferable to ordinary least squares (OLS) regression when analyzing longitudinal data because their standard error estimates can adjust for the fact that repeated observations on the dependent variable for a particular CMA or province are likely to be correlated (Rabe-Hesketh and Skrondal, 2012). Furthermore, all of these methods yield consistent estimates of parameters if model assumptions hold. I use fixed-effects regression models because they focus solely on within-unit (i.e., within-CMA and

\textsuperscript{36} For the national level analysis, because there are only 8 time points, there are not enough cases to perform multivariate analyses. Instead, overall time-series trends and patterns were discussed for Canada in Chapter 2.

\textsuperscript{37} As noted in Chapter 3, the theoretical perspectives are also about changes over time in immigration and crime.

\textsuperscript{38} Although the initial data entry and cleaning were done in SPSS, I used Stata for the substantive analysis because fixed effects regression models are not supported by SPSS.
within-province) change in the variables and require less restrictive assumptions than the alternative models (Snijders and Bosker, 2012).

Said differently, fixed effects models are appropriate for my analysis because they assess how the changes in immigration within a CMA or province are related to changes in crime in that CMA or province. Furthermore, other models assume that time-varying explanatory variables, such as the main independent variable (the immigration index), are uncorrelated with unmeasured CMA-specific or province-specific, time-invariant factors (the “random effect”), whereas fixed effects models do not make such assumptions.

Moreover, the fixed effects model controls for time-invariant factors whose effects are time-stable (e.g., an enduring characteristic specific to a particular CMA or province), whereas the other models do not. In other words, fixed-effects models control for a key source of omitted variable bias (Brame, Bushway and Paternoster, 1999). In addition, I employ robust variance-covariance matrix in the computation of standard errors, so that the model takes into account any clustering of standard errors within CMAs or provinces. For both the CMA- and province-level analyses, I first ran a baseline model which included only the immigration measures: immigration index, recent immigration, and birthplace heterogeneity. I progressively added demographic control variables to the analysis in model 2 and socioeconomic variables in model 3.

4.4 Conclusion

This chapter has outlined the sources of data for this study as well as how they were collected, cleaned, and analyzed. In response to some of the limitations of the literature noted in Chapter 3, I include not just the proportion of immigrants in my analyses but also recent immigration and

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39 I also performed post hoc Hausmann tests which revealed that the use of fixed-effects models was appropriate to use instead of random effects models.
birthplace heterogeneity. Informed by the theoretical perspectives outlined in Chapter 3, I explained the inclusion of various demographic and socioeconomic covariates in my models. Furthermore, because the theoretical perspectives on immigration and crime focus on change, a longitudinal design was chosen and fixed effects regression models were used as the appropriate analytic strategy. The following two chapters, Chapters 5 and 6 present the results of the fixed effects regression models for CMAs and provinces respectively and discuss findings on how changes in immigration are related to changes in crime rates.
Chapter 5: Census Metropolitan Areas (CMAs) Analyses

This chapter reports on the findings from the analysis of Census Metropolitan Areas (CMAs) in Canada over the period 1976-2011. The analyses in this chapter empirically address whether changes in immigration are associated with changes in crime rates in Canadian CMAs over time. Based on the changes in the characteristics of immigration discussed in Chapter 2, a focus on CMAs is important, because immigration settlement has become increasingly concentrated in large urban areas (Chui and Flanders, 2013). CMA-level analyses will also help to determine the generalizability of the findings on the relationship between immigration and crime from studies of US cities.

Rather than a cross-sectional analysis, this set of CMA-level analyses is longitudinal. As noted in Chapter 3, a longitudinal exploration of the relationship between immigration and crime is important because immigration is a process that unfolds over time. Furthermore, a longitudinal design is important, especially in testing the predictions of the theoretical perspectives on this issue because the predictions are about changes in immigration and crime, not about the proportion of immigrants and crime at one point in time. Therefore, as noted in Chapter 4, these analyses were performed using fixed effects regression which allows for the examination of within-city changes in both immigration and crime rates.

The analyses in this chapter include a range of covariates posited by the theoretical frameworks reviewed in Chapter 3. As noted in Chapter 3, this chapter also addresses one of the limitations of the research that has tended to only examine areas or time periods in which immigration has increased. Thus, most of this research establishes that cities or states that had the greatest increases in immigration also had the greatest decreases in crime. By examining CMAs that have experienced decreases in immigration in addition to CMAs that have experienced increases in immigration,
immigration, this chapter investigates whether the negative association between immigration and crime found in other longitudinal studies, is symmetrical, i.e., decreases in immigration are associated with increases in crime rates and increases in immigration are associated with decreases in crime rates.

5.1 Review of Theoretical Predictions

Recall that there are four theoretical perspectives that posit a positive relationship between changes in immigration and changes in crime rates and three perspectives that posit a negative relationship. The four theoretical perspectives that posit a positive relationship between immigration and crime—strain and opportunity models, segmented assimilation theories, cultural theories, and social disorganization theories—would predict that increases in immigration would be associated with increases in crime rates and decreases in immigration would be associated with decreases in crime rates. Each of these perspectives would also emphasize the relative importance of different covariates included in the analyses. Strain and opportunity models and segmented assimilation theories would expect that as the labour force participation rate and the proportion of university graduates in the population increases, crime rates will decrease; whereas as the proportion of the population living below the low income cutoff increases, crime rates will also increase. Social disorganization theories would also make similar predictions. In addition, social disorganization theories would predict increases in birthplace heterogeneity and residential turnover (i.e., decreases in home ownership and in the proportion of non-movers) to be associated with decreasing crime rates. Cultural theories would also make similar predictions about birthplace heterogeneity. Cultural theories would also emphasize that as the size of recent immigration increases, crime rates will also
increase, since this portion of the population is expected to be more frequently in conflict with and/or involved in more significant conflict with the population of the receiving community.

The three theoretical perspectives that posit a negative relationship between immigration and crime—the immigrant revitalization thesis, the immigrant enclave thesis, and the ‘moral booster shot’ perspective’—would predict that increases in immigration would be associated with decreases in crime rates and decreases in immigration would be associated with increases in crime rates. The immigrant revitalization thesis would have similar predictions about the covariates suggested by social disorganization theories. Recall that the immigrant revitalization thesis does not challenge that immigration may lead to social disorganization in the short-term, but that this may be reversed in the long-term as communities are revitalized by immigration. Therefore, finding a positive association between increases in the proportion of recent immigrants and increases in crime rates would not be inconsistent with the immigrant revitalization thesis.

However, the immigrant revitalization thesis would predict a negative relationship between changes in the overall measure of immigration and changes in crime rates. The immigrant enclave thesis would also predict a negative relationship between the overall measure of immigration and crime rates, with its focus on the role of immigrant concentration. Furthermore, since the immigrant enclave thesis argues that shared backgrounds may protect communities from crime, this thesis would predict that increases in birthplace heterogeneity to be associated with increases in crime rates. Finally, the ‘moral booster shot’ perspective would expect increases in the size of recent immigration to be associated with decreases in crime rates, since this portion of the population would have values that would be the most different from the receiving community.
5.2 Main Independent and Dependent Variables

This section summarizes the main independent and dependent variables already discussed in Chapter 4. For my primary immigration measure, I used an Immigration Index that measures the proportion of the population born outside of Canada and the proportion of the population with a mother tongue other than English or French. In addition, I also included a recent immigration measure which is the proportion of the immigrant population that had immigrated in the last ten years. Finally, I included birthplace heterogeneity as another measure of immigration. Including three different measures of immigration allows my analyses to address some of the limitations from the literature that were discussed in Chapter 3.

For crime measures, I use four main dependent variables: total crime rates (excluding traffic), property crime rates, violent crime rates, and homicide rates. The crime rates were disaggregated to examine whether there were differences in the relationships between immigration and crime based on the crime type. Examining different types of crime is also a response to the critiques of immigration and crime studies that have looked exclusively at homicides or violent offences, as discussed in Chapter 3.

5.3 Control Variables

To rule out the possibility of spurious relationships between immigration and crime, I controlled for a number of demographic and socioeconomic variables, informed by theoretical perspectives discussed in Chapter 3 and commonly found in macro-level analyses of immigration and crime.

To account for demographic transition explanations, I included four different measures. The first is a measure of the total population in the CMA. The second is population density. The third
measure, percent of the population comprised of young males aged 15 to 29, is included to account for changes in the sex and age structure of the population at higher risks of criminal offending. The fourth, percent of the population that is divorced, is used to measure changes in family structure.

Taking into account theoretical perspectives that suggest that immigration may be associated with crime rates through its effects on socioeconomic factors, I included five control variables. The first socioeconomic control variable is labour force participation rate. The second socioeconomic control variable is the percentage of the population living below the low income mark set by Statistics Canada. To account for the effects of population change and residential stability on crime rates, I included percent home ownership (percent of household heads who own their home) as well as percent non-movers (percent of the population aged 5 and older not living in the same residence as five years ago) in the models. Finally, percent of the population who graduated from university is also included as a measure of level of education.
5.4 Descriptive Statistics

Table 5.1: Descriptive Statistics (N=182 CMA*Years)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Crime Rate</td>
<td>2702.08</td>
<td>16655.89</td>
<td>7873.8780</td>
<td>3064.68767</td>
</tr>
<tr>
<td>Property Crime Rate</td>
<td>1755.53</td>
<td>10483.79</td>
<td>5205.6911</td>
<td>1960.31773</td>
</tr>
<tr>
<td>Violent Crime Rate</td>
<td>47.79</td>
<td>1926.43</td>
<td>859.7230</td>
<td>318.82551</td>
</tr>
<tr>
<td>Homicide Rate</td>
<td>0</td>
<td>7.97</td>
<td>2.1096</td>
<td>1.10731</td>
</tr>
<tr>
<td>Immigration Index</td>
<td>-1.44755</td>
<td>3.43094</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>6.98</td>
<td>60.44</td>
<td>29.19</td>
<td>11.09782</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>.63</td>
<td>.98</td>
<td>.9095</td>
<td>.05605</td>
</tr>
<tr>
<td>Population</td>
<td>106031</td>
<td>5583064</td>
<td>637893</td>
<td>920232.0969</td>
</tr>
<tr>
<td>Population Density</td>
<td>35.82</td>
<td>1025.88</td>
<td>262.5196</td>
<td>228.15072</td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>6.59</td>
<td>18.29</td>
<td>11.8579</td>
<td>1.95724</td>
</tr>
<tr>
<td>% Divorced</td>
<td>.19</td>
<td>12.74</td>
<td>5.3817</td>
<td>2.72806</td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td>23.65</td>
<td>75.81</td>
<td>65.7274</td>
<td>4.65199</td>
</tr>
<tr>
<td>% Low Income</td>
<td>7.70</td>
<td>27.30</td>
<td>15.3185</td>
<td>3.35004</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td>35.26</td>
<td>80.67</td>
<td>62.5879</td>
<td>7.58705</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>6.31</td>
<td>68.47</td>
<td>54.54</td>
<td>7.14875</td>
</tr>
<tr>
<td>% University Graduates</td>
<td>.44</td>
<td>34.61</td>
<td>13.5548</td>
<td>6.48898</td>
</tr>
</tbody>
</table>

As Table 5.1 indicates, there is great variation over time among Canadian CMAs in various dimensions of immigration, crime rates, and other demographic and socioeconomic characteristics. There is considerable range in total crime rates, property crime rates, violent crime rates, and homicide rates, indicating that the CMAs have had very different levels and patterns of crime over time. For example, total crime rates range from a low of 2702.08 offences per 100 000 in Quebec City in 2011 to a high of 16 655.89 per 100 000 in Vancouver in 1991. The variation in violent crime rates is even more striking with the lowest rate of 47.79 violent crimes per 100 000 in Windsor in 1976 to the highest rate of 1926.43 violent crimes per 100 000 in Thunder Bay in 1991. Similarly, there is considerable range across CMAs and over time in both the concentration of immigrants and proportion of recent immigrants. For example, there was only 6.98% recent immigrants (percent of
immigrants that immigrated in the last ten years) in Sudbury in 1986 versus 60.44% recent immigrants for Trois-Rivieres in 2011. This should not be surprising as CMAs such as Toronto, Vancouver, and Montreal are the primary settlement cities for immigration, whereas small CMAs on the east coast or in Quebec receive very little immigration. Other demographic and socio-economic factors also vary substantially over time and across CMAs, as shown in Table 5.1.

Because the unit of observation for the descriptive statistics is a CMA*year, the range in each variable can represent variation over time, among CMAs, or both. For this reason, interpreting the meaning of correlations between variables is not straightforward. In addition, the assumption of independence of observations is not met, because there are repeated measures over time within each CMA. As a consequence, I do not present a correlation matrix for the independent and dependent variables here, but do include one in the appendix.40

The table of descriptive statistics, however, is useful in showing that CMAs are quite different from each other at one point in time but the CMAs themselves may be different from one point in time to another. As a result, the type of analytic strategy chosen, fixed effects regression which focuses on changes within each CMA over time, is particularly appropriate to examine this type of data.

40 For example, the correlation matrix in the appendix shows that the immigration index is positively correlated with property crime rates and violent crime rates, but not significantly correlated with total crime rate and homicide rates. However, when running the fixed effects regression models that take into account that these measurements are made over time repeatedly for the same CMA and thus the measurements will be correlated, the immigration index is consistently significantly negatively associated with all crime rates. This can be seen in the first block of variables entered in the incremental regression (model 1 in the following tables).
5.5 Analytic Strategy

Since my interest is in the nature and explanation of the longitudinal relationship between immigration and crime rates, I estimated a fixed-effects linear regression models using the *xtreg* procedure in Stata 14. As noted in Chapter 4, I used fixed-effects regression models in this study because fixed-effects models focus on the within-unit change in the variables and requires less restrictive assumptions than the alternative models (Snijders and Bosker, 2012). Fixed effects models are appropriate for my analysis because they assess how changes in immigration within a CMA are related to changes in crime in that CMA.

5.6 Results

Results from fixed effects regression models examining whether within-city, over-time change in immigration and other covariates are associated with within-city, over-time change in total crime rates (Table 5.2), property crime rates (Table 5.3), violent crime rates (Table 5.4), and homicide rates (Table 5.5) are presented below. All four tables report results from a series of three regression models. The first column reports a baseline regression model in which changes in the dependent variable are predicted only by the immigration index, percentage of immigrants who immigrated within the last ten years, and birthplace heterogeneity. In the second and third models, I add respectively demographic characteristics and socio-economic characteristics of CMAs. This model-building strategy allows me to examine the extent to which the observed relationship between change in immigration and change in the crime rate is mediated or explained by the set of variables entered in each block.
Total Crime Rates

Table 5.2 presents the findings from the fixed-effects regression models predicting total crime rates for CMAs for the period 1976-2011.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-3227.479*</td>
<td>-2216.708</td>
<td>-1602.138*</td>
</tr>
<tr>
<td></td>
<td>(795.5089)</td>
<td>(1253.502)</td>
<td>(657.5142)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-50.58072</td>
<td>-60.21158*</td>
<td>16.4576</td>
</tr>
<tr>
<td></td>
<td>(27.44558)</td>
<td>(23.89351)</td>
<td>(13.08642)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-28697.53*</td>
<td>-2318.47</td>
<td>10988.54*</td>
</tr>
<tr>
<td></td>
<td>(8636.671)</td>
<td>(11312.51)</td>
<td>(5190.283)</td>
</tr>
<tr>
<td>Population</td>
<td>0.0000869</td>
<td>0.0023804*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0008924)</td>
<td>(.0005537)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>-2.229946</td>
<td>4.722167*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.003623)</td>
<td>(1.926319)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>1107.416*</td>
<td>111.9581</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(275.78)</td>
<td>(204.5998)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>413.317*</td>
<td>-69.84434</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(112.9951)</td>
<td>(66.558)</td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>638.934*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(86.79186)</td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>324.0478*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(52.87003)</td>
<td></td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>19.54318</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(58.29036)</td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>10.38093</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(14.71369)</td>
<td></td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-516.3966*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(59.6714)</td>
<td></td>
</tr>
<tr>
<td>R-Sq (Within-Unit)</td>
<td>.3696</td>
<td>.5144</td>
<td>.8028</td>
</tr>
<tr>
<td>Corr (u, XB)</td>
<td>-.8500</td>
<td>-.6977</td>
<td>-.6836</td>
</tr>
<tr>
<td>Total # of Observations (CMA*Year)</td>
<td>182</td>
<td>182</td>
<td>182</td>
</tr>
<tr>
<td>Total # of CMAs</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

*p < .05

---

41 This table, as well as the following tables, report unstandardized coefficients with the standard errors in parentheses.  
42 Within-unit R-squared refers to the amount of within-unit (i.e., change in crime rates over time in CMAs) variance that is accounted for by the model.  
43 Corr (u, XB) shows whether the use of fixed-effects models is appropriate in the case. High absolute values, over .5, suggest the model is a poor candidate for random-effects models and that fixed-effects models are more appropriate.
The first column in Table 5.2 is the baseline model in which changes in total crime rates are regressed on changes in the three different measures of immigration. The statistically significant negative relationship between the immigration index \((b=-3227.479, \ p<.05)\) and birthplace heterogeneity \((b=-28697.53, \ p<.05)\) and changes in total crime rates indicates that CMAs experiencing increases in overall immigration and birthplace heterogeneity also experienced decreases in total crime rates. There is no significant relationship between changes in the proportion of recent immigrants and changes in total crime rates.

In the second model in Table 5.2, I entered a block of demographic variables. Controlling for population, population density, percent young males, and percent divorced, neither the coefficient for the immigration index nor the coefficient for birthplace heterogeneity is significant. However, in this model, the proportion of recent immigrants is negatively and significantly associated with changes in total crime rates \((b=-60.21158, \ p<.05)\). Total population and population density of CMAs are not significantly associated with changes in total crime rates, controlling for other variables. Percent young males \((b=1107.416, \ p<.05)\) and percent divorced \((b=413.317, \ p<.05)\) were positively and significantly associated with changes in total crime rates. In other words, increases in the proportion of a CMA’s population that are young males and increases in the proportion of the population that are divorced are positively and significantly associated with increases in total crime rates.

The third model introduces variables that measure changes in socio-economic characteristics of CMAs. Among the socioeconomic characteristics entered, changes in percent home ownership and percent non-movers are not significantly associated with changes in total crime rates. The other three socioeconomic variables are significantly associated with changes in total crime rates. Increases in labour force participation rate \((b=638.934, \ p<.05)\) are associated with increases in total crime rates.
Percent low income (b=324.0478, p<.05) is also positively and significantly associated with increases in the total crime rate. On the other hand, increases in percent university graduates are associated with decreases in total crime rates (b=-516.3966, p<.05). After controlling for socioeconomic characteristics, the only demographic characteristic that remain significantly associated with changes in total crime rates are population size (b=.0023804, p<.05) and population density (b=4.722167, p<.05). Coefficients for percent young males and percent divorced, which were significant in the previous model, are no longer significant.

In the full model controlling for demographic and socioeconomic characteristics, the immigration index (b=-1602.138, p<.05) is negatively and significantly associated with changes in total crime rates. Said differently, CMAs experiencing increases in overall immigration also experienced decreases in total crime rates, controlling for other variables. However, birthplace heterogeneity (b=10988.54, p<.05) is positively and significantly associated with changes in total crime rates, controlling for other variables. CMAs that experienced increases in birthplace heterogeneity also experienced increases in total crime rates. Changes in percent recent immigrants are not associated with changes in total crime rates.

Throughout the different models in this analysis as well as for the following analyses, the within-unit R-squared values are quite high. For example, the full model explains 80.28% of the within-unit variance, i.e., changes in total crime rates within a CMA over time. This is not unusual for fixed effects regression models. Within-unit R-squared values for fixed effects models are always considerably larger than for regular ordinary least squares (OLS) models, even with the same parameter specifications, because the same unit is being measured repeatedly at multiple time periods (Rabe-Hesketh and Skrondal, 2005). The corr (u, XB) values over .5 for all the models confirm that the use of fixed-effects models was appropriate over random-effects models.
Property Crime Rates

Table 5.3 presents the findings from the fixed-effects regression models predicting property crime rates for CMAs for the period 1976-2011.

Table 5.3: Fixed Effects (Within-City) Linear Regression Models Predicting Property Crime Rates, 1976-2011, for CMAs

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-1611.132*</td>
<td>-442.5717</td>
<td>123.6067</td>
</tr>
<tr>
<td></td>
<td>(572.4151)</td>
<td>(698.8465)</td>
<td>(345.1021)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-41.1802</td>
<td>-53.88716*</td>
<td>-5.415113</td>
</tr>
<tr>
<td></td>
<td>(22.56162)</td>
<td>(19.5093)</td>
<td>(12.02484)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-17951.07*</td>
<td>4207.487</td>
<td>15610.58*</td>
</tr>
<tr>
<td></td>
<td>(5932.391)</td>
<td>(7975.452)</td>
<td>(3520.173)</td>
</tr>
<tr>
<td>Population</td>
<td>-.0008628</td>
<td>0.0008153*</td>
<td>(.0003182)</td>
</tr>
<tr>
<td></td>
<td>(.0005798)</td>
<td>(.0003182)</td>
<td>(.0003182)</td>
</tr>
<tr>
<td>Population Density</td>
<td>.05649</td>
<td>4.163649*</td>
<td>1.192794</td>
</tr>
<tr>
<td></td>
<td>(.1.711333)</td>
<td>(1.192794)</td>
<td>(1.192794)</td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>805.9122*</td>
<td>92.74343</td>
<td>116.1981</td>
</tr>
<tr>
<td>% Divorced</td>
<td>268.5267*</td>
<td>-4.580977</td>
<td>(35.83095)</td>
</tr>
<tr>
<td></td>
<td>(64.19469)</td>
<td>(35.83095)</td>
<td>(35.83095)</td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td>294.4412*</td>
<td>57.78214</td>
<td>(57.78214)</td>
</tr>
<tr>
<td></td>
<td>(57.78214)</td>
<td>(57.78214)</td>
<td>(57.78214)</td>
</tr>
<tr>
<td>% Low Income</td>
<td>130.1877*</td>
<td>34.07805</td>
<td>34.07805</td>
</tr>
<tr>
<td></td>
<td>(34.07805)</td>
<td>(34.07805)</td>
<td>(34.07805)</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td>9.494223</td>
<td>32.5077</td>
<td>(32.5077)</td>
</tr>
<tr>
<td></td>
<td>(32.5077)</td>
<td>(32.5077)</td>
<td>(32.5077)</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>6.519307</td>
<td>9.802973</td>
<td>9.802973</td>
</tr>
<tr>
<td></td>
<td>(9.802973)</td>
<td>(9.802973)</td>
<td>(9.802973)</td>
</tr>
<tr>
<td>% University Grads</td>
<td>-388.9818*</td>
<td>(36.91776)</td>
<td>(36.91776)</td>
</tr>
<tr>
<td></td>
<td>(36.91776)</td>
<td>(36.91776)</td>
<td>(36.91776)</td>
</tr>
</tbody>
</table>

R-Sq (Within-Unit) .3227 .5510 .8236
Corr (u, XB) -.8154 -.5047 -.6908
Total # of Observations (CMA*Year) 182 182 182
Total # of CMAs 32 32 32

*p < .05
Table 5.3 displays results of fixed effects regression models that examine whether changes in immigration are associated with changes in property crime rates. The results are broadly similar to the results from the analysis on total crime rates with some particularities.

The first column of Table 5.3 shows the baseline model estimating whether changes in immigration are associated with changes in property crime rates. Consistent with the analysis of total crime rates, both the immigration index (b=-1611.132, p<.05) and birthplace heterogeneity (b=-17951.07, p<.05) are significantly and negatively associated with changes in property crime rates. In other words, CMAs that experienced increases in overall immigration and birthplace heterogeneity also experienced decreases in property crime rates. Similar to the findings from the analysis of total crime rates, changes in recent immigration are not significantly associated with changes in property crime rates.

Model 2 incorporates the demographic control variables. Similar to the analysis of total crime rates, changes in percent young males (b=805.9122, p<.05) and percent divorced (b=268.5267, p<.05) are both significantly and positively related to changes in property crime rates. Again, population and population density are not significantly associated with changes in property crime rates in this model. Controlling for population, population density, percent young males, and percent divorced, neither the immigration index nor birthplace heterogeneity is significantly related to changes in property crime rates. However, percent of recent immigrants is negatively and significantly associated with changes in property crime rates (b=-53.88716, p<.05).

The third model introduces variables that measure changes in socio-economic characteristics of CMAs. Among the socioeconomic characteristics entered, changes in percent home ownership and percent non-movers are not significantly associated with changes in property crime rates. The other three socioeconomic variables are significantly associated with changes in property crime rates.
Increases in labour force participation (b=294.4412, p<.05) and the proportion of those who live below the low income mark (b=130.1877, p<.05) are positively and significantly associated with changes in property crime rates. On the other hand, the proportion of the population who are university graduates (b=-388.9818, p<.05) is negatively and significantly associated with changes in property crime rates. After controlling for socioeconomic characteristics, the only demographic characteristics that remain significant are population size (b=.0008153, p<.05) and population density (b=4.163649, p<.05). CMAs that experienced increases in population size and population density also experienced increases in property crime rates. The other two demographic characteristics, percent young males and percent divorced are no longer significantly associated with property crime rates in the full model. In the full model, controlling for demographic and socioeconomic characteristics, neither the immigration index nor the percent of recent immigrants is significantly associated with changes in property crime rates. On the other hand, birthplace heterogeneity is positively and significantly associated with property crime rates (b=15610.58, p<.05), after controlling for other variables in the final model.

**Violent Crime Rates**

Table 5.4 presents the findings from the fixed-effects regression models predicting violent crime rates for CMAs for the period 1976-2011. This analysis mirrors much of the research on the relationship between immigration and crime. Given the focus on violent crime rates in the literature, as noted in Chapter 3, this analysis allows a more direct comparison with the results from city-level studies done in the United States. Given the important contextual differences between Canada and
the United States in histories and characteristics of immigration, as well as in levels of crime, this analysis is a strong test of the robustness of the immigration and crime relationship.

Table 5.4: Fixed Effects (Within-City) Linear Regression Models Predicting Violent Crime Rates, 1976-2011, for CMAs

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-252.1448*</td>
<td>-330.7801*</td>
<td>-385.1255*</td>
</tr>
<tr>
<td></td>
<td>(67.77702)</td>
<td>(127.6604)</td>
<td>(118.2285)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>1.273432</td>
<td>2.044637</td>
<td>5.346263*</td>
</tr>
<tr>
<td></td>
<td>(1.5648)</td>
<td>(2.011215)</td>
<td>(1.837245)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>2548.181*</td>
<td>289.6167</td>
<td>112.447</td>
</tr>
<tr>
<td></td>
<td>(732.7614)</td>
<td>(924.2593)</td>
<td>(1034.487)</td>
</tr>
<tr>
<td>Population</td>
<td>.0002188</td>
<td>.000276*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0001114)</td>
<td>(.0001093)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>-.6837153</td>
<td>-.2157741</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.4034121)</td>
<td>(.3812521)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>8.811745</td>
<td>-10.01355</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(25.38664)</td>
<td>(33.47225)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>49.64957*</td>
<td>20.65348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(15.20423)</td>
<td>(12.13332)</td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>61.35371*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(12.41798)</td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>31.09761*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(9.343342)</td>
<td></td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>11.33731</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(12.40475)</td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>-1.30905</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.723272)</td>
<td></td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-10.39885</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(14.06715)</td>
<td></td>
</tr>
<tr>
<td>R-Sq (Within-Unit)</td>
<td>.1529</td>
<td>.3170</td>
<td>.4486</td>
</tr>
<tr>
<td>Corr (u, XB)</td>
<td>-.8029</td>
<td>-.8374</td>
<td>-.7731</td>
</tr>
<tr>
<td>Total # of Observations (CMA*Year)</td>
<td>182</td>
<td>182</td>
<td>182</td>
</tr>
<tr>
<td>Total # of CMAs</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

*p< .05
The first column of Table 5.4 shows the baseline model estimating whether changes in immigration are associated with changes in violent crime rates. The immigration index (b=-252.1448, p<.05) is negatively and significantly associated with changes in violent crime rates. On the other hand, birthplace heterogeneity (b=2548.181, p<.05) is positively and significantly associated with changes in violent crime rates. In other words, CMAs that experienced an increase in immigration also experienced decreases in violent crime rates; CMAs that experienced an increase in birthplace heterogeneity also experienced increases in violent crime rates. Percent of recent immigrants is not significantly associated with changes in violent crime rates.

I add demographic control variables in model 2, shown in the second column of Table 5.4. Population, population density, and proportion of young males in the population are not significantly associated with changes in violent crime rates. However, the proportion of the population who are divorced (b=49.64957, p<.05) is positively and significantly associated with changes in violent crime rates. Increases in the proportion of divorced individuals are associated with increases in violent crime rates. After controlling for demographic characteristics, percent of recent immigrants and birthplace heterogeneity are not significantly associated with changes in violent crime rates. However, the coefficient for the immigration index (b=-330.7801, p<.05) remains negative and significant after controlling for demographic characteristics of CMAs.

The third model introduces socioeconomic variables. Changes in percent home ownership, percent non-movers, and percent university graduates, are not significantly associated with changes in violent crime rates. The other two socioeconomic variables, increases in labour force participation (b=61.35371, p<.05) and the proportion of those who live below the low income mark (b=31.09761, p<.05), are positively and significantly associated with changes in violent crime rates. After controlling for socioeconomic characteristics, the only demographic characteristic that remains
significant is population size (b=.000276, p<.05). The other three demographic characteristics, population density, percent young males, and percent divorced are not significantly associated with changes in violent crime rates in the full model.

Controlling for other variables, the full model shows that the immigration index (b=-385.1255, p<.05) is negatively and significantly associated with violent crime rates. CMAs that experienced increases in immigration also experienced decreases in violent crime rates. However, in the full model, percent of recent immigrants (b=5.346263, p<.05) is positively and significantly associated with violent crime rates. In other words, CMAs that experienced increases in the proportion of recent immigrants in their immigrant population also experienced increases in violent crime rates. This finding for recent immigrants differs from the results for total crime rates and property crime rates. Birthplace heterogeneity is not significantly associated with changes in violent crime rates in the full model. The finding that CMAs that experienced increases in immigration also experienced decreases in violent crime rates mirrors the findings on violent crime rates from US longitudinal studies.

Homicide Rates

Table 5.5 presents the findings from the fixed-effects regression models predicting homicide rates for CMAs for the period 1976-2011. As noted above, homicide has been the focus of previous research on immigration and crime. As such, this analysis will be useful in examining whether the findings are consistent with or contrary to the results from city-level studies done on immigration and homicide in the United States, where homicide rates are much greater than in Canada. For many of the CMAs included in this analysis, homicide rates are very low. With low absolute numbers of homicides and some CMAs having populations only slightly larger than 100,000 residents, small
Variations in the number of homicides can create large changes in the homicide rate. This may reduce the chances of finding any relationships between the independent variables and homicide rates.

Table 5.5: Fixed Effects (Within-City) Linear Regression Models Predicting Homicide Rates, 1976-2011, for CMAs

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-.4699141</td>
<td>-.3629447</td>
<td>-.5249872</td>
</tr>
<tr>
<td></td>
<td>(.2769295)</td>
<td>(.4098126)</td>
<td>(.4341636)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-.0016461</td>
<td>-.0013279</td>
<td>.0021696</td>
</tr>
<tr>
<td></td>
<td>(.0084244)</td>
<td>(.0088239)</td>
<td>(.0098512)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-7.42787*</td>
<td>-.5535347</td>
<td>-9.165202</td>
</tr>
<tr>
<td></td>
<td>(2.941492)</td>
<td>(3.416978)</td>
<td>(4.332971)</td>
</tr>
<tr>
<td>Population</td>
<td>.00000001</td>
<td>.00000001</td>
<td>.00000001</td>
</tr>
<tr>
<td></td>
<td>(.00000004)</td>
<td>(.00000005)</td>
<td>.0017221</td>
</tr>
<tr>
<td>Population Density</td>
<td>-.0005585</td>
<td>-.0000536</td>
<td>.0015418</td>
</tr>
<tr>
<td></td>
<td>(.0015418)</td>
<td>(.0017221)</td>
<td>(.0017221)</td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>.1873159*</td>
<td>.2150025*</td>
<td>.0739161</td>
</tr>
<tr>
<td></td>
<td>(.0739161)</td>
<td>(.0921937)</td>
<td>(.0921937)</td>
</tr>
<tr>
<td>% Divorced</td>
<td>.011133</td>
<td>-.0072578</td>
<td>.0461977</td>
</tr>
<tr>
<td></td>
<td>(.0461977)</td>
<td>(.0502277)</td>
<td>(.0502277)</td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0543279</td>
<td></td>
<td>(.0493557)</td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>.0386841</td>
<td>(.0272669)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0386841)</td>
<td>(.0272669)</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>.0311853</td>
<td>(.0389457)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0311853)</td>
<td>(.0389457)</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>.003624</td>
<td>(.0053833)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.003624)</td>
<td>(.0053833)</td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-.0077859</td>
<td>(.0569621)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0077859)</td>
<td>(.0569621)</td>
</tr>
</tbody>
</table>

R-Sq (Within-Unit)      .1443    .2188    .2321
Corr (u, XB)            -.7357   -.4098   -.4255
Total # of Observations (CMA*Year) 182  182  182
Total # of CMAs         32       32       32

*p < .05
The first model shows the baseline model with just the immigration measures. Changes in both the immigration index and the proportion of recent immigrants are not significantly associated with changes in homicide rates. Birthplace heterogeneity \((b=-7.42787, p<.05)\) is negatively and significantly associated with changes in homicide rates.

In the second model including demographic variables, none of the immigration measures is significantly related to changes in homicide rates. Population, population density, and the percent divorced are also not significantly associated with changes in homicide rates. The only exception is the significant and positive association between the proportion of young males in the population \((b=.1873159, p<.05)\) and changes in homicide rates.

In the final model including demographic and socioeconomic characteristics of CMAs, the only significant coefficient is, again, for the proportion of young males in the population \((b=.2150025, p<.05)\). None of the immigration measures are significantly associated with changes in homicide rates in the full model.

As noted earlier, the failure to find a significant association between immigration measures and changes in homicide rates may be due to fluctuations in homicide rates in CMAs with very few homicides. Although not a direct test of this possibility, an analysis based on only the largest CMAs, whose homicide rates are more stable, provides indirect evidence relevant to it. With that in mind, I selected the ten largest CMAs by population (Toronto, Montreal, Vancouver, Ottawa-Gatineau, Calgary, Edmonton, Hamilton, Winnipeg, Quebec City, and Kitchener), and analyzed the relationship between changes in immigration and changes in their homicide rates for the period 1976-2011. Table 5.6 reports the results of this analysis.
Table 5.6: Fixed Effects (Within-City) Linear Regression Models Predicting Homicide Rates, 1976-2011, for the Ten Largest CMAs

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-.628596*</td>
<td>-.8392807*</td>
<td>-.676224*</td>
</tr>
<tr>
<td></td>
<td>(.2754901)</td>
<td>(.3956306)</td>
<td>(.2368984)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>.0098266</td>
<td>.0117773</td>
<td>-.0064733</td>
</tr>
<tr>
<td></td>
<td>(.0120562)</td>
<td>(.0127377)</td>
<td>(.0119837)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-14.97937*</td>
<td>-15.30524*</td>
<td>-18.30735*</td>
</tr>
<tr>
<td></td>
<td>(3.262488)</td>
<td>(6.7227)</td>
<td>(7.08088)</td>
</tr>
<tr>
<td>Population</td>
<td>.00000008</td>
<td>.00000004</td>
<td>(.00000004)</td>
</tr>
<tr>
<td></td>
<td>(.0000004)</td>
<td>(.0000004)</td>
<td>(.0000004)</td>
</tr>
<tr>
<td>Population Density</td>
<td>.0016949</td>
<td>.00573</td>
<td>(.0026705)</td>
</tr>
<tr>
<td></td>
<td>(.0026705)</td>
<td>(.0023558)</td>
<td>(.0023558)</td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>-.0175429</td>
<td>-.0719927</td>
<td>-.0719927</td>
</tr>
<tr>
<td></td>
<td>(.0666139)</td>
<td>(.0894047)</td>
<td>(.0894047)</td>
</tr>
<tr>
<td>% Divorced</td>
<td>-.0243071</td>
<td>-.0044211</td>
<td>.0481246</td>
</tr>
<tr>
<td></td>
<td>(.0396308)</td>
<td>(.0481246)</td>
<td>(.0481246)</td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>-.1457597</td>
<td>(.0681647)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0681647)</td>
<td>(.0681647)</td>
</tr>
<tr>
<td>% Low Income</td>
<td>-.022023</td>
<td>(.03593)</td>
<td>(.03593)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.03593)</td>
<td>(.03593)</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td>.0520612</td>
<td>(.0293119)</td>
<td>(.0293119)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0293119)</td>
<td>(.0293119)</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>-.1195737*</td>
<td>(.0424556)</td>
<td>(.0424556)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0424556)</td>
<td>(.0424556)</td>
</tr>
<tr>
<td>% University Grads</td>
<td>.045312</td>
<td>(.0522229)</td>
<td>(.0522229)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0522229)</td>
<td>(.0522229)</td>
</tr>
<tr>
<td>R-Sq (Within-Unit)</td>
<td>.4832</td>
<td>.5048</td>
<td>.5755</td>
</tr>
<tr>
<td>Corr (u, XB)</td>
<td>-.6751</td>
<td>-.7085</td>
<td>-.7621</td>
</tr>
<tr>
<td>Total # of Observations (CMA*Year)</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Total # of CMAs</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

*p< .05

When restricting the sample to the ten largest CMAs, the association between changes in the immigration index and changes in homicide rates is negative and significant (b=-.628596, p<.05). Birthplace heterogeneity (b=-14.97937, p<.05) is also negatively and significantly associated with changes in homicide rates. The coefficient for recent immigrants is not significant.
With the addition of demographic controls in model 2, both the immigration index (b=-.8392807, p<.05) and birthplace heterogeneity (b=-15.30524, p<.05) remain negatively and significantly associated with changes in homicide rates. None of the demographic variables are significantly associated with changes in homicide rates.

The third model added socioeconomic characteristics of CMAs to the analyses. The only socioeconomic variable significantly associated with changes in homicide rates is the percent of non-movers (b=-1195737, p<.05). Increases in the proportion of non-movers are associated with decreases in homicide rates. None of the other socioeconomic variables and demographic variables is significantly associated with changes in homicide rates. In the final model, overall immigration, as represented by the immigration index (b=-.676224, p<.05), remains significantly and negatively associated with changes in homicide rates. In addition, birthplace heterogeneity (b=-18.30735, p<.05) also remains significantly and negatively related to changes in homicide rates in the full model. Over and above the demographic and socioeconomic variables included in the model, CMAs that experienced increases in overall immigration and birthplace heterogeneity also experienced overall decreases in homicide rates over time.

These results are consistent with the possibility that the failure to find a relationship between immigration and homicide rates in the larger sample of CMAs is due to instability in homicide rates in smaller CMAs. However, the possibility that the negative relationship between immigration and homicide truly only holds in larger CMAs cannot be ruled out. If, however, the negative relationships observed between immigration and total crime rates, property crime rates, and violent crime rates for the 32 CMA sample also hold in analyses of the 10 CMA sample, this would provide greater support for the measurement error hypothesis. Therefore, I re-ran the models for the other dependent variables using the 10 CMA sample (results shown in the Appendix). For each dependent variable, the results
from the 10 CMA sample showed essentially similar results as those for the 32 CMA sample. The robustness of this relationship provides support for the possibility that instability in homicide rates in smaller CMAs is responsible for the failure to observe a relationship between immigration and homicide rates.

5.7 Discussion

This chapter presented findings from fixed effects regression models to examine the relationships between changes in immigration and changes in the rates of total crime, property crime, violent crime, and homicide within Canadian CMAs for the period 1976-2011. The findings are summarized in Table 5.7 below.

Table 5.7: Summary of CMA-Level Findings

<table>
<thead>
<tr>
<th></th>
<th>Total Crime Rates</th>
<th>Property Crime Rates</th>
<th>Violent Crime Rates</th>
<th>Homicide Rates (10 CMAs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immigration index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>-</td>
<td>ns</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Recent immigration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>+</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>ns</td>
<td>ns</td>
<td>+</td>
<td>ns</td>
</tr>
<tr>
<td><strong>Birthplace heterogeneity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>+</td>
<td>+</td>
<td>ns</td>
<td>-</td>
</tr>
<tr>
<td>Total population</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>ns</td>
</tr>
<tr>
<td>Population density</td>
<td>+</td>
<td>+</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Males 15-29</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Divorced</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Labour Force participation Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Low income</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>ns</td>
</tr>
<tr>
<td>% Home ownership</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Non-movers</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>-</td>
</tr>
<tr>
<td>% University Grads</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

ns= not significant
- = negative and significant
+ = positive and significant
These findings show that overall immigration, as measured by the immigration index, is negatively associated with changes in the rates of different types of crime. At the bivariate level\textsuperscript{44}, the immigration index is negatively and significantly associated with changes in all crime rates. In the full multivariate models, the immigration index is still negatively and significantly associated with changes in crime rates except for property crime rates, when controlling for demographic and socioeconomic characteristics of CMAs. In the case of property crime rates, the coefficient for the immigration index is non-significant. This finding is consistent with the research from US cities that immigration is either not significantly associated or negatively associated with crime rates, as noted in Chapter 3. Recall that most of the US studies focus on homicide and violent crimes in the research on immigration and crime. This chapter shows this to be the case as well in Canadian CMAs for rates of violent crime and homicide. However, this chapter also adds to the findings from US cities by showing this negative relationship is not limited to just homicide and violent crimes, but also applies to rates of total crime and property crimes. In addition, these overall findings are consistent with the theoretical perspectives that posit a negative relationship between immigration and crime.

A negative relationship could exist because increases in overall immigration are associated with decreases in crime rates but it could also be because decreases in overall immigration are associated with increases in crime rates. As noted in Chapter 3, the research on immigration and crime has been done mostly in areas or during periods when immigration increased. Therefore, the negative association between immigration and crime only applies to the context of increasing

\textsuperscript{44} Bivariate, in this instance, does not refer to bivariate correlations. As noted earlier in this chapter and in Chapter 4, bivariate correlations are not the most appropriate way to understand these data. Instead, it refers to fixed effects models estimate with only the immigration index measure as the sole predictor for the dependent variable.
immigration. However, in Canada, as noted in Chapter 2, immigration increased in most CMAs during this period but some CMAs experienced decreases in immigration.

In order to assess whether the negative relationship is symmetrical, I plotted changes in overall immigration and changes in crime rates for CMAs that experienced overall decreases in immigration for the period 1976-2011. For example, figure 5.8 below shows the changes in immigration and changes in the violent crime rate for Regina, one of the CMAs that experienced decreases in immigration during this time period.

**Figure 5.1 Immigration and Violent Crime Rate in Regina, 1976-2011**

![Graph showing changes in immigration and violent crime rate in Regina, 1976-2011.](image)

Figure 5.1 shows a general decrease in overall immigration and a general increase in the violent crime rate for the period in Regina. However, as immigration increased towards the end of the time period, violent crime rates also decreased. The other CMAs that experienced decreases in immigration, e.g., Winnipeg, Saskatoon, Sudbury, and Thunder Bay, also follow similar patterns. In
this way, this CMA-level analysis lends support to both possibilities for a negative relationship between immigration crime. The negative relationship is not only because increases in immigration are associated with decreases in crime, as is the case in most CMAs, but also because of decreases in immigration are associated with increases in crime.

These CMA-level analyses also included two other measures of immigration. These measures of immigration yielded less consistent findings than the overall measure of immigration. As seen in Table 5.7, changes in the proportion of recent immigrants are not significantly associated with changes in the rates of total crime, property crime, and homicide. They are, however, positively and significantly associated with the violent crime rate. Birthplace heterogeneity is negatively associated with changes in the rates of total crime, property crime, and homicide rates at the bivariate level. In the full multivariate models, birthplace heterogeneity is positively and significantly associated with changes in the rates of total crime and property crime, but negatively and significantly associated with changes in homicide rates. For violent crime rates, birthplace heterogeneity is positively and significantly associated with changes in violent crime rates at the bivariate level but not significantly associated with changes in violent crime rates in the full multivariate model.

In terms of other covariates, there were some consistent findings across the rates of different types of crime. For rates of total crime, property crime, and violent crime, increases in the total population are positively and significantly associated with increases in crime rates. Also, the proportion of the population living under the low income mark is also positively and significantly associated with changes in crime rates. This relationship is predicted by a number of theoretical

\footnote{It is odd that the sign of the coefficient for birthplace heterogeneity changed from being negative to being positive. Sometimes, this could be an indication of multicollinearity. However, I have ruled this out through multicollinearity diagnostic tests. The VIF values were under 10. It could be due to suppression effects when predictors are added to the model. Another possibility is that the coefficients could vary by chance alone. It could be due to chance because this happened only in the models for the total crime rates and property crime rates for the CMAs and property crimes make up a majority of total crime rates. As will be shown in Chapter 6, this did not occur with any of the models for the province-level analyses.}
perspectives and is consistent with numerous studies that have found a positive relationship between poverty and crime at the aggregate level (Kovandzic, Vieratis, and Yiesley, 1998). A somewhat anomalous finding is the consistency of the positive and significant association between the labour force participation rate and rates of total crime, property crime, and violent crime, as seen in Table 5.7. Labour force participation has been hypothesized to be negatively associated with crime rates by some scholars (e.g., Crutchfield and Pitchford, 1997; Chiricos, 1987). However, it could also be the case that increases in the labour force participation rate mean greater proportions of the population are out in public, not at home, with greater opportunities for victimization, which may translate into higher crime rates (Cohen and Felson, 1979). Coefficients for other covariates such as the proportion of young males, proportion of the population that is divorced, percent home ownership, and percent non-movers are not significant across the models for changes in total crime rates and changes in the rates for other types of crimes. The non-significance of the coefficient for the proportion of the population that is divorced is inconsistent with the predictions of the ‘moral booster shot’ perspective. Recall that this perspective predicted that to the extent that immigrants have more pro-nuptial orientations than native-borns, increases in immigration should increase social control and protect against crime. The non-significance of the measures of residential instability, i.e., percent home ownership and percent non-movers, is inconsistent with the predictions of social disorganization theories.

Overall, the findings from this chapter are consistent with the overall predictions of the three theoretical perspectives that posit a negative association between immigration and crime: the immigrant revitalization thesis, the immigrant enclave thesis, and ‘moral booster shot’ perspectives. However, whether there is support for the mechanisms expected by these perspectives to link immigration and crime is not clear from these analyses. For example, recall that the ‘moral booster
shot’ perspective posits that recent immigration brings in more intact family structures and supervision, which may lower crime rates (Brooks, 2006). However, in these analyses, recent immigration is not significantly related to changes in crime rates in the models (except violent crime, and in the opposite direction than the hypothesis) and the percent divorced measure was also not significantly related to changes in crime rates across all models. For the immigrant revitalization thesis, recent immigration should be positively associated with changes in crime rates, since an influx of immigrants is thought to cause some social disorganization in the short term, with crime-reducing benefits occurring in the long term (Ramey, 2013). However, recent immigration is not significantly related to changes in crime rates across most models. Unfortunately, these analyses cannot address other theoretical mechanisms outlined by the immigrant revitalization thesis such as changes in civic organizations, adaptive social structures, and establishment of ethnically-based community organizations, because measures of these characteristics are not readily available. The inconsistency in the findings for birthplace heterogeneity also makes it difficult to assess the mechanisms for the immigrant enclave thesis.

5.8 Conclusion

The goal of this chapter was to examine the relationship between changes in immigration and changes in crime rates in Canadian CMAs for the time period 1976-2011. This chapter presented findings from fixed-effects regression models which showed that overall increases in immigration were generally associated with decreases in crime rates across different types of crimes. By focusing on cities, this chapter allowed for a more direct comparison with the work on immigration and crime from US cities. The findings from this chapter mirror the negative relationship between immigration and crime from US cities in a very different Canadian context in terms of both immigration and
crime, as discussed in Chapter 2. Furthermore, this chapter also adds to the research on immigration and crime by showing that the negative relationship between immigration and crime exists for other types of crimes apart from homicide and violent crime. Moreover, this chapter also showed that the negative relationship between immigration and crime is symmetrical for Canadian cities for this time period: increases in immigration are associated with decreases in crime rates and decreases in immigration are associated with increases in crime rates. Building on this CMA-level analysis, the next chapter will examine the relationship between changes in immigration and changes in crime rates for Canadian provinces for the time period 1976-2011. Province-level analyses are important in addressing the relationship between immigration and crime in the Canadian context, given the specific role of provinces in Canadian immigrant selection and differing patterns of immigrant settlement across Canadian provinces, as noted in Chapter 2.
Chapter 6: Province-Level Analyses

This chapter reports on the findings from the analysis of the relationship between immigration and crime in the ten Canadian provinces over the period 1976-2011. In Chapter 5, I highlighted the need to examine the relationship between changes in immigration and changes in crime rates at the CMA-level because immigrants do not just immigrate to the nation as a whole but to individual cities. This chapter addresses the need to examine the relationship between immigration and crime in larger units of aggregation, such as provinces.

As noted in the discussion of Canadian immigration policies in Chapter 2, examining the relationship between immigration and crime at the level of provinces is particularly important in the Canadian context. Not only is immigration a concurrent responsibility between the federal government and the provinces in Canada, but there are also individual agreements between provinces and the federal government that highlight the specific concerns, interests, and objectives of each province regarding immigration. Furthermore, with the implementation of Provincial Nominee Programs (PNPs), provinces have an active role in the selection and settlement of immigrants.

The specific concerns and objectives of each province in terms of immigration may give rise to different geographic, demographic, historical, political, social, and/or economic conditions that might shape immigration patterns as well as crime rates. Examining the relationship between changes in immigration and changes in crime rates across a variety of geographical units beyond cities will also help to establish the generalizability and robustness of the findings on the relationship between immigration and crime (Shihadeh and Barranco, 2010; Feldmeyer and Steffensmeier, 2009).

As noted in chapter 3, one of the limitations of the literature is that studies have tended to only examine areas or time periods in which immigration has increased. However, in the Canadian
context, this has not been the case for all provinces, as noted in chapter 2. Only Ontario, British Columbia, and Quebec experienced increases in the proportion of immigrants between 1976 and 2011. In the prairie provinces, immigration declined in the early years of the period and only increased towards the end of the period, roughly around the time when Provincial Nominees Programs were implemented. The Atlantic provinces have been relatively untouched by immigration. Therefore, province-level analyses provide a useful opportunity to examine whether the negative relationship between immigration and crime is robust in contexts in which immigration is not increasing.

6.1 Review of Theoretical Predictions

Most of the theoretical perspectives discussed in Chapter 3 were based on work at smaller levels of aggregation, whether at the city-level or at the neighbourhood-level (e.g., social disorganization theories, the immigrant revitalization thesis, the immigrant enclave thesis, as well as the other perspectives to some extent). However, the predictions made by these theoretical perspectives about the relationship between immigration and crime will be applied to the province-level to examine whether they also apply to larger levels of aggregation.

As reviewed in Chapter 3, there are four theoretical perspectives that posit a positive relationship between changes in immigration and changes in crime rates and three perspectives that posit a negative relationship. Strain and opportunity models, segmented assimilation theories, cultural theories, and social disorganization theories would predict that increases in immigration would be associated with increases in crime rates in provinces and decreases in immigration would be associated with decreases in crime rates in provinces.
The three theoretical perspectives that posit a negative relationship between immigration and crime—the immigrant revitalization thesis, the immigrant enclave thesis, and the ‘moral booster shot’ perspective—would predict that increases in immigration would be associated with decreases in crime rates in provinces and decreases in immigration would be associated with increases in crime rates in provinces.

6.2 Data and Analytic Strategy

As discussed in Chapter 4, I employ the same measures of immigration, crime, and other contextual factors in my provincial-level analysis that I used in the CMA-level analysis. My main immigration measure is an immigration index combining the proportion of the population born outside of Canada and the proportion of the population with a mother tongue other than English or French for each province. As a second measure of immigration, I also included recent immigration, which is the proportion of the immigrant population that had immigrated in the previous ten years of the census. I also include birthplace heterogeneity as another measure of immigration. My dependent variables are: total crime rates, property crime rates, violent crime rates, and homicide rates. For contextual factors, I include four demographic control variables: population, population density, percent of the population who are young males aged 15 to 29, and proportion of the population that is divorced. In addition, I included five socioeconomic control variables: labour force participation rate, percent of the population living below the low income mark, percent home ownership, percent non-movers, and percent of the population who graduated from university.

Similar to the CMA-level analysis, I employed fixed-effects linear regression models in order to examine the longitudinal relationship between changes in immigration and changes in crime rates for provinces. I first ran a baseline model which included only the immigration measures: the
immigration index, recent immigration, and birthplace heterogeneity. I added demographic control variables to the analysis in model 2 and socioeconomic variables in model 3.

6.3 Descriptive Statistics

Table 6.1: Descriptive Statistics (N=80 Province*Years)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Crime Rate</td>
<td>3415.96</td>
<td>14746.04</td>
<td>7571.8524</td>
<td>2685.52119</td>
</tr>
<tr>
<td>Property Crime Rate</td>
<td>2233.05</td>
<td>8656.41</td>
<td>4457.1941</td>
<td>1660.23640</td>
</tr>
<tr>
<td>Violent Crime Rate</td>
<td>366.78</td>
<td>2016.99</td>
<td>965.5561</td>
<td>351.13839</td>
</tr>
<tr>
<td>Homicide Rate</td>
<td>.23</td>
<td>4.19</td>
<td>2.0499</td>
<td>1.00629</td>
</tr>
<tr>
<td>Immigration Index</td>
<td>-1.19299</td>
<td>2.02487</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>7.98</td>
<td>50.71</td>
<td>27.2459</td>
<td>7.98654</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>.74</td>
<td>.98</td>
<td>.8861</td>
<td>.06728</td>
</tr>
<tr>
<td>Population</td>
<td>111640</td>
<td>12851821</td>
<td>2767771.15</td>
<td>3259053.15</td>
</tr>
<tr>
<td>Population Density</td>
<td>1.4</td>
<td>24.7</td>
<td>7.9034</td>
<td>6.96321</td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>8.57</td>
<td>16.79</td>
<td>11.5361</td>
<td>1.82415</td>
</tr>
<tr>
<td>% Divorced</td>
<td>.23</td>
<td>10.6</td>
<td>4.5214</td>
<td>2.32805</td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td>46.3</td>
<td>74</td>
<td>64.2350</td>
<td>5.16275</td>
</tr>
<tr>
<td>% Low Income</td>
<td>10</td>
<td>37.9</td>
<td>16.5713</td>
<td>4.72044</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td>47.23</td>
<td>80.65</td>
<td>69.0627</td>
<td>6.50670</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>40.01</td>
<td>73.35</td>
<td>59.8234</td>
<td>7.59135</td>
</tr>
<tr>
<td>% University Graduates</td>
<td>2.1</td>
<td>23.37</td>
<td>11.0594</td>
<td>4.84107</td>
</tr>
</tbody>
</table>

Similar to the descriptive statistics in Chapter 5 for CMA-level analyses, there is considerable variation over time among the Canadian provinces in various dimensions including immigration, crime rates, and other demographic and socioeconomic characteristics. For example, total crime rates range from a low of 3415.96 offences per 100 000 in Ontario in 2011 to a high of 14746.04 per 100 000 in British Columbia in 1991. The variation in violent crime rates is even more striking with the lowest rate of 366.78 violent crimes per 100 000 in Prince Edward Island in 1981 to the highest rate of 2016.99 violent crimes per 100 000 in Saskatchewan in 2006. Similarly, there is considerable
range across CMAs and over time in both the concentration of immigrants and proportion of recent immigrants. For example, there was only 7.98% recent immigrants (percent of immigrants that immigrated in the last ten years) in Saskatchewan in 1976 versus 50.71% recent immigrants for Saskatchewan in 2011. Because the unit of observation for the descriptive statistics is a province*year, the range in each variable can represent variation over time, among provinces, or both. As noted in Chapter 5, for this reason, interpreting the meaning of correlations between variables is not straightforward. In addition, the assumption of independence of observations is not met, because there are repeated measures over time within each province. As a consequence, I do not present a correlation matrix for the independent and dependent variables here, but do include one in the appendix.
6.4 Results

Total Crime Rates

Table 6.2: Fixed Effects (Within-Province) Linear Regression Models Predicting Total Crime Rates, 1976-2011, for Provinces

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-4686.586*</td>
<td>-4599.656*</td>
<td>-1838.158*</td>
</tr>
<tr>
<td></td>
<td>(257.6064)</td>
<td>(499.2758)</td>
<td>(270.6409)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-34.80335</td>
<td>-40.4668*</td>
<td>6.072616</td>
</tr>
<tr>
<td></td>
<td>(18.57599)</td>
<td>(17.12368)</td>
<td>(14.5298)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-475.5251</td>
<td>9881.693</td>
<td>-11961.63</td>
</tr>
<tr>
<td></td>
<td>(4931.382)</td>
<td>(13931.87)</td>
<td>(9885.893)</td>
</tr>
<tr>
<td>Population</td>
<td>.0000755</td>
<td>.0008038*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0003207)</td>
<td>(.0002547)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>-7.077984</td>
<td>65.74417</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(441.9455)</td>
<td>(226.9454)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>322.7381</td>
<td>250.2163*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(152.6802)</td>
<td>(94.4611)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>107.6531</td>
<td>-61.69203</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(119.7359)</td>
<td>(77.21476)</td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>421.7129*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(106.6091)</td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>153.6937*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(38.82645)</td>
<td></td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>-192.2096*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(57.15215)</td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>-156.0598*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(58.58546)</td>
<td></td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-273.0299*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(80.05997)</td>
<td></td>
</tr>
</tbody>
</table>

R-Sq (Within-Unit)$^{47}$  .5059  .5276  .8405
Corr (u, XB)$^{48}$  -.9426  -.9241  -.7217
Total # of Observations (Province*Year)  80  80  80
Total # of Provinces  10  10  10

*p < .05

$^{46}$This table, as well as the following tables, report unstandardized coefficients with the standard errors in parentheses.

$^{47}$Within-unit R-squared refers to the amount of within-unit (i.e., change in crime rates over time in provinces) variance that is accounted for by the model.

$^{48}$Corr (u, XB) shows whether the use of fixed-effects models is appropriate in the case. High absolute values, over .5, suggest the model is a poor candidate for random-effects models and that fixed-effects models are more appropriate.
Table 6.1 presents the findings from the fixed-effects regression models predicting total crime rates for provinces for the period 1976-2011. The first column in Table 6.2 is the baseline model in which changes in total crime rates are regressed on changes in immigration. The statistically significant negative relationship between changes in the primary immigration index measure \( b = -4684.586, p < .05 \) and changes in total crime rates indicates that provinces experiencing increases in overall immigration also experienced decreases in total crime rates. Changes in the proportion of recent immigrants and birthplace heterogeneity are not significantly associated with changes in total crime rates.

In the second model of Table 6.2, I entered demographic variables into the model. Controlling for population, population density, percent young males, percent divorced, the coefficient for the immigration index \( b = -4599.656, p < .05 \) remains negative and significant. In addition, proportion of recent immigrants \( b = -40.4668, p < .05 \) is also negatively and significantly associated with changes in total crime rates. None of the demographic variables are significantly associated with changes in total crime rates in the second model.

The third model introduces socioeconomic characteristics of provinces. All of the socioeconomic characteristics entered are significantly associated with total crime rates. Changes in labour force participation rate \( b = 421.7129, p < .05 \) and the proportion of the population living below the low income mark \( b = 153.6937, p < .05 \) are positively and significantly associated with changes in total crime rates. Changes in percent homeownership \( b = -192.2096, p < .05 \), percent non-movers \( b = -156.0598, p < .05 \), and percent university graduates \( b = -273.0299, p < .05 \) are all negatively and significantly associated with changes in total crime rates. In addition, the proportion of young males in the population \( b = 250.2163, p < .05 \) is also positively and significantly associated with changes in total crime rates in the third model. Controlling for demographic and socioeconomic characteristics,
the immigration index (b=-1838.158, p<.05) is still negatively and significantly associated with changes total crime rates. The coefficients for the other two measures of immigration are not significant in the full model.

Throughout the different models in this analysis as well as for the following analyses, the within-unit R-squared values are quite high. For example, the full model explains 84.05% of the within-unit variance, i.e., changes in total crime rates within a province over time. As noted in Chapter 5, this is not unusual for fixed effects regression models. Within-unit R-squared values for fixed effects models are always considerably larger than for regular ordinary least squares (OLS) models, even with the same parameter specifications, because the same unit is being measured repeatedly at multiple time periods (Rabe-Hesketh and Skrondal, 2005). The corr (u, XB) values over .5 for all the models confirm that the use of fixed-effects models was appropriate over random-effects models.
Property Crime Rates

Table 6.3 presents the findings from the fixed-effects regression models predicting property crime rates for provinces for the period 1976-2011.

Table 6.3: Fixed Effects (Within-Province) Linear Regression Models Predicting Property Crime Rates, 1976-2011, for Provinces

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-2365.375*</td>
<td>-1747.058*</td>
<td>-261.8134</td>
</tr>
<tr>
<td></td>
<td>(320.1032)</td>
<td>(275.8696)</td>
<td>(228.291)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-24.9862</td>
<td>-31.39381</td>
<td>6.277634</td>
</tr>
<tr>
<td></td>
<td>(21.65449)</td>
<td>(19.29618)</td>
<td>(10.91148)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-1445.122</td>
<td>13122.78</td>
<td>8600.475</td>
</tr>
<tr>
<td></td>
<td>(2540.487)</td>
<td>(8494.225)</td>
<td>(5599.184)</td>
</tr>
<tr>
<td>Population</td>
<td>0.000249</td>
<td>0.001151</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0001771)</td>
<td>(.0001482)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>14.06401</td>
<td>176.3712</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(229.9673)</td>
<td>(106.7313)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>406.2447*</td>
<td>31.64513</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(110.0502)</td>
<td>(52.11853)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>136.0937</td>
<td>92.98054</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(63.08331)</td>
<td>(47.17828)</td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td>160.3832*</td>
<td></td>
<td>(52.69098)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>65.74628*</td>
<td>(25.33712)</td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>-77.7114*</td>
<td>(32.72352)</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>-68.30572*</td>
<td>(27.87653)</td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-274.3068*</td>
<td>(49.80501)</td>
</tr>
<tr>
<td>R-Sq (Within-Unit)</td>
<td>.4221</td>
<td>.5420</td>
<td>.8615</td>
</tr>
<tr>
<td>Corr (u, XB)</td>
<td>-.9421</td>
<td>-.8447</td>
<td>-.6051</td>
</tr>
<tr>
<td>Total # of Observations (Province*Year)</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Total # of Provinces</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

*p < .05

The first column of Table 6.3 shows the baseline model with just immigration measures included. Consistent with the analysis of total crime rates, the immigration index (b = -.2365.375,
p<.05) is significantly and negatively associated with changes in property crime rates. Changes in recent immigration and birthplace heterogeneity are not significantly associated with changes in property crime rates for provinces.

After controlling for demographic variables in model 2, the immigration index (b= -1747.058, p<.05) remains significantly and negatively associated with changes in property crime rates. No other variables are significantly associated with changes in crime rates except for change in percent young males in the population (b= 406.2447, p<.05). Increases in percent young males in the population are positively and significantly associated with changes in property crime rates.

In model 3, I incorporated socioeconomic variables into the regression model. Similar to the findings for total crime rates, all of the socioeconomic characteristics are significantly associated with changes in property crime rates. Changes in the labour force participation rate (b=421.7129, p<.05) and the proportion of the population living below the low income mark (b=65.74628, p<.05) are positively and significantly associated with changes in total crime rates. Changes in percent homeownership (b=77.7114, p<.05), percent non-movers (b=68.30572, p<.05), and percent university graduates (b=274.3068, p<.05) are all negatively and significantly associated with changes in property crime rates. After controlling for socioeconomic characteristics, none of the coefficients for the other variables were significant, including the coefficient for the overall immigration index measure.

**Violent Crime Rates**

Table 6.4 presents the findings from the fixed-effects regression models predicting violent crime rates for provinces for the period 1976-2011. Given the focus on violent crime rates in the
literature, as noted in Chapter 3, this analysis tests the robustness of the relationship between immigration and violent crime rates at a different level of aggregation, i.e., at the level of provinces.

Table 6.4: Fixed Effects (Within-Province) Linear Regression Models Predicting Violent Crime Rates, 1976-2011, for Provinces

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-433.4181*</td>
<td>-550.2046*</td>
<td>-36.9627*</td>
</tr>
<tr>
<td></td>
<td>(94.17979)</td>
<td>(139.2934)</td>
<td>(116.0069)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>4.240049</td>
<td>4.688376</td>
<td>.882001</td>
</tr>
<tr>
<td></td>
<td>(4.118763)</td>
<td>(3.048089)</td>
<td>(2.513146)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>5563.185*</td>
<td>367.6653</td>
<td>-2615.381</td>
</tr>
<tr>
<td></td>
<td>(503.9035)</td>
<td>(1632.047)</td>
<td>(1265.696)</td>
</tr>
<tr>
<td>Population</td>
<td>.0000305</td>
<td>.000026</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0000316)</td>
<td>(.0000488)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>-15.65738</td>
<td>-46.63349</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(47.0815)</td>
<td>(35.87887)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>-45.98989</td>
<td>-20.50541</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(35.7162)</td>
<td>(29.70198)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>63.08447*</td>
<td>55.36028</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(27.5475)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>22.95465</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11.83119)</td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td></td>
<td>19.49361</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(12.04227)</td>
<td></td>
</tr>
<tr>
<td>% Home Ownership</td>
<td></td>
<td>-15.60452</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(8.836536)</td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td></td>
<td>-7.23729</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(14.51522)</td>
<td></td>
</tr>
<tr>
<td>% University Grads</td>
<td></td>
<td>-3.31954*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(16.38757)</td>
<td></td>
</tr>
<tr>
<td>R-Sq (Within-Unit)</td>
<td>.5396</td>
<td>.7207</td>
<td>.7695</td>
</tr>
<tr>
<td>Corr (u, XB)</td>
<td>-.6735</td>
<td>-.8124</td>
<td>-.7114</td>
</tr>
<tr>
<td>Total # of Observations (Province*Year)</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Total # of Provinces</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

*p< .05

The first column of Table 6.4 shows the baseline model with just the immigration measures. Changes in the proportion of recent immigrants are not significantly associated with changes in violent crime rates. However, changes in birthplace heterogeneity (b=5563.185, p<.05) are positively
and significantly associated with changes in violent crime rates. The immigration index (b=-433.4181, p<.05) is negatively and significantly associated with changes in violent crime rates.

I added demographic controls in model 2, shown in the second column of Table 6.4. None of the demographic variables are significantly related to changes in violent crime rates in this model, with the exception of the proportion of the population that is divorced (b=63.08447, p<.05), which is positively associated with changes in violent crime rates. Controlling for demographic variables, the immigration index (b=-550.2046, p<.05) is negatively and significantly associated with changes in violent crime rates. The coefficients for the other two immigration measures are not significant in this model.

The third model controls for socioeconomic variables. In this full model, none of the control variables are significantly associated with changes in violent crime rates, except for percent university graduates (b=-43.31954, p<.05). Controlling for demographic and socioeconomic characteristics of provinces, the immigration index (b=-536.9627, p<.05) is negatively and significantly associated with changes in violent crimes in the full model. Changes in the proportion of recent immigrants and birthplace heterogeneity are not significantly associated with changes in violent crime rates for provinces.

The finding that provinces that experienced increases in immigration also experienced decreases in violent crime rates mirrors the findings on violent crime rates at the level of cities from US longitudinal studies. Finding a similar result at a different level of aggregation, i.e., at the level of provinces, in a different country, helps to lend more support to the robustness of the findings on the relationship between immigration and crime.
Homicide Rates

Table 6.5 presents the findings from the fixed-effects regression models predicting homicide rates for provinces for the period 1976-2011.

Table 6.5: Fixed Effects (Within-Province) Linear Regression Models Predicting Homicide Rates, 1976-2011, for Provinces

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-.4520989</td>
<td>-.153005</td>
<td>-.238016</td>
</tr>
<tr>
<td></td>
<td>(.3831794)</td>
<td>(.4168556)</td>
<td>(.3571687)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>-.0043</td>
<td>-.0040918</td>
<td>-.0106333</td>
</tr>
<tr>
<td></td>
<td>(.0059197)</td>
<td>(.00702)</td>
<td>(.0082392)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-6.393212*</td>
<td>-5.31934</td>
<td>-7.75957</td>
</tr>
<tr>
<td></td>
<td>(2.480127)</td>
<td>(2.91297)</td>
<td>(3.500562)</td>
</tr>
<tr>
<td>Population</td>
<td>-.00000007</td>
<td>.00000003</td>
<td>.00000002</td>
</tr>
<tr>
<td></td>
<td>(.0000001)</td>
<td>(.0000002)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>.2431602</td>
<td>.2248612</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.1222327)</td>
<td>(.1252539)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>.0238547</td>
<td>-.00085356</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0744462)</td>
<td>(.0700226)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>.0232159</td>
<td>-.0085207</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.0573187)</td>
<td>(.048253)</td>
<td></td>
</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td>-.0206227</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.0276334)</td>
<td></td>
</tr>
<tr>
<td>% Low Income</td>
<td>-.0213009</td>
<td></td>
<td>-.0213975</td>
</tr>
<tr>
<td></td>
<td>(.0213975)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Home Ownership</td>
<td>-.0496007</td>
<td></td>
<td>-.0496007</td>
</tr>
<tr>
<td></td>
<td>(.0324687)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>-.0638065</td>
<td></td>
<td>-.0638065</td>
</tr>
<tr>
<td></td>
<td>(.0290556)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% University Grads</td>
<td>.0704136</td>
<td></td>
<td>.0704136</td>
</tr>
<tr>
<td></td>
<td>(.0595638)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-Sq (Within-Unit)         | .2873         | .3617         | .4510         |
Corr (u, XB)               | -.8609        | -.9659        | -.9430        |
Total # of Observations (Province*Year) | 80           | 80            | 80            |
Total # of Provinces       | 10            | 10            | 10            |

*p < .05
The first column of Table 6.5 shows that birthplace heterogeneity (b = -6.393212, p < .05) is negatively and significantly associated with changes in homicide rates for the provinces for the period 1976-2011. Neither the immigration index nor recent immigration is significantly associated with changes in homicide rates.

With the addition of demographic variables in model 2 and socioeconomic variables in model 3, none of the immigration measures are significantly associated with changes in homicide rates. In addition, none of the demographic and socioeconomic variables are significantly associated with changes in homicide rates.

The failure to find a significant relationship between immigration and homicide rates may be due to the fact that homicide rates across the provinces at every time point are fairly low. For all provinces at every time point, the highest homicide rate does not exceed 5 per 100,000. Similar to the issue noted in Chapter 5 regarding the analysis of homicide rates at the CMA level, with such small numbers, random fluctuations may prevent the detection of a significant relationship. Unlike the analysis of the ten largest CMAs in Chapter 5,49 there is no option to run a check on the measurement error hypothesis. Therefore, the possibility that the negative relationship between immigration and homicide holds cannot be ruled out.

6.5 Discussion

This chapter presented findings from fixed effects regression models to examine the relationship between changes in immigration and changes in the rates of total crime, property crime,

49 In the CMA-level analysis of homicide rates, I re-ran the analysis for homicide as well as the other dependent variables using the ten largest CMAs in which homicide rates are more stable. This analysis did find a significant negative relationship between changes in immigration and changes in homicide rates, supporting the possibility that instability in homicide rates in smaller CMAs is responsible for the failure to observe a relationship between immigration and homicide rates.
violent crime, and homicide within Canadian provinces for the period 1976-2011. The findings are summarized in Table 6.6 below.

Table 6.6: Summary of Province-Level Findings

<table>
<thead>
<tr>
<th></th>
<th>Total Crime Rates</th>
<th>Property Crime Rates</th>
<th>Violent Crime Rates</th>
<th>Homicide Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immigration index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>-</td>
<td>ns</td>
<td>-</td>
<td>ns</td>
</tr>
<tr>
<td><strong>Recent immigration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>-</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td><strong>Birthplace heterogeneity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivariate</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Full multivariate</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Total population</td>
<td>+</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Population density</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Males 15-29</td>
<td>+</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Divorced</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Labour Force participation Rate</td>
<td>+</td>
<td>+</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Low income</td>
<td>+</td>
<td>+</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Home ownership</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Non-movers</td>
<td>-</td>
<td>-</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% University Grads</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>ns</td>
</tr>
</tbody>
</table>

ns= not significant
- = negative and significant
+ = positive and significant

These findings show that overall immigration, as represented by the immigration index, is not significantly associated with property crime rates and homicide rates but negatively and significantly associated with rates of total crimes and violent crime. These province-level analyses also included two other measures of immigration. These are not significantly associated with crime rates in the full multivariate models.

These overall findings are not consistent with theoretical perspectives that posit a positive relationship between immigration and crime. Increases in immigration are not significantly and
positively related to increases in crime rates. In fact, there is either no significant relationship between immigration and crime, as in the case of property crime rates and homicide rates for provinces. Where there is a significant relationship, i.e., for total crime rates and violent crime rates, increases in immigration are associated with decreases in crime rates. This is also consistent with the research from US cities that immigration is either not significantly associated or negatively associated with crime rates when there is a relationship, as noted in Chapter 3.

Recall that most of the US studies focus on cities in the research on immigration and crime. This chapter showed this to be the case as well in larger units of aggregation, i.e., at the level of Canadian provinces. The findings at the province-level also echo the CMA-level findings, which lends more support to the robustness of the negative relationship between immigration and crime. Recall that one of the limitations of the literature, noted in Chapter 3, is that studies have tended to only examine areas or time periods in which immigration has increased. However, only three provinces (Ontario, British Columbia, and Quebec) experienced increases in immigration for this period, as noted in Chapter 2. The findings from province-level analyses for total crime rates and violent crime rates show that the negative relationship between immigration and crime also holds in contexts in which immigration was not always increasing.

In terms of other covariates, demographic characteristics of provinces were not consistently significant across the models. However, socioeconomic characteristics were consistently significant across total and property crime rates. Similar to CMA-level findings, the proportion of the population living under the low income mark was also positively and significantly associated with crime rates. Similar to the CMA-level findings, the province-level analyses also showed a positive and significant association between the labour force participation rate and rates of total crime, property crime, and violent crime, as seen in Table 6.6 and in CMA-level findings in Chapter 5. As noted in Chapter 5,
the positive association between increases in the labour force participation rate and crime rates could be because increases in the labour force participation rate means greater proportions of the population are out in public, not at home, with greater opportunities for victimization, which may translate into higher crime rates (Cohen and Felson, 1979).

Consistent with the predictions of social disorganization theories about residential turnover, percent home ownership and percent of the population who have not moved in the previous 5 years, were negatively associated with total and property crime rates. In terms of education, the proportion of the population that are university graduates was negatively and significantly associated with rates of total, property, and violent crimes.

6.6 Conclusion

The goal of this chapter was to examine the relationship between changes in immigration and changes in crime rates in Canadian provinces for the time period 1976-2011. This chapter presented the results from fixed-effects regression models. The findings showed that overall immigration and crime rates are either not significantly related in Canadian provinces or where there is a significant a relation, it is negative. This echoes the findings from the city-level research from the US. Similar findings at the provincial level helps to establish the generalizability and the robustness of the findings on the relationship between immigration and crime. In addition, unlike much of the research from the US, these findings from province-level analyses show that, where there is a negative relationship between immigration and crime, it can also hold in contexts in which immigration was not always increasing. Moreover, to the extent that provinces have an active role in immigrant selection and have favoured particular types of immigrants, a replication of the CMA findings across
provinces lends lend further support to the conclusion that the result is one related to immigrants *per se*. 
In examining the macro-level relationship between immigration and crime in Canada at the provincial and census metropolitan area (CMA) levels for the period 1976-2011, this study has yielded findings that are important for understanding how changes in immigration may be associated with changes in crime rates over time. The literature on the macro-level relationship between immigration and crime has consistently shown that, controlling for other factors, immigration is either not associated with crime rates or if there is an association, it tends to be a negative one (Lee and Martinez, 2009; Sampson, 2008;). This forms what Lee and Martinez (2009) termed the ‘emerging scholarly consensus’ that is quickly becoming the ‘new conventional wisdom’ (Lee and Martinez, 2009). To date, however, the bulk of this literature is grounded in the American context. Furthermore, much of this research has been conducted using a cross-sectional design, which prevents the examination of the relationship between immigration and crime in terms of change over time. The findings outlined in this dissertation build on the ‘emerging scholarly consensus’ by examining the relationship between immigration and crime over time in Canadian cities and provinces. My results are also consistent with the ‘emerging scholarly consensus’ that changes in immigration are negatively associated with changes in crime rates in Canadian cities and provinces.

This chapter is organized as follows. First, I outline and summarize the main findings of the preceding chapters, discussing how my results both confirmed and extended the literature on the macro-level relationship between immigration and crime. Second, I review the limitations of my study. Finally, I outline recommendations for addressing the limitations in future research as well as additional avenues for future research.
7.1 Summary of Findings

The analyses presented in chapters 5 and 6 demonstrated that, similar to the findings from the United States, changes in immigration are either not associated with changes in crime rates or negatively associated in Canadian census metropolitan areas (CMAs) and provinces. Even though there are important differences between the United States and Canada in terms of the patterns of crime and in the histories and characteristics of immigration, as reviewed in Chapter 2, the relationship between changes in immigration and the changes in crime rates at both levels of aggregation, i.e., for CMAs and provinces, seems to be consistent with the negative association found in the United States.

My findings lend support to the generalizability and robustness of the findings from studies of US cities on the relationship between immigration and crime. The CMA-level findings are a more direct comparison with the city-level studies from the US. Even though the contexts of American cities and Canadian cities are different, my analyses showed a similar finding. The province-level findings showed that the negative relationship between immigration and crime can also extend to larger units of aggregation for total and violent crime rates. Furthermore, the non-significant or negative relationship at the CMA- and province-levels was supported even when immigration decreased in certain CMAs and provinces during this time period. This adds to the literature, since most studies have found this negative relationship between immigration and crime in areas and time periods when immigration was increasing. My findings also lend support to the generalizability of this relationship between immigration and crime across different types of crime. Most of the research has focused on homicide rates, my research has shown that this relationship can also extend to rates of violent crimes, property crimes, and total crimes.

I built on the existing literature by measuring different aspects of immigration, not just the proportion of immigrants. My overall measure of immigration is an index measure combining the
proportion of the foreign-born population and the proportion of the population with a mother tongue other than English or French. The measure of those who speak non-official languages is so highly correlated with the immigrant population that the 2011 Census refers to these as “immigrant languages”, defined as languages other than English, French and Aboriginal languages whose presence in Canada is originally due to immigration (Statistics Canada, 2011). This is similar to US studies that include the proportion of Spanish-speaking residents in the immigration index measure (e.g., Ousey and Kubrin, 2009). However, my measure is more closely related to immigration, since the presence of these mother tongues is because of immigration whereas many non-immigrants in the US speak Spanish as well.

In addition, I also included measures of recent immigration, which has been noted in the literature as an aspect of immigration that is distinct from the immigrant concentration in a given area (e.g., Chavez and Griffiths, 2009). Furthermore, I also included measures of birthplace heterogeneity, which captures the extent of heterogeneity of immigrant source countries and is conceptually different from the proportion of immigrants (Logan, Zhang, and Alba, 2002).

7.2 Limitations

The findings of this study are an important step toward understanding the relationship between immigration and crime outside of the American context. These findings prompt additional questions, and also point to limitations in addressing those questions in this study and new directions for research. In this section, I outline and explain the limitations of this study. In the following section, I offer recommendations for future research aimed at addressing these limitations as well as new avenues for research.
This study adds to the current knowledge on whether immigration is associated with crime by employing a longitudinal analytical design, examining this relationship outside of the U.S. context, using different levels of geographical aggregation, and addressing different types of crime, not just homicide. However, this study cannot provide an understanding of why this negative relationship exists or how this process may operate, given the limitations in the data.

There are a variety of reasons why this negative relationship may exist as well a variety of mechanisms through which this relationship may manifest. One reason for this relationship could be a purely compositional effect: such an effect would be consistent with individual-level studies on the relationship between immigration and crime that have found immigrants to be less prone to criminal offending than native-born populations (e.g., Desmond and Kubrin, 2009; Dinovitzer, Hagan, and Levi, 2009; Morenoff and Astor, 2006; Hagan and Palloni, 1999, Tonry, 1997). If immigrants are less prone to criminal offending, then crime rates should be accordingly lower when there are increases in the immigrant populations. However, this study cannot determine whether the negative relationship between immigration and crime found in this study is due to this compositional effect or if it is an aggregate-level contextual effect due to alterations in social conditions because of immigration (South and Messner, 2000).

The negative relationship found in this study is consistent with a contextual effect. Moreover, a direct relationship between immigrants in Canada and levels of immigrant offending cannot be assumed based on the analyses presented here. The data that were available for this analysis do not indicate whether the victims or offenders in criminal incidents are immigrant or native-born. I was careful to frame and interpret my analyses such that I limited inferences about individual-level factors based on aggregate characteristics. This has been an important part of avoiding an ecological fallacy in my interpretations.
In addition to compositional effects, another potential mechanism through which immigration may be associated with lower crime rates is by changing the social structure in the areas in which immigrants may settle. The theoretical perspectives reviewed in Chapter 3, namely the immigrant revitalization thesis and the immigrant enclave thesis, outline different mechanisms for this relationship, such as the formation of new social and civic organizations, adaptive social structures, niche markets, and co-ethnic ties in immigrant enclaves (Stowell and Martinez, 2007; Martinez, 2000). Based on the availability of the data for this study, I could not measure these aspects of the theoretical perspectives positing a negative relationship between immigration and crime. Therefore, my study cannot test the validity of the different mechanisms suggested by the theoretical perspectives predicting a negative relationship between immigration and crime or evaluate the relative utility of various theoretical perspectives.

Moreover, contextual effects work under the premise that immigration influences crime rates by changing broader social structures and contexts. However, it is also possible that these broader social contexts may be influencing immigration rates themselves. In other words, these social conditions may influence whether or not immigrants self-select into metropolitan areas or provinces with lower rates of crime. While immigrants to Canada may not have information about crime rates in different areas or make conscious settlement decisions based on crime rates, they are likely to have information on the locations of family and friends who already live in Canada, other co-ethnic groups concentrated in particular areas, economic conditions, labour market conditions, and a whole host of other factors (Murdie, 2008). These factors may influence their decision about where to settle as well as crime rates in those areas (Reid, Weiss, Adelman, and Jaret, 2005). As such, although this study found a negative association between immigration and crime, it cannot answer whether or to what extent immigrants select themselves into cities and provinces with lower crime rates.
There are also limitations for my study in terms of generalizability. Although my study is consistent with U.S. studies that have found a negative relationship between immigration and crime in a context that is very different in terms of both immigration and crime from the United States, this negative association should not be generalized to other countries and settings. Each country has different patterns of and trends in crime, immigration policies, immigrant settlement, racial and ethnic relations, as well as other important socioeconomic and political differences. Therefore, these factors should be taken into consideration for each country in the study of the relationship between immigration and crime and the negative relationship found in this study should not generalized to other contexts.

Often times in the literature, the negative relationship between immigration and crime is automatically taken to mean that increases in immigration are associated with decreases in crime rates. However, the negative relationship could also be due to decreases in immigration being associated with increases in crime rates, as observed for some CMAs and provinces. This study lends support to the symmetrical nature of the negative relationship between immigration and crime.

7.3 Recommendations for Future Research

Based on the limitations outlined in the previous section, in this section I outline recommendations for future research that may help to address some of these concerns as well as additional trajectories of research in the future. One of the key questions raised by the findings and limitations of this study is why the negative relationship between immigration and crime is symmetrical—in other words, increases in immigration are associated with decreases in crime, and decreases in immigration are associated with increases in crime. On the one hand, future research needs to examine why increased immigration is associated with decreased crime rates. In order to do
this, future research needs to be able to compare the utility of the mechanisms outlined by the theoretical perspectives that predict that increased immigration is associated with decreased crime rates. Accordingly, future research needs to incorporate and analyze data on the following aspects: new forms of community institutions and the reinvigoration of local economies as suggested by the immigrant revitalization thesis; the role of collective efficacy fostered by co-ethnic ties and shared goals in immigrant enclaves; clearer definitional and analytic standards as to what constitutes an enclave; and the ways in which immigration may bring in positive cultural values and behavioural norms that may buffer against crime, as suggested by the ‘moral booster shot’ perspectives.

Currently, there is a lack of Canadian data sources on these factors that are readily accessible and available across multiple years and multiple levels of aggregation. For example, some cities provide information on community organizations by type and neighbourhood50, but these data are not readily available for all CMAs across different time periods. This is no trivial task since it involves gathering and organizing data on these characteristics at various levels of aggregation over many years to document changes.

On the other hand, future research also needs to examine why decreased immigration is associated with increased crime rates, as was the case in some CMAs and provinces. There is a dearth of theoretical and empirical work in the literature about this aspect of the negative relationship between immigration and crime. The theoretical perspectives that posit a negative relationship between immigration and crime all work under the premise that increases in immigration will lead to lower crime rates. However, these perspectives do not necessarily address how a decrease in immigration may be associated with higher crime rates. If it is the case that both possibilities may be

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50 For example, Toronto has a Blue Book which provides a directory and description of community services and organizations available in Toronto.
part of the negative relationship between immigration and crime, there needs to be more work done,
both theoretically and empirically, to understand why this is the case.

One way to further understand the negative relationship between immigration and crime, i.e.,
increases in immigration being associated with lower rates of crime and decreases in immigration
being associated with higher rates of crime, would be to examine and compare individual cities and
provinces in more detail, in terms of local social, economic, and political factors that may be related
to immigration and crime. Moreover, this would also be generally useful in furthering the research
on immigration and crime. This is because processes of immigration play out at the local level.

Immigrants do not just immigrate to Canada, they immigrate to particular provinces and cities in
Canada. Furthermore, immigrants are not randomly assigned to Canadian provinces or cities. There
are local factors that influence immigrants to settle in particular provinces and cities and not in others.
This would allow for the examination and comparison of places that experienced increases in
immigration and decreases in crime, such as Toronto, with places that experienced decreases in
immigration and increases in crime, such as Regina.

Another way of furthering the understanding of the negative relationship between immigration
and crime would be to assess the relative compositional and contextual contributions made by
immigration to crime rates. One way to differentiate between compositional and contextual effects
would be to disaggregate the data according to the characteristics of the population under
examination. In this case, this would require data on offending specific to immigrant status, i.e.,
immigrants or native-born. Collecting the data needed for this objective for representative samples
would be quite a task but future analyses based on this kind of data would be a way to further the
understanding of mechanisms linking immigration and crime.
Not only is there a need to collect data on offending specific to immigrant status, there is also a need to disaggregate the category of ‘immigration’ and ‘immigrants’ in future research. Many, if not most, macro-level studies, this one included, do not disaggregate immigrants according to different nationalities, ethnicities, legal-illegal status, generational indicators, or lengths of settlement. However, immigration and immigrants are not monolithic or homogeneous. In fact, some preliminary research has found that disaggregating homogenized notions of ‘immigrant’, and further disaggregating pan-ethnic classifications such as ‘Latino’ or ‘Asian’ into finer grained groups by ethnicity or national origin, can be useful in demonstrating the systematic within-category variations in the crime outcomes of different groups (DiPietro and Bursik, 2012; Nielsen and Martinez, 2011; Stowell and Martinez, 2009). This would not only be a way to illuminate the relative contribution of compositional and contextual explanations but such an approach would also be able to take account of the fact that immigrants who fall into those disaggregated categories outlined above may face different sets of opportunities, barriers, and contexts of reception and incorporation, which may influence both individual-level offending as well as crime rates (Bucerius, 2007; Tonry, 1997).

One way of doing this would be to expand the data collected by police forces on the immigrant background of criminal offenders to include ethnicity and national origin. Collecting crime data by immigrant status presents its own challenges, particularly in the Canadian context in which the collection of ‘race-based crime statistics’ is officially prohibited and largely controversial (see Wortley, 1999). Another avenue would be to collect self-report data to examine patterns of offending across disaggregated immigrant populations and native-born populations over time.

Almost all studies of the relationship between immigration and crime are framed in terms of whether immigration influences crime. However, a negative relationship between immigration and crime could occur not only because immigration influences the structural characteristics of a city or
province but also because the characteristics of cities or provinces affect the settlement decisions of immigrants. For example, immigrants may be more attracted to urban areas with stronger labour markets, a wider variety of job opportunities, and growing economies, factors also associated with lower crime rates (Chiswick and Miller, 2005). Therefore, some scholars have suggested that the potential endogeneity of the relationship between immigration and crime should be examined in further depth (MacDonald, Hipp, and Gill, 2013; Velez, 2009).

All of the above recommendations are not necessarily easy to implement. Nevertheless, doing so would be useful in making a contribution towards the unpacking and further understanding the ‘emerging scholarly consensus’ that immigration is often not associated with crime rates and may even lower them (Lee and Martinez, 2009).
References


Pruegger, Valerie, and Derek Cook. 2010. “An Analysis of Immigrant Attraction and Retention Patterns among Western Canadian CMA’s.” Edmonton: Prairie Metropolis Centre.


Appendix A: Component Municipalities for CMAs Included in Pre-1991 Crime Data

CMA ID: CMA
Municipality ID: Municipality Name (Police Service ID, years of data)

1: St. John’s
   1: St. John’s (10500: 1985-2011)

2: Halifax
   3: Cole Harbour (12708: 2000)
   5: Bedford (12060: 1982-1995)
   247: Halifax County (12003: 2000-2007)

3: Saint John

4: Saguenay
   15: Chicoutimi (24061: 1977-2001)
   16: Jonquiere (24117: 1977-2001)
   *No data for St. David de Falurdeau (2008-2011)

5: Quebec
   23: Sillery (24324: 1977-2001)

6: Sherbrooke

7: TroisRivieres
   31: TroisRivieresOuest (24339: 1977-2001)
<table>
<thead>
<tr>
<th>Number</th>
<th>City/Location</th>
<th>Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
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<td>1977-2001</td>
</tr>
<tr>
<td>34</td>
<td>Wolinak *First nations (24256)</td>
<td>2003-2007</td>
</tr>
<tr>
<td>40</td>
<td>Brossard (24039)</td>
<td>1977-2001</td>
</tr>
<tr>
<td>46</td>
<td>Boucherville (24037)</td>
<td>1977-2001</td>
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<td>47</td>
<td>Vaudreuil-Dorion (24346)</td>
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</tr>
<tr>
<td>48</td>
<td>St. Luc (24138)</td>
<td>1993-2000</td>
</tr>
<tr>
<td>49</td>
<td>Sainte Julie (24371)</td>
<td>1986-2004</td>
</tr>
<tr>
<td>50</td>
<td>Boisbriand (24302)</td>
<td>1977-2003</td>
</tr>
<tr>
<td>51</td>
<td>St. Bruno de Montarville (2426)</td>
<td>1977-2001</td>
</tr>
<tr>
<td>52</td>
<td>Ste. Therese (24306)</td>
<td>1977-2003</td>
</tr>
<tr>
<td>53</td>
<td>Chambly (24053)</td>
<td>1977-2004</td>
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<tr>
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<td>St-Constant (24366)</td>
<td>1978-1998</td>
</tr>
<tr>
<td>55</td>
<td>St-Lambert (24145)</td>
<td>1977-2001</td>
</tr>
<tr>
<td>56</td>
<td>Varennnes (24243)</td>
<td>1977-2004</td>
</tr>
<tr>
<td>58</td>
<td>Mont St Hilaire (24187)</td>
<td>1977-2000</td>
</tr>
<tr>
<td>59</td>
<td>Ste Catherine (24247)</td>
<td>1992-1998</td>
</tr>
<tr>
<td>60</td>
<td>St. Basile le Grand (24048)</td>
<td>1977-2004</td>
</tr>
<tr>
<td>61</td>
<td>Sainte Marthe sur le Lac (24292)</td>
<td>1977-1992</td>
</tr>
<tr>
<td>62</td>
<td>Pincourt (24202)</td>
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</tr>
<tr>
<td>63</td>
<td>Rosemere (24230)</td>
<td>1977-2003</td>
</tr>
<tr>
<td>64</td>
<td>Mercier (24170)</td>
<td>1977-2002</td>
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<td>L’Ile Perrot (24113)</td>
<td>1977-2001</td>
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<td>66</td>
<td>Lorraine (24140)</td>
<td>1977-2003</td>
</tr>
<tr>
<td>67</td>
<td>Otterburn Park (24046)</td>
<td>1977-2000</td>
</tr>
<tr>
<td>68</td>
<td>Carignan (24383)</td>
<td>1996-2004</td>
</tr>
<tr>
<td>69</td>
<td>Pointe Calumet (24372)</td>
<td>1987-1996</td>
</tr>
<tr>
<td>70</td>
<td>Charlemagne (24070)</td>
<td>1977-1993</td>
</tr>
<tr>
<td>71</td>
<td>Hudson (24107)</td>
<td>1977-2001</td>
</tr>
<tr>
<td>72</td>
<td>Terrasse-Vaudreuil (24330)</td>
<td>1990, 1993-1997</td>
</tr>
<tr>
<td>73</td>
<td>Kanesatake (24198)</td>
<td>1999-2007</td>
</tr>
<tr>
<td>76</td>
<td>Montreal Metro (24572)</td>
<td>1977-1998</td>
</tr>
<tr>
<td>77</td>
<td>St. Jerome (24581)</td>
<td>1977-1998, prov</td>
</tr>
<tr>
<td>78</td>
<td>St. Jerome (24781)</td>
<td>1977-1981, RCMP</td>
</tr>
</tbody>
</table>
83: Delson (24079: 1977-1992)
84: Delson (24049: 1992-1993)
87: Burlington (35520: 1977-2007)
89: Cambridge (35536: 1977-2007)
104: King'sville (35152: 1977-1998)
112: East/West St. Paul (46017: 1977-1979)
21: Regina
118: Balgonie (47092: 1979-1983)

22: Saskatoon
121: Corman Park (47101: 1985-2005)
125: Vanscoy (47103: 1990-1997)

23: Calgary

24: Edmonton
150: Devon (48896: 1977-3007, 2008-2011)

25: Vancouver

26: Victoria

27: Moncton
188: Moncton (13017: 1977-1997)
190: Riverview (13845: 1977-1997)
191: Riverview (13701: 1997-2007)

28: Kingston

29: Peterborough
203: Peterborough County (35545: 1977-2007)

30: Brantford
205: Brant County (Paris) (35214: 1977-1999)
207: Brant County (35523: 1977-2007, 2008-2011, rural)

31: Guelph
211: Guelph (35537: 1977-1999, rural)

32: Barrie

33: Kelowna

34: Abbotsford

12: Toronto

10: Ottawa (both Ontario and Quebec Parts [ON:231-239; QC: 240-246])
244: Buckingham (24459:1999-2004)
Appendix B: Correlation Matrix for All Variables in CMA-Level Analyses

Table A.1 Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<th>7</th>
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<th>11</th>
<th>12</th>
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<tr>
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<tr>
<td>5</td>
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<td>.02</td>
<td>.07</td>
<td>.62*</td>
<td>-.04</td>
<td>.31*</td>
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<td>.11</td>
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<td>.44*</td>
<td>-.07</td>
<td>.46*</td>
<td>-.29*</td>
<td>-.08</td>
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<td>.52*</td>
<td>-.24*</td>
<td>.44*</td>
<td>-.07</td>
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<td>-.02</td>
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<td>-.45*</td>
<td>.21*</td>
<td>.15*</td>
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<td>-.31*</td>
<td>-.23*</td>
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<td>.25*</td>
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<td>.57*</td>
<td>-.04</td>
<td>.24*</td>
<td>.13*</td>
</tr>
</tbody>
</table>

*p < .05

1= Total Crime Rate
2= Property Crime Rate
3= Violent Crime Rate
4= Homicide Rate
5= Immigration Index
6= % Recent Immigrants
7= Birth Place Heterogeneity
8= Population
9= Population Density
10= % Males, 15-29
11= % Divorced
12= Labour Force Participation Rate
13= % Low Income
14= % Home Ownership
15= % Non-Movers
16= % University Graduates
Appendix C: Fixed Effects Regression Tables for 10 Largest CMAs

Table A.2: Fixed Effects (Within-City) Linear Regression Models Predicting Total Crime Rates, 1976-2011, for 10 Largest CMAs

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<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<td>Immigration Index</td>
<td>-4775.002*</td>
<td>-4681.286*</td>
<td>-3044.073*</td>
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<tr>
<td></td>
<td>(590.3234)</td>
<td>(980.6621)</td>
<td>(741.4584)</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>35.1213</td>
<td>10.5584</td>
<td>67.36324</td>
</tr>
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<td></td>
<td>(49.51421)</td>
<td>(40.10846)</td>
<td>(26.4169)</td>
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<td>Birth Place Heterogeneity</td>
<td>-20231.77</td>
<td>-11681.13</td>
<td>20254.66</td>
</tr>
<tr>
<td></td>
<td>(16556.86)</td>
<td>(37409.07)</td>
<td>(17796.25)</td>
</tr>
<tr>
<td>Population</td>
<td>0.0005305</td>
<td>0.002635*</td>
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<td>(.0009278)</td>
<td>(.0004761)</td>
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<td>Population Density</td>
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<td>(4.246197)</td>
<td>(2.062837)</td>
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<tr>
<td>% Males, 15-29</td>
<td>736.9893</td>
<td>106.8891</td>
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<td></td>
<td>(499.0139)</td>
<td>(268.0834)</td>
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<tr>
<td>% Divorced</td>
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<td>(233.0779)</td>
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<td>(198.9477)</td>
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<td>Labour Force Participation Rate</td>
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<td>% Low Income</td>
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<td>(70.93049)</td>
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<td>% Home Ownership</td>
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<td>% Non-Movers</td>
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<td>% University Grads</td>
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<td>R-Sq (Within-Unit)</td>
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<td>Corr (u, XB)</td>
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<td>Total # of Observations (CMA*Year)</td>
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*p< .05
Table A.3: Fixed Effects (Within-City) Linear Regression Models Predicting Property Crime Rates, 1976-2011, for 10 Largest CMAs

<table>
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<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-2748.717*</td>
<td>-2291.714*</td>
<td>-806.0354</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>25.17124</td>
<td>2.024004</td>
<td>36.70991</td>
</tr>
<tr>
<td></td>
<td>(38.73684)</td>
<td>(31.32884)</td>
<td>(18.88406)</td>
</tr>
<tr>
<td>Birth Place Heterogeneity</td>
<td>-17122.96</td>
<td>-5773.972</td>
<td>16459.58</td>
</tr>
<tr>
<td></td>
<td>(9674.693)</td>
<td>(24210.98)</td>
<td>(7895.11)</td>
</tr>
<tr>
<td>Population</td>
<td>-.0001962</td>
<td>.0012606*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.000534)</td>
<td>(.0002533)</td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>3.512979</td>
<td>5.081183*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.11354)</td>
<td>(1.310568)</td>
<td></td>
</tr>
<tr>
<td>% Males, 15-29</td>
<td>625.5492</td>
<td>154.4058</td>
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</tr>
<tr>
<td></td>
<td>(337.3441)</td>
<td>(185.6668)</td>
<td></td>
</tr>
<tr>
<td>% Divorced</td>
<td>352.1072*</td>
<td>-128.0854</td>
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</tr>
<tr>
<td></td>
<td>(137.3005)</td>
<td>(135.0558)</td>
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</tr>
<tr>
<td>Labour Force Participation Rate</td>
<td></td>
<td></td>
<td>443.6291*</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(82.57282)</td>
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<tr>
<td>% Low Income</td>
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</tr>
<tr>
<td></td>
<td>(50.76106)</td>
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<tr>
<td>% Home Ownership</td>
<td>31.01631</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(30.59196)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>23.09467</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(61.05083)</td>
<td></td>
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<tr>
<td>% University Grads</td>
<td>-349.7515*</td>
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</tr>
<tr>
<td></td>
<td>(60.01504)</td>
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</tbody>
</table>

R-Sq (Within-Unit)              | .5033                        | .6202                        | .8947                        |
Corr (u, XB)                    | -.8709                       | -.7849                       | -.7260                       |
Total # of Observations (CMA*Year)| 70                          | 70                          | 70                          |
Total # of CMAs                 | 10                          | 10                          | 10                          |

*p< .05
Table A.4: Fixed Effects (Within-City) Linear Regression Models Predicting Violent Crime Rates, 1976-2011, for 10 Largest CMAs

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration Index</td>
<td>-254.0139*</td>
<td>-321.7902*</td>
<td>-391.5143*</td>
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<tr>
<td></td>
<td>(45.00317)</td>
<td>(87.05123)</td>
<td>(83.70111)</td>
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<tr>
<td>% Recent Immigrants</td>
<td>7.366719*</td>
<td>5.209263</td>
<td>4.508816</td>
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<td></td>
<td>(2.286861)</td>
<td>(2.622519)</td>
<td>(3.571853)</td>
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<td>Birth Place Heterogeneity</td>
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<td>-2188.051</td>
<td>-2357.938</td>
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<tr>
<td></td>
<td>(1531.966)</td>
<td>(1853.178)</td>
<td>(1306.867)</td>
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<td>Population</td>
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<tr>
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<td>(.0000853)</td>
<td>(.0000885)</td>
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</tr>
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<td>Population Density</td>
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</tr>
<tr>
<td></td>
<td>(.3727005)</td>
<td>(.4168342)</td>
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</tr>
<tr>
<td>% Males, 15-29</td>
<td>-18.91829</td>
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<tr>
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<td>(38.49509)</td>
<td>(33.68747)</td>
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</tr>
<tr>
<td>% Divorced</td>
<td>57.49721</td>
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<tr>
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<td>(26.51559)</td>
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<tr>
<td>Labour Force Participation Rate</td>
<td>58.57604*</td>
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<tr>
<td>% Low Income</td>
<td>41.6533*</td>
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<td>% Home Ownership</td>
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<tr>
<td>% Non-Movers</td>
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<td>% University Grads</td>
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<td>R-Sq (Within-Unit)</td>
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*p < .05
## Appendix D: Correlation Matrix for All Variables in Province-Level Analyses

Table A.5 Correlation Matrix

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</table>

*p < .05

1= Total Crime Rate  
2= Property Crime Rate  
3= Violent Crime Rate  
4= Homicide Rate  
5= Immigration Index  
6= % Recent Immigrants  
7= Birth Place Heterogeneity  
8= Population  
9= Population Density  
10= % Males, 15-29  
11= % Divorced  
12= Labour Force Participation Rate  
13= % Low Income  
14= % Home Ownership  
15= % Non-Movers  
16= % University Graduates