

THE PERFORMANCE OF IMMIGRANTS IN SELECTED CANADIAN CITIES*

By

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Abstract

This paper uses two cross-sections drawn from the 1991 and 1996 Canadian censuses to analyze the earnings performance of immigrants in selected Canadian CMAs. With the exception of immigrant men arriving between 1981-85 and residing in large CMAs, the results show positive rates of assimilation for all arrival cohorts in all three CMA levels and for both sexes. Furthermore, immigrants living in smaller or medium sized CMAs enjoyed a much higher rate of assimilation (relative to the native-born), compared to their counterparts living in large CMAs. Finally, the estimates of true assimilation captured by the within-cohort earnings growth estimates were much lower than that predicted by the pure cross-sectional estimate. This is especially true for the immigrant men sample. The implication of this result is that the cross-sectional growth underestimates the number of years that it will take recent immigrants living in these CMAs to overtake their native-born counterparts.

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1.0 Introduction

The literature on the economic assimilation of immigrants has been dominated by 2 key questions. First, do immigrants experience rapid earnings growth over time and secondly do they catch-up with their native-born counterparts. In other words do immigrants' earnings converge or diverge from the native born and how long does it take. The path breaking study by Chiswick (1978) provided some insights into these issues. In a study of immigrant men in the US labour market using data from the 1970 US census data, he concluded that although immigrants initially earn less than the native-born, their earnings rise more rapidly with the acquisition of US labour market experience, and after 10-15 years their earnings equal and exceed that of the native-born.

Using another a slightly different methodology, Borjas (1985) pointed out the problems associated with using a single cross-section in analyzing immigrant assimilation. Building on the work of Chiswick, he painted a more pessimistic picture of immigrant assimilation in the US, alluding to quality differences in immigrant cohorts.

In Canada, numerous studies have also been published using variants of the methodologies proposed by Chiswick (1978) and Borjas (1985). Recent studies include Beach and Worswick (1993), Baker and Benjamin (1994), Bloom, Grenier and Gunderson (1995), Pendakur and Pendakur (1998) and Grant (1999). In the main, these studies portray disturbing trends regarding immigrant assimilation, and predict that many immigrant cohorts will be unable to fully assimilate into the Canadian labour market.¹

In addition, most studies to-date on the performance of immigrants in the labour market, have been at the national or aggregate (macro) level where an implicit assumption of homogeneity in labour markets across the country is inevitable. However, labour markets in Canada are not homogeneous and the bulk of immigrants settle in cities. For example, in 1996, 42% of immigrants landing between 1991 and 1996 were resident in Toronto, 18% in Vancouver, 13% in Montreal, 3% in both Calgary and Edmonton, and 2% in Hamilton. See HRDC Deck (2000, p. 10). Given the unequal distribution of immigrants across cities against the backdrop of heterogeneous labour markets, it is feasible that the poor performance of recent immigrants in the 1990's could be prevalent in certain cities but absent in others. Thus, an analysis of earnings performance at the CMA level is warranted for an accurate picture of immigrant assimilation.

The primary objective of this paper therefore is to empirically analyze the earnings performance of immigrants in selected Census Metropolitan Areas (CMAs) or cities in Canada, using data from the 1991 and 1996 Canadian censuses, public use microdata files. Preliminary results show positive rates of

¹ The exception is Grant (1999), who portrays a more optimistic picture of immigrant assimilation in Canada.

assimilation for all arrival cohorts in all three CMA levels and for both sexes. The only exception is immigrant men arriving between 1981-85 and residing in large CMAs. Furthermore, we also observed that immigrant men and women living in smaller or medium sized CMAs enjoyed a much higher rate of assimilation (relative to the native-born), compared to their counterparts living in large CMAs. Finally, the estimates of genuine cohort assimilation captured by the within-cohort earnings growth estimates were much lower than that predicted by the pure cross-sectional estimate. This is especially true for the immigrant men sample. The implication of this result is that the cross-sectional growth underestimates the number of years that it will take recent immigrants living in these CMAs to overtake their native-born counterparts.

The analysis proceeds as follows: section 2 presents an overview of the data including key features and sample selection criteria; sections 3 discusses the methodology used to estimate the assimilation profiles of various immigrant cohorts in selected CMAs; section 4 discusses the main results from the study and section 5 provides concluding remarks.

2.0 Data

The data used for the current study is from the 1991 and 1996 Canadian censuses, public use microdata files.² The individuals included in the sample are men and women aged 16-59 in the 1991 sample and 21-64 in the 1996 sample, who worked 40 or more weeks in the survey year, did not reside in the Atlantic Provinces or Northwest and Yukon Territories, and also reported positive earnings. Immigrants from the Atlantic Provinces and territories are excluded because the year of immigration variable is coded differently. The resulting sample is designed to target those who are active in the labour market (full time workers) and also to track as close as possible similar populations across both censuses, hence the different age cohorts in both censuses.

Tables 1 and 2 report the unadjusted relative (to the native-born) log real earnings (1995 dollars) of immigrant cohorts in various CMAs.³ This implies that the figures reported in these tables are calculated without controlling for differences in observable characteristics. Thus any differences in assimilation could disappear once these characteristics have been accounted for. Table 1 documents the results for men and Table 2 for women. In this paper, we identify 3 levels of CMAs based on population size. These are small, medium and large CMAs. Following Li (2000), we define a small CMA as a city with a population of between 100,000 and 499,999 people; medium CMA with a population of

² Subsequently, this study will be replicated using data from the 20% sample of both censuses.

³ 1990 earnings is converted into real earnings using the consumer price index; thus 1990 dollars are multiplied by 1.117.

between 500,000 and 999,999; and large CMA with a population of 1 million plus.⁴

Using the above criteria, the small CMAs/cities in the sample included St Catharines, Kitchener, London, Windsor and Victoria. Medium-size CMAs included Ottawa-Hull, Hamilton, Winnipeg, Calgary and Edmonton. Large CMAs included Montreal, Toronto and Vancouver. For ease of analysis and parsimony, I will concentrate on the aggregated analysis within these 3 designated groups of CMAs as opposed to individual cities. From Table 1, we observe that immigrant men in small CMAs as a group earned on average 6% more relative to the native born in 1991 (see the last 3 rows in table 1). Immigrant men in both medium sized and large CMAs on the other hand fared worse. In these CMAs, immigrant men earned on average 3% less compared to the native-born. By 1996, although immigrant men in small CMAs experienced a decrease in their earnings from 6% to 4% relative to the native-born, the fact still remains that they earned more i.e. relative earnings was positive. Immigrant men in medium sized and large CMAs fared even worse relative to their native-born counterparts. Relative earnings fell from -3% in 1991 to -9% and -16% in medium-size and large CMAs respectively.

The situation for women captured in the last 4 rows of Table 2 portrays a similar trend. In conclusion, the unadjusted relative earnings comparisons seem to suggest that immigrants residing in small CMAs experienced higher assimilation rates compared to those residing in medium sized or large CMAs. However, the above analysis does not disentangle cohort effects from that of pure assimilation. In the next section, we outline a methodology to address these issues more formally.

⁴ Note that Statistics Canada defines a CMA as being delineated around an urban area (called the urban core and having a population of at least **100,000 based on the previous census**).

Table 1
Relative log Wages of Immigrants by Year of Arrival Cohorts and CMAs: Men

CMA	Arrival Cohort	1991	1996
<i>Small CMAs^a</i>			
St. Catharines	All Immigrants	0.24	0.02
	1976-1980	0.11	0.06
	1981-1985	-0.1	-0.25
	1986-1990	-0.09	-0.17
	1991-1996	n.a.	-0.38
Kitchener	All Immigrants	0.06	-0.14
	1976-1980	-0.02	-0.26
	1981-1985	0.08	-0.03
	1986-1990	-0.36	-0.39
	1991-1996	n.a.	-0.74
London	All Immigrants	0.08	0.07
	1976-1980	0.05	0.32
	1981-1985	-0.13	0.21
	1986-1990	-0.55	-0.29
	1991-1996	n.a.	-0.29
Windsor	All Immigrants	0.07	-0.02
	1976-1980	-0.01	0.04
	1981-1985	0.14	0.05
	1986-1990	-0.08	-0.24
	1991-1996	n.a.	-0.29
Victoria	All Immigrants	0.06	0.1
	1976-1980	0.11	0.07
	1981-1985	-0.29	0.15
	1986-1990	-0.22	-0.08
	1991-1996	n.a.	-0.13
<i>Medium-Size CMAs^b</i>			
Ottawa-Hull	All Immigrants	0.05	-0.01
	1976-1980	-0.14	-0.04
	1981-1985	-0.03	-0.05
	1986-1990	-0.5	-0.41
	1991-1996	n.a.	-0.65
Hamilton	All Immigrants	0.11	0.03
	1976-1980	0.08	-0.18
	1981-1985	-0.27	-0.01
	1986-1990	-0.28	-0.27
	1991-1996	n.a.	-0.67
Winnipeg	All Immigrants	-0.09	-0.11
	1976-1980	-0.24	-0.2
	1981-1985	-0.39	-0.13
	1986-1990	-0.49	-0.27
	1991-1996	n.a.	-0.77
Calgary	All Immigrants	-0.05	-0.22
	1976-1980	-0.05	-0.15
	1981-1985	-0.17	-0.28
	1986-1990	-0.61	-0.37
	1991-1996	n.a.	-1.02

Table 1 (Continued)
Relative log Wages of Immigrants by Year of Arrival Cohorts and CMAs: Men

CMA	Arrival Cohort	1991	1996
Edmonton	All Immigrants	-0.12	-0.16
	1976-1980	-0.19	-0.25
	1981-1985	-0.27	-0.14
	1986-1990	-0.66	-0.46
	1991-1996	n.a.	-0.73
<i>Large CMAs^c</i>			
Montreal	All Immigrants	-0.11	-0.17
	1976-1980	-0.15	-0.21
	1981-1985	-0.39	-0.31
	1986-1990	-0.59	-0.41
	1991-1996	n.a.	-0.55
Toronto	All Immigrants	-0.04	-0.22
	1976-1980	-0.1	-0.24
	1981-1985	-0.19	-0.27
	1986-1990	-0.35	-0.43
	1991-1996	n.a.	-0.63
Vancouver	All Immigrants	-0.07	-0.21
	1976-1980	-0.19	-0.16
	1981-1985	-0.22	-0.3
	1986-1990	-0.47	-0.43
	1991-1996	n.a.	-0.63
<u>Aggregated Analysis</u>			
	All Small CMAs	0.06	0.04
	All Medium-size CMAs	-0.03	-0.09
	All Large CMAs	-0.03	-0.16

Source: Author's calculations from 1991 and 1996 Canadian Censuses, Public Use Files.
 All wages relative to those of the native-born of comparable age. 1990 wages expressed in 1995 dollars.
 Calculations based on a sample criteria of individuals aged 16-59 in the 1991 sample and 21-64 in the 1996 sample, who reported positive earnings and worked 40 or more weeks in the reference year (full-year, full-time workers).

NOTES:

- a. Census Metropolitan Area (CMA) with a population of 100,000 – 499,999.
- b. CMA with a population of between 500,000 – 999,999 people.
- c. CMA with a population of 1,000,000 or more.

Table 2
Relative log Wages of Immigrants by Year of Arrival Cohorts and CMAs: Women

CMA	Arrival Cohort	1991	1996
<i>Small CMAs^a</i>			
St. Catharines	All Immigrants	0.06	0.07
	1976-1980	-0.25	0.09
	1981-1985	-0.21	-0.28
	1986-1990	-0.35	-0.25
	1991-1996	n.a.	0.01
Kitchener	All Immigrants	-0.05	-0.06
	1976-1980	-0.21	0.00
	1981-1985	-0.24	-0.04
	1986-1990	-0.19	-0.21
	1991-1996	n.a.	-0.42
London	All Immigrants	-0.01	-0.12
	1976-1980	0.00	0.08
	1981-1985	0.02	-0.18
	1986-1990	-0.41	-0.19
	1991-1996	n.a.	-0.55
Windsor	All Immigrants	0.14	0.07
	1976-1980	-0.03	0.00
	1981-1985	0.05	-0.14
	1986-1990	-0.08	-0.05
	1991-1996	n.a.	-0.37
Victoria	All Immigrants	0.00	-0.03
	1976-1980	0.05	-0.12
	1981-1985	0.35	-0.24
	1986-1990	-0.53	-0.11
	1991-1996	n.a.	-0.22
<i>Medium-Size CMAs^b</i>			
Ottawa-Hull	All Immigrants	-0.15	-0.12
	1976-1980	-0.13	-0.18
	1981-1985	-0.45	-0.03
	1986-1990	-0.66	-0.39
	1991-1996	n.a.	-0.61
Hamilton	All Immigrants	-0.04	-0.07
	1976-1980	-0.17	0.06
	1981-1985	-0.07	-0.25
	1986-1990	-0.57	-0.19
	1991-1996	n.a.	-0.94
Winnipeg	All Immigrants	-0.04	-0.16
	1976-1980	-0.24	-0.11
	1981-1985	-0.28	-0.35
	1986-1990	-0.32	-0.36
	1991-1996	n.a.	-0.62
Calgary	All Immigrants	-0.12	-0.2
	1976-1980	-0.11	-0.05
	1981-1985	-0.29	-0.19
	1986-1990	-0.39	-0.36
	1991-1996	n.a.	-0.69

Table 2 (Continued)
Relative log Wages of Immigrants by Year of Arrival Cohorts and CMAs: Women

CMA	Arrival Cohort	1991	1996
Edmonton	All Immigrants	-0.15	-0.23
	1976-1980	-0.14	-0.15
	1981-1985	-0.28	-0.32
	1986-1990	-0.59	-0.41
	1991-1996	n.a.	-0.48
<i>Large CMAs^c</i>			
Montreal	All Immigrants	-0.13	-0.17
	1976-1980	-0.23	-0.16
	1981-1985	-0.28	-0.19
	1986-1990	-0.49	-0.43
	1991-1996	n.a.	-0.62
Toronto	All Immigrants	-0.07	-0.2
	1976-1980	-0.15	-0.17
	1981-1985	-0.2	-0.23
	1986-1990	-0.25	-0.33
	1991-1996	n.a.	-0.63
Vancouver	All Immigrants	-0.08	-0.2
	1976-1980	-0.07	-0.2
	1981-1985	-0.19	-0.18
	1986-1990	-0.42	-0.38
	1991-1996	n.a.	-0.55
<u>Aggregated Analysis</u>			
	All Small CMAs	0.07	0.00
	All Medium-sized CMAs	-0.12	-0.17
	All Large CMAs	-0.04	-0.14

Source: Author's calculations from 1991 and 1996 Canadian Censuses, Public Use Files.
All wages relative to those of the native-born of comparable age. 1990 wages expressed in 1995 dollars.
Calculations based on a sample criteria of individuals aged 16-59 in the 1991 sample and 21-64 in the 1996 sample, who reported positive earnings and worked 40 or more weeks in the reference year (full-year, full-time workers).

NOTES:

- a. Census Metropolitan Area (CMA) with a population of 100,000 – 499,999.
- b. CMA with a population of between 500,000 – 999,999 people.
- c. CMA with a population of 1,000,000 or more.

3.0 Methodology and Model Specification

This section draws heavily from the work of Borjas (1985) and Baker and Benjamin (1994). See also studies by Hayfron (1998) and Grant (1999). It is based on the quasi-panel approach to estimating immigrant assimilation. This is in contrast to the years since migration model developed by Chiswick (1978). Consider a standard earnings function for immigrants of the form:

$$y_t = X_t\beta_t + \sum_i \delta_{i,t} + \varepsilon_t \quad (1)$$

where y_t is the logarithm of earnings recorded in census year t for immigrants who immigrated to Canada in period i . X_t is a vector of explanatory variables, β_t is a vector of unknown parameters to be estimated, δ_i are cohort specific intercepts (i.e. intercepts for immigrants who arrived in Canada in period i). ε_t is the disturbance term. The earnings equation for the base group⁵, i.e. the native-born, can similarly be expressed as:

$$y_{n,t} = X_{n,t}\lambda_t + \delta_{n,t} + \varepsilon_{n,t} \quad (2)$$

Furthermore, the predicted average earnings of cohort i in year t can be expressed as:

$$\hat{y}_{i,t} = X_{i,t}\beta_t + \delta_{i,t} \quad (3)$$

where $X_{i,t}$ is a vector of mean values of the explanatory variables used in the regression for cohort i in year t . The predicted earnings for this same cohort in year $t-k$ using the mean values of the explanatory variables in year t , can similarly be expressed as:

$$y_{i,t-k} = X_{i,t}\beta_{t-k} + \delta_{i,t-k} \quad (4)$$

Furthermore, the year t predicted earnings, for a cohort that has the same years in Canada as cohort i does in year $t-k$ is:

⁵ In this paper, I chose the native born as the base group. However, some scholars have experimented with other alternatives in addition to the native-born, to ascertain the robustness of their inferences regarding the choice of the base group. For example, Baker and Benjamin (1994) and Grant (1999) used immigrants with 25 or more years in Canada as an additional base group.

$$y_{i+k,t} = X_{i,t}\beta_t + \delta_{i+k,t} \quad (5)$$

that is, in year t , cohort $i+k$ has the same years since migration as cohort i does in year $t-k$. For example, given that $k=5$ (where k is the years of assimilation), immigrants who immigrated to Canada say from 1981-1985 have been in Canada between 5-10 years as of 1991. In the same vein, as of 1996, those who arrived from 1986-1990 have also been in Canada between 5-10 years. Finally the predicted earnings for the native-born (the base group) in year t can be expressed as:

$$y_{n,t} = X_{i,t}\lambda_t + \delta_{n,t} \quad (6)$$

Using equations (3) and (5), the cross-section estimate of k years of assimilation ($\delta_{i,t} - \delta_{i+k,t}$) is equal to $(y_{i,t} - y_{i+k,t})$. Following Borjas (1985), this cross-section estimate can be decomposed into 2 components, within cohort and across cohort earnings growth components, i.e.,

$$y_{i,t} - y_{i+k,t} = [(y_{i,t} - y_{i,t-k}) - (y_{n,t} - y_{n,t-k})] + [(y_{i,t-k} - y_{i+k,t}) - (y_{n,t-k} - y_{n,t})] \quad (7)$$

The first term on the right hand side of equation (7) is the estimate of within cohort earnings growth, the change in earnings for cohort i across two censuses relative to the change in earnings for the native-born (the base group) or the quasi-panel measure of assimilation. The second component in (7) is the across cohort growth, the position of cohort i relative to the native-born in year $t-k$ compared with the relative position of cohort $i+k$ in year t .

4.0 Results

We first present estimates of assimilation based on the cross-sectional samples of the immigrant population from each census and for each CMA level. They are constructed from estimates of the cohort specific effects, $\delta_{i,t}$. The cross-section estimates are presented in Tables 3 and 4 for women and men respectively. The underlying regressions control for education, work experience, marital status, hours worked in the census reference week (i.e. week immediately preceding the week in which the survey was conducted), weeks worked in the census year (i.e. year prior to survey year), visible minority status, and year of immigration to Canada.

Table 3
Cross-Section Estimates of Assimilation (Women)

CMA	Time in Canada	1991 Census		1996 Census	
		Difference In Cohort Coefficients	Assimilation	Difference in Cohort Coefficients	Assimilation
Small	11-15 years			Coh7680-8185	0.157
	6-10 years	Coh7680-8185	0.034	Coh8185-8690	-0.031
	First 5 years	Coh8185-8690	0.126	Coh8690-9196	0.17
Medium	11-15 years			Coh7680-8185	0.101
	6-10 years	Coh7680-8185	0.144	Coh8185-8690	0.071
	First 5 years	Coh8185-8690	0.11	Coh8690-9196	0.168
Large	11-15 years			Coh7680-8185	0.019
	6-10 years	Coh7680-8185	0.033	Coh8185-8690	0.123
	First 5 years	Coh8185-8690	0.067	Coh8690-9196	0.192

Table 4
Cross-Section Estimates of Assimilation (Men)

CMA	Time in Canada	1991 Census		1996 Census	
		Difference In Cohort Coefficients	Assimilation	Difference in Cohort Coefficients	Assimilation
Small	11-15 years			Coh7680-8185	-0.057
	6-10 years	Coh7680-8185	0.103	Coh8185-8690	0.252
	First 5 years	Coh8185-8690	0.148	Coh8690-9196	0.08
Medium	11-15 years			Coh7680-8185	-0.073
	6-10 years	Coh7680-8185	0.086	Coh8185-8690	0.142
	First 5 years	Coh8185-8690	0.171	Coh8690-9196	0.297
Large	11-15 years			Coh7680-8185	0.037
	6-10 years	Coh7680-8185	0.053	Coh8185-8690	0.103
	First 5 years	Coh8185-8690	0.141	Coh8690-9196	0.139

NOTE – Assimilation is estimated as the difference between the estimated dummy variable coefficients for two adjacent cohorts. See appendix for a description of the control variables employed. The sample is based on individuals aged 16-59 years in 1991 and 25-64 years old in 1996, who worked 40 or more weeks in the previous year and also reported positive earnings. Coh7680, Coh8185, Coh8690 and Coh9196 depict immigrant arrival cohorts for the years indicated.

Given that immigrant cohorts are coded differently across the 2 censuses, different parts of the assimilation profile are captured by each census. The returns to sequential 5-year periods of assimilation are estimated and presented in Tables 3 and 4. The results indicate an unstable assimilation profile across the 2 census periods. For example, in Table 3, the results show that for the first 5 years in Canada, immigrant women residing in small CMAs enjoyed a 12.6% growth in earnings in 1991, increasing to 17% by 1996. For women in medium-size CMAs the returns to the first 5 years in Canada increased from 11% in 1991 to 16.8% in 1996. For large CMAs, the increase was from 6.7% in 1991 to approximately 19% in 1996. For men (see Table 4), the trend regarding the returns to the first 5 years in Canada was inconclusive. Whilst in the small and large CMAs immigrant men experienced a decrease in the return to their first 5 years in Canada between 1991 and 1996, their counterparts in medium-sized CMAs enjoyed an increase in returns from 17.1% in 1991 to approximately 30% in 1996. However, for the 6-10 year interval, the assimilation estimates for immigrant men were consistent. Specifically, earnings growth increased between 1991 and 1996 for immigrant men in all CMAs, (from 10.3% to 25.2% for small CMAs, 8.6% to 14.2% for medium-sized CMAs and 5.3% to 10.3% for large CMAs).

In summary, the general observation from Tables 3 and 4 suggest that immigrants to Canada, both men and women, do assimilate and also the rate of economic integration into Canadian society has increased over time. However, the lack of consistency of the estimates across the 2 censuses depicted by the unstable assimilation profiles suggests that the cohort effects may be biasing the cross-section estimates. Following Borjas (1985), we combine information from more than one census (i.e. 1991 and 1996) and examine estimates of within and across-cohort earnings growth, to eliminate the cross-sectional bias alluded to earlier. These results are presented in Tables 5 and 6. The results are restricted to two recent immigrant arrival cohorts, those arriving between 1981-1985 and those arriving between 1986-1990. The third columns of Tables 5 and 6 report the cross-section estimates of immigrant assimilation discussed in the previous tables. The fourth and fifth columns report the decomposition estimates without a control group. The sixth and seventh columns repeat the same exercise using the earnings of the native-born to normalize immigrant earnings for the various cohorts.

We now focus on Table 5 summarizing the results for immigrant men. The results indicate that between 1991 and 1996 the 1981-85 immigrant cohort (Coh8185) in small CMAs experienced an earnings growth of an impressive 25.2%, according to the cross-sectional analysis. As noted above, however, these estimates comprise both within and across cohort earnings growth; the former which measures assimilation. The last 2 columns in Table 5 are the estimates of within and across cohort components of earnings growth using the earnings growth of the native-born for normalization or as the base group.

Table 5
Decomposition of Cross-Section Growth in Immigrant Earnings (Men)

CMA	Arrival Cohort	Cross Section	Control Base Group			
			None		Natives	
			Within	Across	Within	Across
Small	Coh8185	0.252	0.1783	0.0737	0.1415	0.1105
	Coh8690	0.08	0.1008	-0.0208	0.064	0.016
Medium	Coh8185	0.142	0.1322	0.0098	0.1463	-0.0243
	Coh8690	0.297	0.2338	0.0632	0.2479	0.0491
Large	Coh8185	0.103	-0.007	0.11	-0.0158	0.1188
	Coh8690	0.139	0.0333	0.1057	0.0245	0.1145

Table 6
Decomposition of Cross-Section Growth in Immigrant Earnings (Women)

CMA	Arrival Cohort	Cross Section	Control Base Group			
			None		Natives	
			Within	Across	Within	Across
Small	Coh8185	-0.031	0.124	-0.155	0.0778	-0.1088
	Coh8690	0.17	0.258	-0.08	0.2118	-0.0418
Medium	Coh8185	0.071	0.1445	-0.0735	0.1753	-0.1043
	Coh8690	0.168	0.1824	-0.0144	0.2132	-0.0452
Large	Coh8185	0.123	0.1316	-0.0086	0.1138	0.0092
	Coh8690	0.192	0.0724	0.1196	0.0546	0.1374

Note: Calculations based on regression coefficients reported in the Appendix and the means of the Various explanatory variables.

Turning our attention once again to the last 2 columns we observe that once the earnings have been normalized, the within cohort estimate indicate that the 1981-85 cohort actually experienced an earnings growth of 14.15% over the same period, substantially lower than the cross-sectional estimate of 25.2%. Furthermore the positive within cohort estimate of 14.15% also indicates that the earnings profiles of this particular cohort and the native-born are converging over time. The 1981-85 immigrant men cohort residing in small CMA also enjoyed an across earnings growth of approximately 11% over the period. This across earnings estimate for Coh8185 relates the entry earnings of this cohort with those of Coh8690, i.e. the subsequent cohort. The positive term implies that

Coh8185 earned approximately 11% more than Coh8690 in 1996 in 1996. For the 1986-90 cohort in small CMAs the trend is similar to that of Coh8185. They also experience an earnings growth of 6.4% (within cohort estimate) during the first 5 years in Canada, down from 8% from the pure cross-sectional estimate. We can similarly interpret the positive across cohort estimate of 1.6% for this cohort as: Coh8690 in 1991 earned about 1.6% (relative to natives) more than Coh9196 in 1996.

The earnings growth pattern for immigrant men from the two cohort groups (Coh8185 and Coh8690) in both medium and large CMAs is quite similar to that of immigrant men residing in small CMAs. The only exception is Coh8185 in large CMAs. Here we observe a decrease in earnings growth of approximately 1.58% relative to the native-born, between 1991 and 1996. Thus, the earnings profiles of this cohort and that of the native-born are diverging through time. Finally, the results for immigrant men show that the rate of assimilation captured by the within-cohort earnings growth estimates, are substantially higher in smaller and medium sized CMAs compared with larger CMAs, for both arrival cohorts under investigation.

The results for immigrant women are summarized in Table 6, the bottom panel. The results indicate positive rates of assimilation for both arrival cohorts in all three CMA levels. Just as in the case for immigrant men, immigrant women residing in small and medium-sized CMAs enjoyed much higher rates of earnings growth (assimilation) compared to immigrant women living in larger CMAs. For example, Coh8690 in small and medium sized CMAs earned approximately 21.2% and 21.3% more respectively, relative to the native-born, but only 5.4% more relative to native-born earnings in larger CMAs. On the other hand, the negative across-cohort earnings growth estimates observed in small and medium sized CMAs for both arrival cohorts suggests that in 1991, recent immigrant women in these CMAs did poorly than recent immigrant women in 1996 in the same CMAs.

5.0 Conclusions

This paper uses two cross-sections drawn from the 1991 and 1996 Canadian censuses to analyze the earnings performance of immigrants in selected Canadian CMAs. The sample was restricted to both men and women working forty or more weeks, not residing in the Atlantic provinces or the Territories and reporting positive earnings. This was designed to focus on individuals who are active labour market participants. With the exception of immigrant men arriving between 1981-85 and residing in large CMAs, the results show positive rates of assimilation for all arrival cohorts in all three CMA levels and for both sexes. Furthermore, we also observe that immigrant men and women living in smaller or medium sized CMAs enjoyed a much higher rate of assimilation (relative to the native-born), compared to their counterparts living in large CMAs. Finally, the

estimates of true assimilation captured by the within-cohort earnings growth estimates were much lower than that predicted by the pure cross-sectional estimate. This is especially true for the immigrant men sample. The implication of this result is that the cross-sectional growth underestimates the number of years that it will take recent immigrants to overtake their native-born counterparts.

In light of the results presented above it is tempting to suggest that an obvious policy implication will be redistributing the immigrant population from larger CMAs such as Montreal, Toronto and Vancouver to medium or smaller CMAs such as St Catharines. This could be achieved by presumably offering more points to prospective immigrants who opt to settle in smaller cities. However, the challenge lies in actually making these immigrants stay in these smaller cities because internal migration to larger cities is highly likely. What needs to be done in my opinion, is to first ascertain why immigrants primarily choose bigger cities over smaller cities. Why are immigrants not flocking to smaller cities if their earnings prospects are better according to these results? Future research should document the determinants of geographic concentration among immigrants. What are the pull factors into these large cities and the push factors from smaller cities to larger cities? The knowledge gained from such exercise can subsequently be used to design successful integration and settlement policies in smaller cities and also to create the ethnic or cultural infrastructure that immigrants need to thrive especially in smaller cities.

Appendix

Table A1
Definition of Explanatory Variables Used in the Regressions

Variable	Description
EDUCATION	Education in years
EXPERIENCE	Work experience in years = (Age – Education – 6)
MARRIED	= 1 if currently married; zero otherwise
WK4048	= 1 if worked 40-48 weeks in the reference year; 0 otherwise. (Reference group: those who worked 49-52 weeks).
HR0119	= 1 if worked 1-19 hours in reference week; 0 otherwise
HR2029	= 1 if worked 20-29 hours in reference week; 0 otherwise
HR3034	= 1 if worked 30-34 hours in reference week; 0 otherwise
HR3539	= 1 if worked 35-39 hours in reference week; 0 otherwise
HR4549	= 1 if worked 45-49 hours in reference week; 0 otherwise
HR50	= 1 if worked 50 or more hours in reference week; 0 otherwise (Reference group: those who worked 40-44 hours).
Visible minority	= 1 if member of visible minority; zero otherwise
COH55	= 1 if immigrated before 1955; zero otherwise
COH5660	= 1 if immigrated between 1956-1960; 0 otherwise
COH6165	= 1 if immigrated between 1961-1965; 0 otherwise
COH6670	= 1 if immigrated between 1966-1970; 0 otherwise
COH7175	= 1 if immigrated between 1971-1975; 0 otherwise
COH7680	= 1 if immigrated between 1976-1980; 0 otherwise
COH8185	= 1 if immigrated between 1981-1985; 0 otherwise
COH8690	= 1 if immigrated between 1986-1990; 0 otherwise
COH9196	= 1 if immigrated between 1991-1996; 0 otherwise

Table A2
Estimates of Earnings Functions (Dependent variable: log earnings)
Women, Small CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		7.938 (124.77)		8.183 (99.31)
Education	0.048 (6.98)	0.104 (25.32)	0.055 (7.53)	0.098 (20.41)
Experience	0.032 (4.70)	0.063 (20.89)	0.027 (3.81)	0.046 (13.04)
Experience Squared	-0.0005 (-3.77)	-0.001 (-15.04)	-0.0004 (-3.10)	-0.0007 (-8.64)
Married	0.039 (0.82)	0.035 (1.75)	0.018 (0.40)	0.085 (3.76)
Wk4048	-0.202 (-3.84)	-0.260 (-10.19)	-0.102 (-1.98)	-0.228 (-7.66)
Hr0119	-0.938 (-12.91)	-0.873 (-26.46)	-0.843 (-11.75)	-0.891 (-22.24)
Hr2029	-0.617 (-9.04)	-0.603 (-19.52)	-0.520 (-7.61)	-0.579 (-16.04)
Hr3034	-0.471 (-6.34)	-0.346 (-8.91)	-0.235 (-2.94)	-0.352 (-8.37)
Hr3539	-0.004 (-0.07)	0.040 (1.68)	-0.016 (-0.28)	-0.021 (-0.72)
Hr4549	0.028 (0.28)	0.089 (1.92)	0.087 (0.93)	0.058 (1.23)
Hr50	0.040 (0.48)	0.025 (0.60)	0.065 (0.86)	-0.011 (-0.27)
Visible Minority	-0.020 (-0.38)	0.156 (2.29)	-0.054 (-0.98)	0.083 (0.81)
Coh55	9.059 (64.88)		9.111 (55.85)	
Coh5660	9.165 (64.76)		9.106 (56.25)	
Coh6165	8.980 (63.52)		9.004 (55.82)	
Coh6670	8.972 (68.65)		9.068 (60.08)	
Coh7175	8.927 (70.58)		9.076 (62.83)	
Coh7680	8.940 (67.74)		9.098 (58.48)	
Coh8185	8.906 (64.04)		8.941 (58.04)	
Coh8690	8.780 (69.56)		8.972 (60.75)	
Coh9196			8.802 (59.44)	
R-squared		0.372		0.226
Sample size	1352	5824	1382	5585

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

Table A3
Estimates of Earnings Functions (Dependent variable: log earnings)
Women, Medium-size CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		8.081 (195.93)		8.268 (170.08)
Education	0.072 (15.52)	0.099 (37.35)	0.063 (12.49)	0.092 (32.06)
Experience	0.029 (6.24)	0.062 (31.63)	0.034 (6.74)	0.053 (24.40)
Experience Squared	-0.0004 (-4.00)	-0.001 (-23.63)	-0.0006 (-5.91)	-0.0009 (-18.06)
Married	0.024 (0.75)	0.039 (3.07)	0.028 (0.90)	0.041 (3.03)
Wk4048	-0.237 (-7.02)	-0.250 (-14.72)	-0.201 (-5.62)	-0.295 (-16.32)
Hr0119	-0.749 (-14.13)	-0.822 (-36.58)	-0.787 (-14.76)	-0.858 (-33.78)
Hr2029	-0.629 (-12.82)	-0.573 (-26.00)	-0.598 (-12.15)	-0.511 (-22.49)
Hr3034	-0.213 (-3.66)	-0.296 (-11.51)	-0.278 (-4.94)	-0.306 (-11.76)
Hr3539	0.083 (2.31)	0.054 (3.61)	0.074 (1.86)	0.063 (3.74)
Hr4549	0.090 (1.28)	0.076 (2.58)	0.061 (0.96)	0.082 (2.86)
Hr50	0.072 (1.34)	0.025 (1.01)	-0.034 (-0.71)	0.084 (3.61)
Visible Minority	-0.035 (-1.11)	-0.093 (-1.87)	-0.073 (-2.25)	-0.114 (-2.07)
Coh55	8.653 (86.93)		9.077 (76.47)	
Coh5660	8.618 (87.43)		8.908 (76.66)	
Coh6165	8.611 (87.82)		8.864 (77.38)	
Coh6670	8.673 (95.92)		8.866 (83.16)	
Coh7175	8.591 (98.31)		8.887 (85.28)	
Coh7680	8.555 (97.09)		8.807 (85.34)	
Coh8185	8.411 (94.88)		8.706 (84.69)	
Coh8690	8.301 (94.89)		8.635 (84.91)	
Coh9196			8.467 (84.19)	
R-squared		0.319		0.258
Sample size	3292	14434	3281	13404

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

Table A4
Estimates of Earnings Functions (Dependent variable: log earnings)
Women, Large CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		8.258 (302.16)		8.339 (251.87)
Education	0.061 (26.89)	0.092 (53.40)	0.063 (25.93)	0.093 (48.42)
Experience	0.031 (13.41)	0.061 (46.6)	0.027 (10.9)	0.051 (34.51)
Experience Squared	-0.0005 (-10.11)	-0.001 (-34.22)	-0.0004 (-8.21)	-0.0008 (-24.03)
Married	0.027 (1.77)	0.020 (2.26)	0.050 (3.21)	0.048 (5.00)
Wk4048	-0.202 (-11.51)	-0.203 (-17.67)	-0.166 (-9.07)	-0.185 (-15.05)
Hr0119	-0.634 (-21.62)	-0.865 (-51.97)	-0.749 (-24.32)	-0.841 (-44.21)
Hr2029	-0.465 (-17.40)	-0.538 (-34.93)	-0.508 (-18.11)	-0.553 (-33.95)
Hr3034	-0.246 (-8.26)	-0.298 (-17.62)	-0.268 (-8.77)	-0.340 (-18.12)
Hr3539	0.073 (4.45)	-0.004 (-0.35)	0.012 (0.64)	-0.018 (-1.55)
Hr4549	0.146 (4.33)	0.098 (4.82)	0.078 (2.46)	0.125 (6.28)
Hr50	0.068 (2.44)	0.077 (4.50)	0.074 (2.90)	0.117 (6.99)
Visible Minority	-0.052 (-3.36)	-0.056 (-2.23)	-0.074 (-4.51)	-0.016 (-0.57)
Coh55	9.025 (174.22)		9.056 (146.38)	
Coh5660	8.942 (184.97)		9.001 (153.43)	
Coh6165	8.899 (186.83)		9.001 (156.79)	
Coh6670	8.915 (201.29)		9.055 (169.50)	
Coh7175	8.841 (206.27)		8.973 (174.79)	
Coh7680	8.782 (201.25)		8.922 (174.01)	
Coh8185	8.749 (198.74)		8.903 (171.62)	
Coh8690	8.682 (206.56)		8.780 (177.67)	
Coh9196			8.588 (175.38)	
R-squared		0.317		0.250
Sample size	12112	26864	12289	25252

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

Table A5
Estimates of Earnings Functions (Dependent variable: log earnings)
Men, Small CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		8.579 (163.57)		8.867 (141.8)
Education	0.042 (7.20)	0.064 (19.13)	0.053 (8.06)	0.059 (15.93)
Experience	0.045 (6.52)	0.068 (23.98)	0.034 (4.65)	0.050 (16.20)
Experience Squared	-0.0007 (-5.38)	-0.001 (-17.11)	-0.0005 (-3.49)	-0.0007 (-11.22)
Married	0.235 (5.02)	0.241 (12.31)	0.124 (2.50)	0.251 (12.37)
Wk4048	-0.091 (-1.91)	-0.130 (-5.36)	-0.179 (-3.25)	-0.161 (-6.19)
Hr0119	-0.541 (-4.46)	-0.900 (-20.19)	-0.732 (-6.34)	-0.578 (-10.48)
Hr2029	-0.800 (-6.42)	-0.518 (-10.25)	-0.527 (-4.45)	-0.591 (-10.7)
Hr3034	-0.197 (-1.77)	-0.323 (-6.42)	-0.704 (-5.41)	-0.458 (-8.74)
Hr3539	0.070 (1.14)	-0.0009 (-0.04)	0.056 (0.73)	-0.053 (-1.64)
Hr4549	0.030 (0.50)	0.057 (1.99)	0.127 (2.12)	0.146 (5.12)
Hr50	0.072 (1.53)	0.062 (2.78)	0.110 (2.27)	0.104 (4.75)
Visible Minority	-0.148 (-3.07)	-0.125 (-1.86)	-0.114 (-2.20)	-0.073 (-0.87)
Coh55	9.201 (72.75)		9.146 (60.64)	
Coh5660	9.171 (73.9)		9.247 (62.23)	
Coh6165	9.113 (72.27)		9.246 (62.24)	
Coh6670	9.129 (77.39)		9.291 (66.28)	
Coh7175	9.064 (77.33)		9.189 (67.13)	
Coh7680	9.138 (74.66)		9.224 (66.79)	
Coh8185	9.035 (71.75)		9.281 (63.08)	
Coh8690	8.887 (75.59)		9.029 (67.27)	
Coh9196			8.949 (64.63)	
R-squared		0.354		0.222
Sample size	1824	6976	1715	6407

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

Table A6
Estimates of Earnings Functions (Dependent variable: log earnings)
Men, Medium-size CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		8.381 (260.21)		8.664 (214.32)
Education	0.061 (15.86)	0.082 (40.25)	0.065 (15.67)	0.071 (29.92)
Experience	0.044 (10.34)	0.069 (38.58)	0.038 (7.63)	0.056 (26.70)
Experience Squared	-0.0007 (-7.40)	-0.001 (-26.44)	-0.0006 (-6.55)	-0.0008 (-19.04)
Married	0.2005 (6.91)	0.199 (16.97)	0.126 (3.90)	0.241 (18.34)
Wk4048	-0.149 (-4.67)	-0.181 (-11.67)	-0.199 (-5.74)	-0.225 (-12.73)
Hr0119	-0.591 (-7.93)	-0.763 (-25.71)	-0.418 (-5.29)	-0.683 (-18.05)
Hr2029	-0.529 (-6.75)	-0.484 (-15.46)	-0.562 (-6.69)	-0.600 (-16.62)
Hr3034	-0.286 (4.20)	-0.277 (-8.81)	-0.351 (-4.22)	-0.448 (-12.39)
Hr3539	0.046 (1.37)	0.003 (0.24)	0.077 (1.78)	-0.015 (-0.80)
Hr4549	0.119 (2.69)	0.103 (5.42)	0.132 (2.99)	0.078 (3.83)
Hr50	0.083 (2.73)	0.062 (4.59)	0.018 (0.56)	0.074 (5.13)
Visible Minority	-0.228 (-8.49)	-0.099 (-2.46)	-0.295 (-10.01)	-0.097 (-1.92)
Coh55	9.011 (111.01)		9.209 (91.03)	
Coh5660	8.874 (110.71)		9.142 (92.54)	
Coh6165	8.868 (110.36)		9.206 (90.61)	
Coh6670	8.96 (119.44)		9.107 (96.26)	
Coh7175	8.838 (121.23)		9.119 (99.29)	
Coh7680	8.874 (122.03)		8.967 (99.85)	
Coh8185	8.788 (118.73)		9.040 (99.00)	
Coh8690	8.617 (117.38)		8.898 (101.18)	
Coh9196			8.601 (97.45)	
R-squared		0.355		0.242
Sample size	4282	17255	4153	15725

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

Table A7
Estimates of Earnings Functions (Dependent variable: log earnings)
Men, Large CMAs

	1991		1996	
	Immigrants	Natives	Immigrants	Natives
Intercept		8.547 (361.2)		8.676 (294.87)
Education	0.059 (29.83)	0.074 (50.63)	0.056 (26.40)	0.074 (43.07)
Experience	0.041 (17.84)	0.066 (50.63)	0.033 (13.61)	0.055 (35.83)
Experience Squared	-0.0006 (-13.34)	-0.001 (-35.27)	-0.0005 (-10.66)	-0.0008 (-24.69)
Married	0.184 (11.64)	0.219 (25.43)	0.129 (7.84)	0.209 (21.78)
Wk4048	-0.173 (-10.00)	-0.169 (-15.04)	-0.157 (-8.79)	-0.162 (-12.52)
Hr0119	-0.482 (-12.35)	-0.684 (-30.14)	-0.514 (-12.64)	-0.671 (-22.03)
Hr2029	-0.442 (-10.41)	-0.558 (-23.37)	-0.555 (-13.52)	-0.523 (-18.94)
Hr3034	-0.329 (-8.27)	-0.234 (-10.9)	-0.384 (-9.79)	-0.298 (-11.66)
Hr3539	0.019 (1.05)	-0.011 (-0.97)	0.039 (1.75)	-0.026 (-1.94)
Hr4549	0.081 (3.56)	0.106 (7.53)	0.103 (4.40)	0.087 (5.55)
Hr50	0.093 (5.40)	0.097 (9.09)	0.104 (6.15)	0.114 (10.13)
Visible Minority	-0.178 (-12.42)	-0.085 (-3.37)	-0.175 (-11.43)	-0.075 (-2.66)
Coh55	9.118 (200.72)		9.314 (170.51)	
Coh5660	9.099 (212.18)		9.270 (179.8)	
Coh6165	9.036 (214.70)		9.271 (184.02)	
Coh6670	9.040 (227.10)		9.273 (197.96)	
Coh7175	8.989 (230.97)		9.249 (204.08)	
Coh7680	8.977 (230.36)		9.140 (201.06)	
Coh8185	8.924 (225.08)		9.103 (197.10)	
Coh8690	8.783 (233.30)		9.000 (206.78)	
Coh9196			8.861 (207.06)	
R-squared		0.319		0.215
Sample size	15026	31613	15345	28625

NOTES: t – ratios are given in parentheses. R^2 does not exist for the immigrant regressions, because they were estimated without intercepts.

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