

# **Ethnic Enclaves and Immigrant Earnings Growth: 1981 through 1996 \***

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## **Abstract**

This paper examines the effect of enclaves on wage growth as well as other labour market outcomes of immigrant men in Canada using the 1981, 1986, 1991 and 1996 Censuses. While the primary measure of affiliation is country of birth, ethnicity, language and visible minority status were also examined to determine the robustness of the findings. Consistent with U.S. findings, enclaves based on country of birth were found to have a negative impact on the ten-year wage growth of immigrants. Further, the model for wage growth was found to be robust to different lengths of time and different base years as well as the specification of language and ethnicity as the affiliation grouping. While the evidence indicates a negative effect of enclaves on wage growth, little evidence is found of the effects of enclaves on change in employment. While the overall effect of enclaves on wage growth was negative, enclaves were found to have a divergent effect on different landing cohorts, having a positive impact on the wage growth of the more recent cohorts and a negative impact on earlier cohorts.

JEL Codes: J15, J24, J31, J61

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## 1. Introduction

Immigration continues to be an important element of modern Canadian society. Besides composing an increasing proportion of the general population, immigrants make up an increasing proportion of the labour market. It is estimated that by the end of the decade, all new labour force growth will come from immigration.<sup>1</sup> With the growing importance of immigrants on the overall health of the Canadian economy, the labour market outcome of immigrants is an important issue. This paper examines the effect of enclave residential segregation on the labour market outcome of immigrants.

While immigrants have become a more significant part of the Canadian labour force, their labour market performance has deteriorated in recent decades. The deterioration in the labour market outcomes of recent immigrant cohorts to Canada is well documented. Studies by Baker and Benjamin (1994) and Bloom, Grenier and Gunderson (1995) both found that more recent immigrant cohorts have not assimilated as well as previous cohorts.<sup>2</sup> This phenomenon is not exclusive to Canada. In the United States, Borjas (1995) found that the entry wage of the 1970 and 1980 cohorts was lower than that of earlier cohorts and that a wage disadvantage between the recent cohorts and the native population would always exist. While most research has detected a poorer economic performance of recent immigrant cohorts, the reason for this decline has not been fully explained. Potential explanations could include: a change in the composition of immigrant classes,<sup>3</sup> a change in composition of sending countries from western

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<sup>1</sup> With immigrants already making up 70 percent of the labour force growth in 2001, estimates by Statistics Canada (2003) show that by 2011, all new growth could be created by immigrants.

<sup>2</sup> Conversely, Grant (1999) finds an improvement in the earning assimilation for immigrants during the 1980s.

<sup>3</sup> Green (1999) notes that there has been a change in the composition of the classes admitted into Canada, for example, the proportion of immigrants coming from the independent class dropped from 70 percent in

European to Asian and African countries (De Silva, 1997a), discrimination (Pendakur and Pendakur, 1998), macro conditions (McDonald and Worswick, 1997, McDonald and Worswick, 1998),<sup>4</sup> and a change in the human capital of immigrants (Coulson and Devoretz, 1993, De Silva, 1997a).

Another potential explanation is the effect of residential patterns on immigrants. Immigrants have not settled randomly across the country. They tend to settle in the large Canadian urban centres, and different groups tend to settle more densely in different urban centres. In addition, these immigrant groups tend to cluster in enclaves within these urban centres. If clustering inhibits the acquisition of skills necessary for labour market success, the tendency for immigrants to cluster based on ethnicity, linguistic difference and birthplace may help to explain the poor fairing of recent cohorts.

In 1967, with changes to Canadian Immigration policy, a point and class system was introduced and immigration was no longer determined by country of birth.<sup>5</sup> With this change in immigration policy, there was a drastic shift in country of origin of immigrants. Prior to this shift in policy, immigrants from countries that were seen as being similar to Canada were given preferential treatment. Other countries were viewed as “having values that were too far removed from Canadian values to enable them to adapt to Canadian society” (Weinfeld and Wilkinson, 1999). In the past, when sending countries were ethnically and culturally similar to Canada, concentration of ethnic and linguistic groups

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1973 to 20 percent in 1992. However, De Silva (1997b) finds that earnings of different immigrant classes converges over time.

<sup>4</sup> McDonald and Worswick (1997) find that differences in unemployment probability of immigrants are affected by macro conditions, but overtime, these rates come to resemble the rates experienced by non-immigrant men. McDonald and Worswick (1998) found that macro conditions affect the rate of earnings assimilation.

<sup>5</sup> For a thorough examination of the history of Canadian immigration policy see Green and Green (1995) and Green (1999).

would not affect interaction between immigrants and the general Canadian population. As the composition of the sending countries has changed, and the language and culture of the new cohorts has become remarkably different from previous cohorts, enclaves may isolate immigrants from the general Canadian labour market. Consequently enclaves may hinder the transmission of human capital from Canadian born individuals to immigrants, affecting the acquisition of the type of skills necessary for success of immigrants in the Canadian labour market.

It has been argued that ethnic communities provide a hospitable atmosphere to newly arrived immigrants. With the reduction of cultural and linguistic trauma as well as the presence of job opportunities, an ethnic community may provide a newly arrived immigrant with a better environment to obtain initial success in his/her new country. An immigrant residing outside his/her enclave may experience increased difficulties during the initial adjustment period due to the inadequate knowledge of the local job market, knowledge that may be provided within an ethnic community. However, the level of success of an immigrant choosing to reside in an enclave may be confined to the level of opportunities present in the community. Although it is easier for an immigrant to adapt to the common language and culture present in their ethnic community, adaptation to the ethnic community will not encourage the accumulation of the skills required for success in the labour market (Lazear, 1999). While it is not being argued that ethnic communities will have a lower level of human capital, rather it is suggested that the skills present within the enclaves will be less transferable to the Canadian labour market. With a relatively lower portion of human capital in an ethnic community transferable to the Canadian labour market, immigrants that locate inside their ethnic community may

experience lower income growth than those immigrants who reside outside their ethnic community. Furthermore, living in their ethnic community, immigrants do not have as great an incentive or need to learn the dominant language. Residing outside his/her enclave, an immigrant can no longer communicate in his/her native language and therefore must acquire a stronger understanding of the dominant language.

This paper uses the Canadian Census to examine the effect of ethnic enclaves on the wage growth of immigrants. Evidence from the United States indicates that segregation of immigrant groups has a negative impact on their labour market outcomes. Using the American Census, Borjas (2000) examined the effect of location selection on the wage growth of immigrants. He found that residing in an ethnic community had a statistically significant negative effect on the wage growth of these immigrants.

This paper applies Borjas' (2000) model to Canada. A ten-year growth model of mean wages between 1980 and 1990 with country of birth as the concentration index will be examined to be able to compare the Canadian results to Borjas' study. Variations from this specification will also be examined to determine the robustness of the results. Models with country of birth will also be run with five and fifteen-year growth models, as well as with 1985 and 1990 as base years. The application of different base years and durations of the models will aid in determining if the results are robust to different macro conditions. Using only one base year and one time length may not give an accurate representation of the effects of residential segregation if macro conditions have disparate influence on the impact of enclaves on labour market outcomes. The shift in country of origin of immigrants is another reason for the inclusion of different base years.

While Borjas' model was run with workers with positive wages, full-time workers will also be examined when 1980 is the base year with country of birth as the concentration index.<sup>6</sup> With 1980 as the base year, the five, ten and fifteen-year growth models will also be estimated using ethnicity, mother tongue and visible minority status as the concentration index. As well, the effect of enclaves on other labour market activities such as the growth in earnings and change in employment will be examined.

The issue of mobility of workers is investigated. Borjas (2000) also examined this issue, but due to the ten-year duration between American Censuses and the availability of information only on five years of movement, this issue could not be fully addressed. The Canadian Census also has information about the location of individuals five years prior to the Census but has an advantage over the American Census in that the Canadian Census is produced every five years. Therefore, the bias created by the internal migration of workers can be fully controlled for utilizing five-year growth models. From the results obtained from this paper, it is hoped to determine whether enclaves act as a refuge where immigrants can prosper in their new country, or whether ethnic enclaves impede immigrants' progress confining them to the economic opportunities present within the enclave.

## **2. Enclave and Neighbourhood Literature**

With the increasing ethnic and cultural diversity in large Canadian and American cities, residential patterns have become an area of interest in determining the outcome of immigrants and origin groups. As well as being examined in terms of wage rate assimilation, residential segregation has also been utilized to explain other outcomes of

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<sup>6</sup> Full-time workers are classified as having worked 40 or more weeks a year.

immigrants. Using the 1990 U.S. Census and employing home language as a proxy for social networks, Bertrand, Luttmer and Mullainathan (2000) uncover evidence that these social networks influence welfare participation. Also using the 1990 U.S Census, Chiswick and Miller (2002) examine the effect of linguistic concentration on labour income and language proficiency. They concluded that concentration of the home language had a negative effect on earnings. Further, they found that concentration of minority languages resulted in a lower proficiency in English. Using the 1991 Canadian Census, Chiswick and Miller (2001) also detected a negative effect of concentration of people of the same mother tongue on language proficiency in Canada.

The effect of enclaves is not confined to outcome of immigrants. In addition to finding that segregation had a negative impact on employment and earnings of black Americans, Cutler and Glaeser (1997) find that enclaves lowered high school graduation rates and increase the incidence of single motherhood for this group. Conversely, they found that segregation had a small positive effect on the outcomes of white Americans.

Not all studies found neighbourhood effects on the labour market outcome of its inhabitants. Oreopoulos (2000) found that after controlling for socioeconomic characteristics, neighbourhoods had an insignificant effect on earnings, years of welfare participation, income and educational attainment of children from Toronto's subsidized housing area.

While maximization of utility derived from location selection is based on more than labour market success, the rationale of location selection will be examined in terms of labour market integration. Many non-market considerations influence the location decision of immigrants. Social factors may influence where an immigrant chooses to

reside. Immigrants may choose to reside in an enclave due to the utility obtained from sharing common language, culture and religion. In addition, ethnic neighbourhoods may provide a cushion from the shock of settling in a new country. Besides the effect of location on labour market income, there are other non-labour market economic considerations of residing in an ethnic concentrated area. While immigrants experience labour market benefits such as information about job opportunities and avoidance of discrimination, there are also benefits such as lower priced market and non-market ethnic goods. Due to economies of scale, the cost of ethnic goods will be lower in ethnic communities.<sup>7</sup> For example, churches and other cultural centres would be less expensive per capita to build in a more populous ethnic community. Also importing and producing ethnic goods will be less expensive in areas where an ethnic group is larger, since a larger volume of goods can be purchased or produced. In addition to ethnic goods being more expensive outside of an enclave, these goods may not even be available. If only a few people from an ethnic group live within an area, it may be too costly to import or produce ethnic market goods and non-market goods.

This paper concentrates solely on the market success of immigrants, which is an important aspect of their utility maximizing decision. If ethnic enclaves are found to hinder labour market performance of immigrants, ethnic goods and non-market aspects of a neighbourhood may aid in compensating for the lower level of wage growth and equate the utility of living in an ethnic enclave with the utility attained from living outside.

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<sup>7</sup> For a more detailed examination of ethnic goods, see Chiswick and Miller (2002).

### 3. Specification of Enclaves

Borjas (2000) classified Census Metropolitan Area (CMA) as the geographical unit for his analysis. While the CMA may be viewed as too large an area to consider as a neighbourhood, smaller geographical units may cause more severe problems. A smaller geographical specification, such as Census Tract, may give a more accurate portrayal of a neighbourhood, however controlling for the interaction between a given group between two neighbourhoods would be difficult. Consider an individual from a given ethnic group  $X$ . If this individual lives in neighbourhood  $A$ , which has a low concentration of people from the same ethnic group  $X$ , but is in close spatial proximity to a neighbourhood  $B$  which has a high concentration of individuals from this same group, nothing is preventing this individual from associating with people of group  $X$  in neighbourhood  $B$ . Further, with the low cost of transportation available within CMAs, it is difficult to infer that people from the same ethnic group  $X$  living in neighbourhoods close by are more likely to interact than if they resided in neighbourhoods that were a further distance apart (up to a certain distance). It is difficult to presume that interaction between individuals who live within a five minute walking distance from each other is more likely than interaction between individuals whose contact is separated by a five minute drive.

This problem of controlling for cross-neighbourhood interaction does not exist when CMAs are used as the geographical unit. The distances between CMAs are great, making interaction between the same group  $X$  in different CMAs unlikely. Travel time and travel costs will be much larger between CMAs than within making frequent contact

unlikely.<sup>8</sup> It is the frequency of the interaction between people of the same origin group that is important, not the spatial proximity in which the interaction occurs. Smaller geographical units, such as Census Tracts may be more relevant for the study of groups that are less mobile and are confined to interact within a smaller area. For example, children are limited by transportation so their interaction is limited to the immediate area and school. While the study of neighbourhood effects for children may be appropriate at the Census Tract level, the study of more mobile individuals is more suitable at the CMA level.

#### **4. Indexes**

Borjas (2000) used two indexes to measure the clustering of immigrants.<sup>9</sup> The primary index is the *exposure index*. This index gives the fraction of the population between the ages of 18 and 64 in each metropolitan area by country of birth. Both male and females in this age group, regardless of labour market status were included in the calculation of the indexes due to the human capital externalities they potentially provide.<sup>10</sup> The second index is the *relative cluster index*, which deflates the exposure index by dividing it by the percentage of the total population studied that each country of birth group makes up. This adjusts the exposure index by the proportion of the group  $i$  in the population studied. If the relative clustering index is greater than 1, then a higher percentage of immigrants from country  $i$  live in metropolitan area  $j$  relative to the average of the metropolitan areas studied. If the relative clustering index is equal to 1, then the

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<sup>8</sup> Physical interaction may not be the only way in which human capital is transmitted. Telecommunication may be another method in which human capital is transmitted, changing the concept of ethnic communities. With the decreasing costs of long distance phone calls and the advent of the Internet, communication between CMAs has become less costly. While non-physical interaction is important it is beyond the limits of this paper.

<sup>9</sup> See Borjas (2000) for a more in-depth explanation of the indexes.

<sup>10</sup> Institutional residents are omitted from the analysis.

percentage of people from country  $i$  in metropolitan area  $j$  is equal to the average of the population studied. Finally, if the clustering index is less than one, then there is a lower proportion of people from origin group  $i$  in metropolitan area  $j$  than would be predicted if the group was randomly assigned to the studied CMAs based on a CMA's population.

The square of the exposure and relative indexes are also examined. Concentration of immigrants may have a non-linear effect on the economic assimilation of immigrants. If concentration of immigrants is found to have a negative impact on wage growth, then lower levels of concentration can be expected to have less of a negative effect on wages than a mid level of concentration. At very low levels of concentration, segregation may not take place if the community is too small. Furthermore, lower levels of concentration may provide enough information about the local job market without inhibiting the accumulation of knowledge and skills of the Canadian labour market. Higher concentration may have a negative effect on earnings. This will occur if there is still a benefit of learning the dominant language and culture but the acquisition of these skills is reduced due to the fact that a higher proportion of interaction occurs between people of the same ethnic group. Conversely, very high levels of concentration may have less of a negative effect or even a positive effect on the labour market integration of immigrants. If an ethnic group comprises a very large portion of a city, then learning the language or culture of the adopted country may not be as beneficial or necessary.

## **5. Measures of Demographic Groups**

The immigrant group is classified as the sample of foreign-born workers who come from demographic group  $i$ , live in metropolitan area  $j$ , and arrived in Canada in calendar

year  $k$ . These demographic groupings are country of birth, ethnicity, language and visible minority status. The CMAs used are based on the 1981 Census definition.

Following the methodology of Borjas (2000), country of birth is used as the primary measure of residential segregation. However, language, ethnicity, and visible minority status are also examined. These additional definitions of demographic groups are included for two particular reasons. First, since the Canadian Censuses used do not have a question pertaining to the country of birth of the parents of the respondents, members of a community who are not immigrants, but whose parents were born outside of Canada are unaccounted for when the indexes are calculated. Therefore, the proportion of an origin group will be underestimated. This miscalculation of the indexes will be especially pronounced for more traditional immigrant groups and less pronounced for more recent immigrant groups. Therefore, ethnicity, language, and visible minority status will also be examined since the status of second generation Canadians can be calculated for these origin group variables.

A second consideration for including these extra measures arises when the country of birth is not necessarily a homogeneous group and therefore may not be an accurate representation of a “community”. There are many incidences where people from the same country of birth may speak different languages, have different cultures and come from different ethnic backgrounds. For example, the former Yugoslavia was composed of several different ethnic linguistic groups. Furthermore, common culture, language and ethnicity may cross country boundaries. If people from the same country of birth speak different languages and people of different countries share a common language, the idea of a community based on country of birth is marginalized. Ethnicity

will also be studied. In many cases, people from the same country of birth may come from ethnic groups that have ethnic conflicts and are unlikely to associate with each other (such as the Croatians and Serbians in the former Yugoslavia). Also, ethnicity is not confined to country borders, and people from the same ethnicity may come from different countries. For example, in the 1981 Census there are over 100 different countries of birth reported by Jewish immigrants, including such diverse countries as Australia, Chile, Jamaica and Egypt.

While visible minority classifications may be too general to be viewed as a grouping, visible minority status may also provide some level of attachment and interaction not measured by ethnicity, country of birth or mother tongue and, therefore, will also be analyzed. While Cutler and Glaeser's 1997 American study examined the effect of Black enclaves, regression analysis will be extended to include all identifiable visible minority groups as the affiliation measure (see appendix 1). There is also a literature in Canada which finds an earnings disadvantage for visible minorities versus White males, which was especially true for visible minority male immigrants (Pendakur and Pendakur, 1998). Hum and Simpson (1999) find that Black males are the only Canadian-born visible minority group to have a statistically significant negative wage differential. However, they do find a statistically significant negative wage disadvantage for several visible minority immigrant groups. Potentially, clustering of visible minority immigrant groups could account for some of this disadvantage if human capital accumulation and labour market opportunities are affected by clustering.

## 6. Model Specification

The 1981, 1986, 1991 and 1996 full 1/5 Canadian Censuses are employed to estimate the economic outcomes of male immigrants.<sup>11</sup> Initially, the economic outcome is defined as the wage growth of the immigrant cell  $(i,j,k)$  and is estimated with the following model:

$$(1) \quad \Delta \log W_{ijk} = \alpha \log W_{ijk}(t_0) + \beta x_{ijk} + \delta S_{ij} + n_i + r_j + y_k + \mu_{ijk}$$

The dependent variable for the regression is the growth rate of the mean hourly wage of immigrants from group  $i$ , living in CMA  $j$ , from landing cohort  $k$ .<sup>12</sup> The regression is calculated over a five, ten and fifteen year period when 1980 is the base year, a ten and five year period when 1985 is the base year and a five year period when 1990 is the base year.<sup>13</sup> For the five-year growth model, the average log hourly wage earned by workers aged 18-59 in cell  $(i,j,k)$  was calculated for the base year in the respective Canadian Censuses, while the average log hourly wage was then calculated for the same cells aged 23-64 in the following Census. For the ten-year growth models, the average log hourly wage earned by workers aged 18-54 for the cell  $(i,j,k)$  is calculated for the initial year, while the average log hourly wage is then calculated for the same cells for the 28-64 age workers ten years later. Finally, for the fifteen-year growth model, the initial average mean log wage level is calculated for the 18-49 age cells in 1980 and then for the same cells for workers between 33-64 years old in 1995. The standard errors for the regressions were corrected for heteroskedasticity using White's (1980) method. The regression is

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<sup>11</sup> The effect of enclaves on the earnings of female immigrants is not studied due to the complex nature of female labour market decisions.

<sup>12</sup> The hourly wage rate for each worker is calculated by dividing the total wage and salary of each workers by the number of weeks worked in the reference year times the total number of hours worked in the reference week.

<sup>13</sup> The wages were converted into 1995 dollars using the CPI (Canadian Price Index).

weighted by the total number of frequencies a group composes ( $F_{ijk}$ ) times the total of the Census weights for each group ( $W_{ijk}$ ) divided by the total sum of weights for all of the groups ( $\sum W_{ijk}$ ). This summed up over all groups equals  $\sum F_{ijk}$ .<sup>14</sup>

To be able to compare results with those of Borjas (2000) and to control for the demographic composition of the cells, education and age distribution variables were included in the regression. For the educational attainment, the proportion of the cell with high school or less, trade-vocational school or college diploma and university diploma was calculated.<sup>15</sup> For the five-year growth models, the proportion of workers in the 26-36, 37-47 and 48-59 age groups were calculated, while in the ten-year growth model, the proportion in the 25-34, 35-44 and 45-54 age groups were calculated. For the fifteen-year growth models the proportion in the 25-33, 34-43 and 44-49 age categories were calculated.

The effect of residential segregation on wage growth is represented by  $S_{ij}$ . When country of birth is employed as the affiliation measure, the model is rerun with  $S_{ij}$  entering as a quadratic. Following the methodology of Borjas (2000), fixed effects were employed to net out: regional labour market ( $r_j$ ), cohort ( $\gamma_k$ ) and national origin fixed effects ( $n_i$ ). The national origin fixed effects will be replaced with ethnicity fixed effects ( $e_i$ ), visible minority fixed effects ( $v_i$ ) and language fixed effects ( $l_i$ ) for the regressions based on the growth rate of the wage of ethnic, visible minority and language groups respectively. The cohort groups used for the regression are denoted by the subscript  $k$ .

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<sup>14</sup> Each group weight =  $(F_{ijk}) \times [W_{ijk} / \sum W_{ijk}]$ . The sum of the total weights =  $\sum [F_{ijk} \times [W_{ijk} / \sum W_{ijk}]] = \sum F_{ijk}$  where  $\sum [W_{ijk} / \sum W_{ijk}] = 1$ . The results for country of birth for the five, ten and fifteen year models with 1980 as the base year were rerun with the frequency as the weight. The results were found to be very similar to the results with the frequency re-weighted by the proportion of the Census weights a group composes.

<sup>15</sup> Borjas used years of schooling, however this variable was not available in the 1981 Canadian Census.

The cohort landing groups are those that landed between 1975 and 1979, 1970 to 1974, 1965 to 1969, 1960 to 1964, 1950 to 1959 and those that landed before 1950 when 1980 is the base year. The cohort landing groups are pushed up by five and ten years when 1985 and 1990 are the base years respectively. Immigrants who landed in the base year are omitted from each regression analysis since the income reported in the Census is the income earned in the year of landing. This causes a disparity in the opportunity for labour market activity for immigrants who immigrated later in the base year.

For country of birth, ethnicity and mother tongue, the most numerous groups were utilized for the regression analysis.<sup>16</sup> For country of birth, following Borjas (2000), the largest 90 immigrant groups in the population studied were used. In the 1981 and 1986 Censuses, the top 90 groups made up over 99 percent of the working age foreign born male immigrant population in the geographical areas studied, and over 98 percent in 1991. There were 60 ethnic groups and 50 language groups analyzed. For these ethnic and language estimations, all distinct groups identifiable across Censuses and composing a weighted frequency of 200 or greater were included. All the visible minority groups were used except for “multiple groups”, which is not included since it is not possible to determine the composition of the visible minority groups of respondents in this category.

For the analysis based on country of birth, immigrants are classified as having immigrated to Canada and having been born outside of Canada. For visible minority status, ethnicity and language, immigrants are classified by whether they immigrated to Canada or not. The regression is run for immigrant men who collect a salary or wage. The regression is rerun with the growth in total earnings of workers as the dependent

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<sup>16</sup> The calculation of the most numerous group is based on the weighted number of working age males in the base year for the ten-year specification model. See appendix 1 for groups included in the analysis.

variable since a worker's income may come from non-wage, non-salary sources. Total earnings include earnings from wages and salaries, self-employment income and investment income. The growth in average total earnings is also examined.<sup>17</sup>

Convergence in employment rates is also examined. Focusing solely on wage convergence may not give an accurate picture of the effect of enclaves on economic assimilation. Potentially enclaves may provide immigrants with more opportunities to find employment, however the employment found within an enclave may not be as desirable as the employment found outside the enclave. If residing in an enclave provides a better opportunity for employment than living outside the enclave, but at lower wages, then a larger percent of the lower skilled workers will be employed, depressing the average observed growth in the wage rate of a group. Outside the enclave, if less skilled workers have a more difficult time finding employment, then higher skilled workers will be over-represented in the labour force, overstating the benefit of living outside an enclave. The percentage of all working age males actually employed may also give an indication of the availability of jobs if unemployment is hidden by the discouraged worker effect. Therefore, the change in total employment is examined.

## **7. Empirical Results**

The model that Borjas' (2000) called the "most complete specification" is employed. The complete specification regression includes fixed effects for cohort, metropolitan area and country of birth. The exposure and relative clustering indexes are statistically significant and negative for the ten-year growth model with 1980 as the base year

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<sup>17</sup> For the regressions based on the growth rate of total earnings, individuals who do not work or who do not report any earnings are omitted from the estimation. For the regressions based on the growth rate of average total earnings, individuals who do not work or who do not report any earnings are assigned total earnings equal to 1.

**TABLE A: Country of Birth, Growth of Mean Wage, 1980 Base Year**

	A1	A2	A3	A4	A5	A6
Period of Growth	1980-85	1980-90	1980-95	1980-85	1980-90	1980-95
(I)						
R <sup>2</sup>	0.3797	0.4731	0.3661	0.3657	0.4725	0.3677
Initial log wage	-.7618***	-.8361***	-.8000***	-.7482***	-.8480***	-.8374***
	(.022)	(.023)	(.026)	(.022)	(.025)	(.029)
Exposure index	-.8080***	-.7096**	-.7274**	-.8053***	-.9470***	-.8252**
	(.241)	(.291)	(.331)	(.239)	(.309)	(.350)
(II)						
R <sup>2</sup>	0.3787	0.4723	0.367	0.3650	0.4706	0.3689
Initial log wage	-.7579***	-.8329***	-.7976***	-.7437***	-.8426***	-.8346***
	(.023)	(.023)	(.026)	(.023)	(.025)	(.028)
Relative index	-.0087***	-.0063**	-.0135***	-.0100***	-.0074**	-.0156***
	(.003)	(.003)	(.005)	(.003)	(.003)	(.005)
(III)						
R <sup>2</sup>	0.3804	0.4743	0.3669	0.3670	0.4735	0.3691
Initial log wage	-.7637***	-.8393***	-.8026***	-.7499***	-.8500***	-.8392***
	(.022)	(.023)	(.026)	(.022)	(.024)	(.029)
Exposure index	-1.9512***	-2.5233***	-2.5008**	-2.3830***	-2.6284***	-3.0327***
	(.672)	(.736)	(1.041)	(.685)	(.770)	(1.098)
Exposure <sup>2</sup>	11.6172*	18.4777***	18.1088*	15.9752**	17.0711***	22.4705**
	(6.266)	(6.496)	(9.699)	(6.355)	(6.648)	(10.008)
(IV)						
R <sup>2</sup>	0.3789	0.4729	0.3677	0.3655	0.4712	0.3699
Initial log wage	-.7580***	-.8332***	-.7977***	-.7438***	-.8428***	-.8348***
	(.023)	(.023)	(.026)	(.023)	(.025)	(.028)
Relative index	-.0121**	-.0137***	-.0223***	-.0157***	-.0145***	-.0267***
	(.005)	(.005)	(.008)	(.005)	(.005)	(.008)
Relative <sup>2</sup>	.0004	.0008***	.001**	.0006*	.0008**	.0013***
	(.0003)	(.0003)	(.0005)	(.0003)	(.0004)	(.0005)
Movers excluded	NO	NO	NO	YES	YES	YES

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

(column A2 in table A), which concurs with Borjas' (2000) findings. These indexes are also statistically significant and negative for the five and fifteen-year growth models.

Therefore, enclaves based on country of birth have a negative impact on wage growth.

Further, the magnitude of the negative effect of exposure index is around twice as large as what Borjas (2000) found in the United States over the same period.<sup>18</sup> With a ten-year

<sup>18</sup> Each of the five, ten and fifteen-year growth models for country of birth were also found to be negative and statistically significant under the fully specified model for full-time workers.

growth model spanning 1980 to 1990 and fixed effects controlling for country of birth, landing cohort and metropolitan area, Borjas (2000) obtained a coefficient of -.369.

**TABLE B: Country of Birth, Growth of Mean Wage, 1985 and 1990 Base Years**

Base year 1985	B1	B2	B3	B4	Base year 1990	B5	B6
Period of Growth	1985-90	1985-95	1985-90	1985-95		1990-95	1990-95
(I)					(I)		
R <sup>2</sup>	0.4744	0.4294	0.4328	0.4072	R <sup>2</sup>	0.3748	0.351
Initial log wage	-.7904***	-.8044***	-.7906***	-.7834***	Initial log wage	-.8170***	-.8152***
	(.019)	(.021)	(.021)	(.023)		(.020)	(.022)
Exposure index	-.7209**	-.8087**	-.8095**	-.7188*	Exposure index	-.9288**	-.7706**
	(.305)	(.355)	(.335)	(.369)		(.372)	(.3885)
(II)					(II)		
R <sup>2</sup>	0.4737	0.4295	0.4321	0.4073	R <sup>2</sup>	0.3747	0.3508
Initial log wage	-.7889***	-.8032***	-.7888***	-.7823***	Initial log wage	-.8151***	-.8135***
	(.019)	(.022)	(.021)	(.023)		(.019)	(.022)
Relative index	-.0051*	-.0097***	-.0064**	-.0087**	Relative	-.0078***	-.0063**
	(.003)	(.004)	(.003)	(.004)		(.003)	(.003)
(III)					(III)		
R <sup>2</sup>	0.4747	0.4295	0.4330	0.4074	R <sup>2</sup>	0.3748	0.3510
Initial log wage	-.7901***	-.8041***	-.7903	-.7830***	Initial log wage	-.8170***	-.8152***
	(.019)	(.021)	(.021)	(.023)		(.020)	(.022)
Exposure index	-1.7088**	-1.3054	-1.6582**	-1.5467*	Exposure index	-1.1924	-1.2606
	(.705)	(.842)	(.762)	(.866)		(.835)	(.880)
Exposure <sup>2</sup>	12.4308	6.2565	10.6773	10.4283	Exposure <sup>2</sup>	4.3382	8.0619
	(7.865)	(9.382)	(8.651)	(9.612)		(12.142)	(12.803)
(IV)					(IV)		
R <sup>2</sup>	0.4741	0.4298	0.4325	0.4078	R <sup>2</sup>	0.3749	0.3511
Initial log wage	-.7887***	-.8028***	-.7886***	-.7818***	Initial log wage	-.8155***	-.8139***
	(.019)	(.022)	(.021)	(.023)		(.020)	(.022)
Relative index	-.0111**	-.0161***	-.0127**	-.0162***	Relative index	-.0117***	-.0106**
	(.005)	(.006)	(.005)	(.005)		(.004)	(.005)
Relative <sup>2</sup>	.0008**	.0008	.0008**	.0009*	Relative <sup>2</sup>	.0004	.0004
	(.0003)	(.0005)	(.0004)	(.0006)		(.0003)	(.0003)
Movers excluded	NO	NO	YES	YES	Movers excluded	NO	YES

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

The five and ten-year growth models with 1985 as the base year and the five-year growth model with 1990 as the base year are also statistically significant at the 5 percent level for the exposure index (see table B). For the relative index, the results are negative and statistically significant at the 10 percent level for the five-year growth model with

1985 as the base year and negative and statistically significant at the 1 percent level for the ten-year growth model when 1985 is the base year and for the five-year growth model with 1990 as the base year. The magnitude of the results are also fairly consistent across the different time lengths and base years and therefore appear robust to different macro conditions. The results indicate that a 1 percent increase in exposure to one's own group causes a decrease in the wage growth of somewhere between .7 and .95 percent.

### **7.1 Movement of Workers**

Movement of workers is one issue that is difficult to address with the Census. However, the results may be affected by migration of workers. For a given cell, if above average skilled workers from group *A* move from an area with a low concentration of the same group into an area with a higher proportion of individuals of group *A*, the coefficient of the index will be biased upwards. Conversely if below average skilled workers move from less concentrated to more concentrated neighbourhoods, or high skilled workers move from high concentrated to less concentrated neighbourhoods, a downward bias on the coefficient of the index will occur. In an attempt to control for and test the magnitude of this problem, Borjas (2000) re-estimated his model after omitting workers who had moved into the CMA within the previous five years of the second Census. Comparing these results to his original model, he found little difference in the results. However, Borjas notes that since his model was based on a ten-year growth, there was still a five-year period in which one could not control for migration.

To examine this problem, the regressions with country of birth as the affiliation indicator are re-estimated excluding individuals who have not been living in the CMA in the five years before the later time period of the growth model. Being able to calculate a

five-year growth model for each of the 3 base year models, we should get an accurate picture of the severity of the potential bias that mobility of workers creates. After controlling for mobility, the results are still statistically significant and strongly negative. Only the 1985-95 growth model (column B3 of table B) is below the 5 percent level but is significant at the 10 percent level with a p value of 0.051. The other models are still statistically significant at the 5 or 1 percent level. When 1980 is the base year, for the five-year model the coefficient for the exposure index becomes only slightly less negative (column A4 of table A). With 1985 as the base year, the coefficient on the exposure index becomes more negative, while with 1990 as the base year, the negative impact of exposure decreases, but still remains strongly negative. While omitting the migrants solves the problem for the five-year growth model, there still remains a five and ten year period for which there might have been migration in the ten and fifteen-year growth models, giving less confidence in these regressions. For the ten and fifteen-year growth models with 1980 as the base year, there was an upward bias, while for the ten-year growth model with 1985 as the base year there was a slight downward bias. Overall, it appears little bias exists, and the direction of the bias is indeterminate.

## 7.2 Square of Exposure and Relative Indexes

Equation (1) with country of birth as the affiliation group is re-estimated with the indexes also entered as a quadratic and is estimated by:

$$(2) \quad \Delta \log W_{ijk} = \alpha \log W_{ijk}(t_0) + \beta x_{ijk} + \delta S_{ij} + \Psi S_{ij}^2 + n_i + r_j + y_k + \mu_{ijk}$$

When the square of the exposure index is added to the regression it is found to be positive and statistically significant when 1980 is the base year. From table A section (III), the square of exposure index is statistically significant at least at the 5 percent level for

columns A2, A4, A5 and A6 and at the 10 percent level for the remaining two columns for the regressions with 1980 as the base year. This indicates that at low levels of concentration, an increase in the level of concentration has an additional negative impact on mean wage growth occurs at a decreasing rate. This occurs until the exposure index is somewhere between 0.068 and 0.084. So when a group  $i$  constitutes around 7 or 8 percent of a CMA  $j$ , an increase in the percent of a CMA that a group comprises will have a positive impact on the growth of wages. However, only around 1 percent of the groups  $i$  make up more than 7 percent of a CMA population  $j$ . Therefore, the quadratic to the right of the turning point can be ignored in the regressions indicating that at low levels of concentration, an additional member to the group has a negative impact on wage growth at a decreasing rate. For the regressions with 1985 and 1990 as the base year, the square of the exposure index is still positive, but not statistically significant.

The square of the relative index is also positive. It is statistically significant at least at the 5 percent level for the ten and fifteen-year growth models with 1980 as the base year and for the five-year growth model with 1985 as the base year. The turnaround occurs when the relative index is somewhere between 7 and 15. The right of the turnaround can also be ignored for the relative index since over 99 percent of groups have relative indexes below the turnaround point. Therefore, the square of the relative index also indicates that the negative impact of concentration occurs at a decreasing rate.

### **7.3 Employment**

No convincing evidence was found to suggest that enclaves affect the change in employment or total employment rates of the cells after controlling for the initial rate of employment. The rate of employment is defined as the total number of people employed

**TABLE C: Change in the Rate of Employment and Total Employment Rate, 1980  
Base Year**

	C1	C2	C3	C4	C5	C6
Period of Change	1980-85	1980-90	1980-95	1980-85	1980-90	1980-95
(I)	Employment	Employment	Employment	Total Employment	Total Employment	Total Employment
R <sup>2</sup>	0.5038	0.3735	0.4154	0.6186	0.5830	0.5832
Initial rate	-.9544***	-.9448***	-.9202***	-.9609***	-.9290***	-.9610***
	(.021)	(.027)	(.026)	(.016)	(.025)	(.027)
Exposure index	.0282	-.1982**	-.0375	.0262	-.1270	-.1851
	(.072)	(.081)	(.105)	(.072)	(.162)	(.163)
(II)	Employment	Employment	Employment	Total Employment	Total Employment	Total Employment
R <sup>2</sup>	0.5056	0.3727	0.4159	0.6201	0.5828	0.5830
Initial rate	-.9538***	-.9443***	-.9200***	-.9603***	-.9293***	-.9614***
	(.021)	(.027)	(.026)	(.016)	(.025)	(.027)
Relative index	.0038**	.0006	.0019	.0038**	-.0009	-.0012
	(.002)	(.001)	(.001)	(.002)	(.002)	(.002)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

divided by the total number of people in the labour force for a given cell  $(i,j,k)$ . Total employment gives the percentage of the cell in the given age group that is employed. For the change in rate of employment, the only statistically significant results occur with the exposure index for the ten year model in column C2 with a negative result and for the relative index for the five year model in column C1 which is positive. For the total employment model, the only statistically significant result is for the relative index for the five-year growth model, which is positive. The indexes of concentration do not appear to be able to predict changes in employment rates or total employment.

#### 7.4 Earnings

If workers receive income from non-wage/non-salary sources, the hourly wage may not give a complete story of the impact of enclaves on labour market assimilation. The growth in total earnings is examined with 1980 as the base year in columns D1-D3 in table D for workers with positive earnings. While the exposure index for the five-year

growth model is statistically insignificant and the relative index is positive, the ten and fifteen-year growth models indicate statistically significant and large negative effects of enclaves on the growth of earnings. However, while examining total earnings rather than wages and salaries covers a larger portion of the working age population, a bias may still exist. Looking only at employed workers may give a misleading view of the effect of

**TABLE D: Growth in Total Earnings, 1980 Base Year**

	D1	D2	D3	D4	D5	D6
Period of Growth	1980-85	1980-90	1980-95	1980-85	1980-90	1980-95
<b>(I)</b>	All workers	All workers	All workers	All cell members	All cell members	All cell members
R <sup>2</sup>	0.3515	0.4374	0.4300	0.4600	0.5821	0.5375
Initial total log earnings	-.5666***	-.8154***	-.7005***	-.8069***	-.9349***	-.9365***
	(.056)	(.053)	(.070)	(.025)	(.024)	(.029)
Exposure index	-1.1729	-2.5624**	-4.0614***	-1.1616	-2.5714**	-4.1117***
	(.847)	(1.017)	(1.236)	(.827)	(1.013)	(1.255)
<b>(II)</b>	All workers	All workers	All workers	All cell members	All cell members	All cell members
R <sup>2</sup>	0.3511	0.4366	0.4287	0.4598	0.5814	0.5364
Initial total log earnings	-.5622***	-.8083***	-.6925***	-.8045***	-.9336***	-.9349***
	(.056)	(.053)	(.070)	(.025)	(.024)	(.029)
Relative index	.0037	-.0235**	-.0377***	.0079	-.0211*	-.0367***
	(.011)	(.011)	(.013)	(.011)	(.011)	(.014)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

enclaves on labour market outcomes if enclaves also affect the likelihood of finding employment. In columns D4-D6, all working age males in a cell are included. These results give an indication of the effect of enclaves on the overall earnings opportunities. If better employment is available outside of an enclave, but a smaller proportion actually does find work, the estimated effect of enclaves on earnings growth will be misleading. However, such a bias does not appear to exist. Examining columns D4-D6, the results are similar to the results with only workers with positive earnings with the impact of enclaves on earnings becoming increasingly negative over the longer growth models.

## 7.5 Other Residential Segregation Measures

When the country of birth is replaced by ethnicity or mother tongue as the affiliation index in equation (1), there is still evidence of the negative impact of clustering on wage growth. The exposure index for ethnicity and mother tongue are statistically significant at either the 5 or 1 percent levels for the five and ten-year growth models with 1980 as the base year (columns E1, E2, E4 and E5 in table E). The exposure index for the fifteen-year growth models are both negative, but only statistically significant at the 10 percent level for the mother tongue and not statistically significant for ethnicity (columns E6 and E3). The relative index coefficients for these two affiliation measures are negative, but not statistically significant.

Convincing evidence of enclave effects are not found when visible minority status is applied as the affiliation measure. While the results for the ten-year growth model with visible minority as the affiliation measure is statistically significant and resemble the magnitude of Borjas' (2000) results for country of birth, the results are not robust to

**TABLE E: Ethnicity and Mother Tongue, 1980 Base Year**

	E1	E2	E3	E4	E5	E6
Period of Growth	1980-85	1980-90	1980-95	1980-85	1980-90	1980-95
<b>(I)</b>	Ethnicity	Ethnicity	Ethnicity	Language	Language	Language
R <sup>2</sup>	0.3536	0.4570	0.4145	0.3467	0.4670	0.4201
Initial log wage	-.7686***	-.7955***	-.8231***	-.7308***	-.7847***	-.7698***
	(.030)	(.032)	(.036)	(.030)	(.030)	(.036)
Exposure index	-.3060**	-.3119**	-.2660	-.6652***	-.4331**	-.6202*
	(.129)	(.125)	(.204)	(.224)	(.216)	(.329)
<b>(II)</b>						
R <sup>2</sup>	0.3527	0.4564	0.4142	0.3445	0.4663	0.4196
Initial log wage	-.7674***	-.7934***	-.8219***	-.7315***	-.7844***	-.7701***
	(.030)	(.032)	(.036)	(.030)	(.030)	(.036)
Relative index	-.0035	-.0041	-.0039	-.0035	-.0020	-.0062
	(.003)	(.003)	(.004)	(.003)	(.003)	(.004)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

changes in the length of the time periods of the model. The rest of the results for the five and fifteen-year models are not statistically significant and the exposure index for the fifteen-year growth model is positive. These regressions are rerun with non-visible minorities removed. Potentially, the inclusion of non-visible minorities could affect the results if enclaves do not have an impact on the labour market outcome of non-visible minorities. The results for the regressions with non-visible minorities excluded are shown in Columns F4-F6. Even with the non-visible minorities removed, the results still do not follow the trend of the results when country of birth, ethnicity or language were used as the affiliation measures. The coefficients for both the exposure and relative indexes are all positive and not statically significant at the 5 percent level. Only the exposure index

**TABLE F: Visible Minority, Growth of Mean Wage, 1980 Base Year**

BASE YEAR 1980	F1	F2	F3	F4	F5	F6
Period of Growth	1980-85	1980-90	1980-95	1980-85	1980-90	1980-95
(I)	All groups	All groups	All groups	Only visible minorities	Only visible minorities	Only visible minorities
R <sup>2</sup>	0.4380	0.6013	0.4547	0.4259	0.4778	0.3851
Initial log wage	-.6070***	-.6407***	-.7462***	-.7742***	-.7025***	-.8382***
	(.054)	(.056)	(.083)	(.064)	(.070)	(.091)
Exposure index	-.1267	-.3142**	.0005	.4811	-.0089	.0692
	(.134)	(.136)	(.178)	(.582)	(.763)	(.923)
(II)						
R <sup>2</sup>	0.4375	0.5996	0.4552	0.4281	0.4778	0.3859
Initial log wage	-.6091***	-.6368***	-.7510***	-.7792***	-.7027***	-.8436***
	(.054)	(.056)	(.083)	(.063)	(.070)	(.091)
Relative index	.0041	-.0102	.0073	.0153*	.0001	.0121
	(.007)	(.007)	(.009)	(.009)	(.012)	(.013)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

for the ten-year growth model is negative, but is no longer statistically significant. A possible explanation is that visible minority groups are too broad of a grouping to measure ethnic networks and that interaction occurs at a less broad level of classification.

## 7.6 Similar Countries

It is likely that the impact of residential segregation should differ for countries that are similar to Canada versus countries that are very culturally different from Canada. Borjas (2000) included Australia, Canada, Ireland, New Zealand and the UK in his study. However, it is presumable that enclaves should not have an impact on the labour market assimilation of immigrants from countries that are similar to the host country. The results

**TABLE G: Controlling for Similar Countries of Birth, 1980 Base Year**

BASE YEAR 1980	G1	G2	G3	G4	G5	G6
Period of Growth	1980-85	1980-90	1980-95	1985-90	1985-95	1990-95
R <sup>2</sup>	0.3819	0.4767	0.3672	0.4760	0.4300	0.3767
Initial log wage	-0.7623***	-0.8387***	-0.7884***	-0.7925***	-0.8054***	-0.8180***
	(.022)	(.022)	(.027)	(.019)	(.021)	(.019)
Exposure index	-1.0412***	-1.0920**	-.4065	-1.0991**	-.8900*	-1.2219**
	(.315)	(.419)	(.415)	(.445)	(.498)	(.512)
Expo*(W/S Euro)	.5318	.7624*	-.4989	.7375	.1522	.4201
	(.384)	(.454)	(.531)	(.505)	(.631)	(.722)
Expo*(E Euro)	-3.4394	3.701	.8898	-2.2267	-.1987	-3.996
	(2.721)	(4.017)	(5.479)	(3.580)	(4.721)	(3.647)
Expo*(C/S America + Caribbean)	-2.7051	-4.6271**	-4.0866**	-2.1458	-1.76	-.7666
	(1.980)	(2.258)	(1.968)	(1.510)	(1.555)	(1.340)
Expo*(Africa + Middle East)	-13.9039*	5.0971	-15.1051	4.651	-8.6634	-9.0681
	(7.863)	(10.759)	(11.271)	(9.639)	(10.553)	(6.158)
Expo*(S Asia)	-3.3576	-5.0922	-4.5312*	-2.9128	-1.3016	-.6747
	(2.434)	(3.347)	(2.513)	(2.572)	(2.140)	(1.409)
Expo*(SE Asia)	-.2017	3.5413	-2.138	3.0047	-.1525	-.3244
	(2.615)	(3.717)	(4.489)	(3.094)	(2.273)	(1.828)
Expo*(East Asia)	-1.7132	1.6007	-8.9797	1.2349	1.9292	2.6294**
	(3.783)	(3.400)	(10.461)	(1.634)	(1.657)	(1.170)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

of country of birth regressions are reexamined in Table H where the exposure is interacted with regional dummy variables. The similar country dummy is used as the reference variable. The countries classified as being similar to Canada include the UK, the U.S., Ireland, New Zealand and Australia for English or bilingual CMAs and France

for French or bilingual CMAs.<sup>19</sup> Otherwise, these countries are included in the Western-Southern European index. Surprisingly there does not appear to be a consistent statically significant difference between similar countries and most of the other regions.

The coefficient for the interaction between the exposure and the Central American, South American and Caribbean region is large, negative and statistically significant at the 5 percent level for the ten and fifteen-year growth models with 1980 as the base year. The only other region that is statistically significant different at the 5 percent level from the similar countries is the East Asian for the five year growth model with 1990 as the base year. Combining all of the non-similar regions and using an F-test, it was not possible to reject the null hypothesis that the effect of enclaves (defined by the exposure index) on wage growth is the same across similar and non-similar countries.

### **7.7 Cohort Effect**

It is conceivable that enclaves may have divergent effects on different landing cohorts. In Table H, the exposure index is interacted with cohort dummies. The results indicate that the negative effects of enclaves are strongest for the later cohorts. These results are contrary to Borjas' findings where he found that enclaves were most harmful for newly arrived immigrants. Using the earliest cohort as the reference variable, the exposure index is strongly negative and statistically significant at either the 5 or 1 percent level for each of the regressions. Further, the effects of the enclaves are positive for the most recent cohort for each of the three base years. When 1985 and 1990 are the base years, the effect of the exposure to one's own country of birth group on wage growth is

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<sup>19</sup> Bilingual CMAs include Saint John, Montreal and Ottawa. French CMAs include all CMAs in Quebec except for Montreal, while all other CMAs are classified as being English CMAs.

**TABLE H: Country of Birth, Exposure Index Interacted with Cohorts, 1980 Base Year**

BASE YEAR 1980	H1	H2	H3	H4	H5	H6
Period of Growth	1980-85	1980-90	1980-95	1985-90	1985-95	1990-95
(l)	t=0	t=0	t=0	t=5	t=5	t=10
R <sup>2</sup>	0.3839	0.4757	0.3691	0.4781	0.4340	0.3783
Initial log wage	-.7739***	-.8479***	-.8139***	-.8034***	-.8200***	-.8249***
	(.023)	(.023)	(.026)	(.019)	(.022)	(.019)
Exposure index	-1.6064***	-1.3161**	-1.8641**	-.8933**	-1.6391***	-1.8112***
	(.353)	(.574)	(.733)	(.400)	(.465)	(.448)
Cohort(1975+t~ 1979+t)*index	1.7917***	1.7107***	2.3005***	1.8825***	2.3562***	2.6002***
	(.353)	(.544)	(.743)	(.474)	(.534)	(.804)
Cohort(1970+t~ 1974+t)*index	1.1685***	.6608	1.7136**	1.1445***	2.0935***	1.2965**
	(.340)	(.530)	(.702)	(.370)	(.409)	(.567)
Cohort(1965+t~ 1969+t)*index	.4601	.5228	1.1234	-.0756	1.5771***	1.8446***
	(.306)	(.519)	(.714)	(.339)	(.389)	(.438)
Cohort(1960+t~ 1964+t)*index	.8621**	.2697	1.0412	-.0123	.7127*	1.3213***
	(.342)	(.541)	(.730)	(.335)	(.367)	(.467)
Cohort(1950+t~ 1959+t)*index	.8524***	.6394	.8711	-.0225	.3724	.4731
	(.300)	(.518)	(.703)	(.329)	(.345)	(.361)

Significance levels are indicated by (\*) for 10 percent, (\*\*) for 5 percent and (\*\*\*) for 1 percent. Standard errors are in brackets.

very large for the 1980-84 and 1985-89 cohorts, respectively. For example, for the five-year growth model for the 1980-1984 cohort with 1985 as the base year (column H4), the interaction coefficient is 1.883, compared to -.893 for the reference category which is immigrants who landed before 1955. This indicates a positive effect of residential segregation on growth of mean wage of around 1 for the 1980-1984 cohort.

For the most recent cohorts, enclaves may act as a source of better employment. Immigrants lack knowledge of the Canadian labour market at time of entry, therefore residing in an enclave may provide job connections and knowledge not available to immigrants who locate in areas with fewer contacts. Also immigrants' skills may be more recognized and may be more valued in their own community. However, the skills

necessary to obtain better employment are not obtained inside the enclave. Further, the employment within the enclave may not provide the long-run economic growth that the employment available outside the enclave may provide. Immigrants going outside an enclave may find an initially poorer level of employment, but the skills and contacts they acquire may provide better opportunities later in their career.

## **8. Conclusion**

This paper has found evidence that ethnic enclaves have a negative impact on the wage growth of immigrants in Canada. Several specifications of the model were examined to determine the robustness of the results. The findings were robust for different time periods and different specifications of time lengths of the growth model. As well, when country of birth was replaced by mother tongue or ethnicity as the affiliation measure there was still evidence of a negative impact of clustering. The five-year model was particularly useful in examining the bias that movement of workers has on the results. Even after re-estimating the model to remove workers who had moved in the previous five years, the negative impact of enclaves remained. The findings indicate that ethnic enclaves have a larger negative impact on the wage growth of earlier cohorts and in some case even have a positive impact on the wage growth of the most recent cohorts. Surprisingly, there is no strong evidence to suggest that enclaves have a divergent effect on the wage growth of immigrants from countries similar to the host country versus countries that are not similar to the host country.

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## APPENDIX 1

<b>COUNTRY OF BIRTH: Working Age Males (18-54) in CMAs</b>					
Base year: 1980		Base year: 1985		Base year: 1990	
United Kingdom	163653	United Kingdom	157618	United Kingdom	141208
Italy	137433	Italy	117350	Italy	94961
Germany	46626	Portugal	49137	India	59064
Portugal	45599	India	44375	Hong Kong	54437
U.S.A.	39170	U.S.A.	40374	Portugal	53916
India	36047	Germany	42587	Viet Nam	42542
Greece	35608	China	31234	U.S.A.	40073
Yugoslavia	29637	Greece	31229	China	39845
Netherlands	26396	Hong Kong	29180	Poland	37869
Jamaica	22267	Jamaica	28669	Philippines	35366
Hong Kong	21220	Viet Nam	28037	Germany	34248
Poland	19332	Yugoslavia	27156	Jamaica	32220
Philippines	18056	Netherlands	24939	Greece	25640
Taiwan	16756	Philippines	23490	Yugoslavia	24000
France	16121	Poland	22971	Guyana	23372
China	15603	Guyana	17544	Lebanon	21477
Hungary	15476	France	16050	Netherlands	19328
Vietnam	15063	Trinidad & Tobago	14334	Trinidad & Tobago	17121
Trinidad & Tobago	13564	Hungary	13290	France	15211
Guyana	12645	Haiti	10235	Haiti	13023
USSR	11617	Lebanon	9856	Iran	12793
Czechoslovakia	9628	Czechoslovakia	9590	South Korea	10838
Haiti	9301	USSR	9049	Sri Lanka	10653
Lebanon	8912	Egypt	8395	Hungary	10250
Egypt	8440	South Korea	7008	Czechoslovakia	9714
Austria	6714	Ireland	6502	El Salvador	9630
Pakistan	5727	Pakistan	6396	Egypt	9611
Denmark	5275	Chile	6191	Pakistan	9431
Belgium	5215	Austria	5846	USSR	9385
Barbados	4853	Iran	5818	Chile	8765
Morocco	4656	Morocco	5484	Romania	7446
Chile	4587	South Africa	5439	South Africa	7403
Spain	4582	Tanzania	5287	Tanzania	6686
Romania	4397	Romania	4781	Morocco	6611
Malta	4373	Belgium	4745	Kampuchea	6560
Eire	4320	Barbados	4725	Ireland	6247
South Africa	4221	Israel	4599	Israel	5917
Tanzania	4172	Fiji	4525	Kenya	5882
Israel	4135	Denmark	4521	Fiji	5853
Switzerland	3774	Sri Lanka	4387	Ethiopia	5744
Finland	3743	Spain	4179	Taiwan	5336
Fiji Islands	3621	Kampuchea	4009	Malaysia	5236

Australia	3210	Malta	3837	Laos	4974
Uganda	3146	Kenya	3750	Barbados	4589
Japan	3094	El Salvador	3682	Austria	4557
South Korea	3043	Switzerland	3559	Belgium	4417
Kenya	2821	Uganda	3412	Argentina	4085
North Korea	2658	Laos	3403	Syria	3796
Turkey	2591	Malaysia	3239	Uganda	3702
Malaysia	2446	Australia	3163	Turkey	3653
Argentina	2391	Japan	3125	Denmark	3644
New Zealand	2097	Finland	3099	Peru	3503
Ecuador	2020	Turkey	3089	Australia	3328
Laos	1935	Argentina	3000	Spain	3322
Syria	1927	Ecuador	2434	Japan	3312
Iran	1912	Syria	2300	Ecuador	3214
Indonesia	1911	Taiwan	2231	Switzerland	3208
Colombia	1717	Iraq	1989	Ghana	3187
Sweden	1706	Cyprus	1955	Malta	3159
Cyprus	1691	Peru	1906	Iraq	3036
Kampuchea	1625	Indonesia	1835	Guatemala	2920
Sri Lanka	1625	New Zealand	1807	Finland	2808
Uruguay	1397	Colombia	1803	Mexico	2544
Iraq	1343	Mexico	1675	Colombia	2507
Mexico	1318	Uruguay	1657	Somali	2352
Peru	1288	Sweden	1572	Brazil	2162
Norway	1274	Ethiopia	1499	Afghanistan	2138
Algeria	1200	Brazil	1434	Uruguay	2105
Mauritius	1159	Ghana	1413	Bangladesh	2087
S.W. Africa	1038	Mauritius	1381	Mauritius	2072
Brazil	1032	Guatemala	1338	New Zealand	2035
Singapore	955	Grenada	1276	Indonesia	1965
Tunisia	903	Singapore	1219	Brunei	1796
St. Vincent	839	Paraguay	1190	Singapore	1771
Ghana	814	Algeria	1062	Nicaragua	1758
Paraguay	786	Norway	1005	Cyprus	1733
Grenada	770	St. Vincent & Grenadines	985	Algeria	1690
Nigeria	761	Tunisia	951	Sweden	1578
Venezuela	698	Venezuela	940	Macao	1486
Bulgaria	512	Bangladesh	921	St.Vincent & Grenadines	1485
Burma	510	Nigeria	879	Nigeria	1462
Jordan	502	Macao	868	Grenada	1456
Bangladesh	501	Burma	785	Tunisia	1303
Guatemala	496	Jordan	693	Paraguay	1278
El Salvador	493	Brunei	686	Venezuela	1176
Bermuda	410	Afghanistan	559	Bulgaria	1031
Netherland Antilles	382	Bulgaria	532	Norway	989

Rhodesia	371	Antigua	522	Jordan	909
Antigua	362	St. Lucia	507	Myanmar	788
St. Kitts & Nevis	354	Cuba	488	Zaire	735

<b>ETHNIC GROUPS: Working Age Males (18-54) in CMAs, Base Year 1980</b>			
Italian	138420	Romanian	1776
Chinese	69541	Macedonian	1770
German	57047	Iranian	1769
Portuguese	45686	Estonian	1732
Greek	36696	Serbian	1719
Dutch	28332	Fijian	1665
Jewish	20329	Lettish (Latvian)	1538
Caribbean	19878	Chilean	1502
Filipino	15948	Swedish	1484
Polish	15513	Russian	1476
Hungarian	14875	Norwegian	1426
Spanish	13710	Turk	1424
Vietnamese	9126	Laotian	1369
Croatian	8138	Slovene	1270
Ukrainian	7081	Lithuanian	1220
Armenian	5694	Cambodian	961
Lebanese	5500	Mexican	538
Korean	5410	Malay	494
Danish	4691	Syrian	485
Haitian	4336	Bulgarian	436
Austrian	3995	Indonesian	431
Czech	3949	Gujarati	404
Maltese	3854	Argentinian	348
Finnish	3728	Peruvian	301
Egyptian	2967	Ecuadorian	292
Japanese	2930	Singhelese	246
Swiss	2630	Palestinian	236
Belgian	2074	Brazilian	232
Punjabi	2049	Bengali	230
Slovak	1907	Albanian	219

<b>LANGUAGE GROUPS: Working Age Males (18-54) in CMAs, Base Year 1980</b>					
Italian	131448	Armenian	5109	Latvian	1412
Chinese	59489	Korean	4931	Serbian	1382
German	58803	Danish	4602	Kam-Tai	1312
Portuguese	44271	Urdu	4377	Swedish	1210
Greek	34648	Finnish	3383	Bengali	1123
Dutch & Flemish	24618	Russian	3056	Norwegian	1080
Spanish	20149	Japanese	2828	Lithuanian	996
Arabic	17937	Slovak	2673	Flemish	922
Hungarian	15670	Hebrew	2371	Cambodian	820
Polish	13963	Macedonian	2349	Tamil	788
Punjabi	11734	Romanian	2329	Malay, Bahasa	691
Philippino	9883	Tagalog	2132	Malayalam	680
Croatian	8413	Yiddish	1680	Bulgarian	448
Vietnamese	8262	Estonian	1637	Cingalese	361
Ukrainian	6375	Iranian	1598	Welsh	357
Hindi	5951	Slovenian	1580	Swahili	235
Czech	5413	Turkish	1523		

<b>VISIBLE MINORITIES: Working Age Males (18-54) in CMAs, Base Year 1980</b>			
Not a Minority	680859	Filipinos	16126
Chinese	70140	Latin Americans	14363
Black	60974	Southeast Asian	13793
Indo-Pakistanis	56491	Korean	5491
Pacific Islanders	28051	Japanese	2989