Catalogue no. 11F0019MIE — No. 294
ISSN: 1205-9153
ISBN: 978-0-662-44993-5

Research Paper

Analytical Studies Branch Research Paper Series

Chronic Low Income and Low-income Dynamics Among Recent Immigrants

by Garnett Picot, Feng Hou and Simon Coulombe

Business and Labour Market Analysis
24th floor, R.H. Coats Building, 100 Tunney's Pasture Driveway, Ottawa, K1A 0T6

Telephone: 1-800-263-1136

Statistics Canada

Canada

Chronic Low Income and Low-income Dynamics Among Recent Immigrants

by

Garnett Picot, Feng Hou and Simon Coulombe

11F0019 No. 294
ISSN: 1205-9153
ISBN: 978-0-662-44993-5

Statistics Canada
Business and Labour Market Analysis
24-I, R.H. Coats Building, 100 Tunney's Pasture Driveway, Ottawa K1A 0T6

How to obtain more information:
National inquiries line: 1-800-263-1136
E-Mail inquiries: infostats@statcan.ca

January 2007

Special thanks to Ross Finnie for his advice on some technical issues in using the Longitudinal Administrative Database. We are indebted to David Green, Jeffrey Reitz and Arthur Sweetman for important comments on an earlier version of this paper.

Published by authority of the Minister responsible for Statistics Canada

La version française de cette publication est disponible (n° 11F0019MIF au catalogue, n° 294).

Note of appreciation:
Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Table of contents

Abstract

The deteriorating economic outcomes among immigrants entering during the 1980s and 1990s have prompted much public concern and policy debate. In 1993, immigrant selection procedures were further modified to increase immigrants' educational attainment and the share of immigrants in the "skilled" economic class. By 2000, dramatic increases in the educational attainment of entering immigrants and the share in the skilled class were observed. In the face of these and other changes, this research focuses on three issues: (1) whether entering immigrants economic outcomes improved after 2000 (the last date for which we have such information from the census), (2) low-income dynamics among successive cohorts of entering immigrants, including changes in the entry and exit probabilities, and the extent of "chronic" low income among successive cohorts, and, (3) whether rising educational attainment and increasing share in the "skilled" class resulted in improvements in economic outcomes as measured by poverty entry, exit and chronic low income.

Based on the Longitudinal Administrative Database (LAD) and the Longitudinal Immigration Database (IMDB) data, we find that low-income rates among recent immigrants deteriorated after 2000. Low-income rates of immigrants during their first full year in Canada reached 3.5 times that of the Canadian born in 2002 and fell to 3.2 times in 2004. These rates were higher than at any time during the 1990s (at around 3.0). However, this rise in low income was concentrated among immigrants who had entered very recently (in Canada one or two years), suggesting an increase in the short-term adjustment problem in the 2000s as compared to the 1990s. The downturn in the technology sector after 2000 might be a partial explanation, as the share of entering immigrants in information technology (IT) and engineering occupations rose dramatically over the 1990s.

Among immigrants entering Canada during the 1990s, most experienced low income at some time during their first decade in Canada (about 65%). Most of those entering low income did so in the first year in Canada, when the likelihood of entry was in the 34% to 46% range, depending upon the entering cohort. If immigrants escaped low income in their first year, the likelihood of entry in subsequent years fell dramatically to below 10%. However, as with the Canadian born, many spells of low income are short lived. From 35% to 40% exited low income after one year. In both the raw data and after conditioning on the characteristics of immigrants, poverty dynamics outcomes deteriorated for immigrants entering Canada after 2000—the probability of entry rose, and of exit fell.

In order to capture entry, exit and re-entry patterns in a single measure, a "chronic" low-income measure (in low income four of the first five years in Canada) was produced. About one-fifth of immigrants entering Canada during the 1990s found themselves in chronic low income, a rate about 2.5 times higher than among the Canadian born. The chronic low-income rate fell somewhat between the 1993 and 1999 entering cohorts. There were two possible reasons for the decline: the more favorable labour market-related characteristics of immigrants entering in the late 1990s, and improving economic conditions (business cycle). The former accounted for virtually none of the improvement, the latter for the majority.

Overall, the dramatic rise in educational attainment of entering immigrants and the shift to the skilled class immigrant had only a very small effect on poverty outcomes as measured by the probability of entry, exit and chronic rates. This is because by the early 2000s, skilled class entering immigrants were actually more likely to enter low income and be in chronic low income than their family class counterparts, and the small advantage that the university educated entering immigrants had over, say, the high school educated in the early 1990s had largely disappeared by 2000, as the number of highly educated rose. What did change, was the face of the chronically poor immigrant;

by the late 1990s, one-half were in the skilled economic class, and 41% had degrees (up from 13% in the early 1990s).

Keywords: immigrants, chronic low income, low-income dynamics

1. Executive summary

Host countries, such as Canada, look to the skills and initiative of immigrants to promote economic growth. Immigrants, in turn, look to the host country for opportunities to gainfully employ their skills and abilities. These considerations are particularly important when immigrants are highly educated. Host countries are increasingly seeking highly educated immigrants to drive economic growth in the "knowledge-based" economy. Not surprisingly, immigrants look to use their higher education levels to achieve high economic standards of living.

However, if immigrants are unable to convert their training to productive use, the expectations of both the host country and the arriving immigrants remain unmet. Immigrant contributions to the host country, which are central to the economic justification of relatively open immigration policies, may not be fully realized. In light of these considerations, there is considerable concern regarding the deteriorating economic outcomes among immigrants entering during the 1980s and 1990s.

This paper addresses three issues related to the economic welfare of immigrants. First, in the face of rapidly rising immigrant educational attainment and an increasing share of immigrants in the skilled economic class, did family economic welfare outcomes (as measured by the low-income rate) among entering immigrants improve after 2000, when macro-economic conditions were much more favorable than in the early 1990s? Second, did the probability of entering and exiting low income change significantly between 1993 and 2003 as a result of the rising educational attainment and the shift to "skilled economic class" of entering immigrants? Third, how common was chronic low income among entering immigrant cohorts? Did this change over the 1990s, and if so, how? And among which types of immigrants was chronic low income concentrated?

Our study is unique in that it addresses the economic welfare of the immigrant family, not just the individual. Low income is a simple measure that incorporates the effect of changes in income from all sources, not just earnings, and concentrates on changes in income among families at the bottom of the income distribution, those of most concern from a welfare standpoint. In this study, low income is defined as family income below 50% of median income of the total population, adjusted for family size. Since low income is a family concept, it provides a better welfare perspective on the immigrant families' economic resource position than individual earnings.

1.1 Trends in immigrant low-income rates between 2000 and 2004

Within the context of a "knowledge-based" economy, immigrant selection procedures were altered in 1993 to encourage the immigration of more highly educated immigrants. As part of this impetus, the number entering in the "family" immigrant class was reduced, replaced by economic immigrants in the "skilled" class. At the same time, the overall level of immigration remained relatively high by historical standards over the 1990s and early 2000s. These changes were extremely successful in altering the characteristics of landed immigrants. Over the period covered by this study, 1992 to 2004, the educational attainment of entering immigrants rose dramatically

(among those aged 15 years or older, 17% had a degree in the 1992 entering cohort, 45% in the 2004 cohort), and many more were in the "skilled" economic class, with far fewer in the "family" class. The share in the economic class (including principal applicants, spouses, and dependants) rose from 29% in the 1992 entering cohort to 56% in the 2003 cohort.

The first section of the paper examines whether these changes in the supply characteristics coincided with an improvement in the outcomes of immigrants beyond 2000, or reduced the likelihood of chronic low income among the entering cohorts of the late 1990s. We focus on the post-2000 period simply because until now, the latest data available on low-income rates among entering immigrants were from the 2001 Census (with income data for 2000), which is now very dated.

We find little evidence of improvement, and if anything, continued deterioration in outcomes. For immigrants entering after 2000 (our latest data are from 2004), low-income rates during their early years in Canada were higher than for those entering around or before 2000. The *relative* low-income rates of entering immigrants (relative to the Canadian born), perhaps a better measure of immigrant outcomes since the measure controls for economic cycles and policy changes that affect the entire Canadian population, were particularly high during the early 2000s, as compared to the 1990s. Similar trends were observed in individual earnings of entering immigrants. The deterioration was concentrated among immigrants who had entered very recently (in Canada one or two years). It was not evident among immigrants in Canada for longer periods and seemed to be related to early adjustment issues. The relative deterioration between 2000 and 2003 in family welfare outcomes of entering immigrants was widespread. But there was some recovery in 2004, and the lingering effects by that time were concentrated among older entering immigrants, those from Africa and East Asia, those in IT-related occupations (information technology), the highly educated, and those in the skilled class.

How much of the deterioration (or at least lack of improvement) during the early 2000s was related to the high-tech downturn of the period? We do not really know. We do know, however, that in the late 1990s and early 2000s, the number of entering immigrants who looked to that sector for employment was large and rising rapidly, and that the effect on the domestic labour supply was significant: by 2001, fully 22% of the Canadian IT labour force were immigrants who had arrived during the previous five years. But as most entering immigrants were not in IT- or engineering-related occupations, it is unlikely that the high tech downturn accounted for all of the outcomes observed above.

1.2 The probability of entering and exiting a low-income spell

While the study of immigrant cross-sectional low-income rates is informative, it tells us nothing of the dynamics of low income. From a policy perspective, short-term low-income spells are of less concern than persistent, long-duration spells, as the negative effects of low income are likely to be much more pronounced when long-duration spells are experienced. Accordingly, the second part of the paper focuses on the entry and exit patterns associated with the first low-income spell after entry to Canada.

This is the first paper to address low-income dynamics among entering immigrants, primarily because of earlier data constraints. Only recently have the data on immigrants been linked to the

longitudinal file based on taxation records for the population as a whole (the LAD[1] file maintained at Statistics Canada), thus providing a sufficiently large sample, and a longitudinal panel of sufficient length, to study low-income dynamics among entering immigrant cohorts.

We find that the probability of entry to the first low-income spell is very high during the first year in Canada (34% to 46%, depending upon the cohort), and falls dramatically to around 10% in the second year, lower in subsequent years. About 65% of entering immigrants enter low income at some time during the first ten years in Canada, and of these, two-thirds do so during the first year. If entering immigrants escape low income in the first full year in Canada, their chances of remaining out of low income are quite high. Regarding exit from the first spell, from 34% to 41% exit after one year, but this value was lowest for the latest three cohorts (2001 to 2003). From 31% to 36% remained in the first spell after three years, and this value was highest among the cohorts of the early 2000s.

The entry and exit data support the notion of continued deterioration after 2000. The likelihood of entering low income was significantly higher among the 2003 cohort than for the 2000 cohort, although aggregate economic conditions had changed little, and demographic differences among the cohorts were controlled for.

Since the selection system was altered to attract more highly educated immigrants, and the proportion in the skilled class rose significantly over the period, we assess the relationship between these variables, and entry and exit probabilities, in an attempt to determine the effect that these immigrant characteristics had on economic welfare outcomes. Findings can be summed up as follows:

- Initially, university-educated immigrants had a marginally lower likelihood of entering low income than their high school educated counterparts (0.8 times as likely, controlling for other demographic differences), but this relative advantage fell significantly over the period examined, so that by 2004, there was only a small difference (0.9 times as likely).

- There was little difference in the likelihood of exit from low income between the more and less highly educated immigrants, meaning that once in low income, average durations of low-income spells were roughly the same.

- With respect to immigrant class, immigrants in the skilled economic class were *more* likely to enter low income than their family class counterparts, possibly because the family class immigrants often entered an already economically established family. This relative disadvantage observed for the skilled class increased significantly over the 1992 to 2004 period, when the number of skilled class immigrants rose. However, this should not necessarily be interpreted as meaning that individuals in the economic class do worse in the

1. The LAD (Longitudinal Administrative Database) is a 20% sample of all Canadian tax filers and their families. Families are formed to allow family income to be determined. Population coverage is very high in the LAD, as 95% to 97% of the entire adult population is covered (Finnie and Sweetman, 2003). The LAD file exists for the period 1982 to 2004, but reliable family income information for all parts of the income distribution exists only since 1992. Hence, we use the data on individuals over age 20 for the 1992 to 2004 period. Immigrants entering Canada since 1980 are identified on the LAD, and information on educational attainment, intended occupation, self-reported language and immigrant class is added from the landing records. For more information on this data file, contact the Small Area and Administrative Data Division at Statistics Canada (Telephone 613-951-9720, toll free 1-866-652-8443).

labour market (i.e., in term of individual earnings) than their family class counterparts. The opposite has historically been the case.

- Immigrants in the skilled and family class were equally likely to exit low income once in it, meaning their average durations were about the same.

In summary, there is only a small difference in low-income entry and exit patterns between the more and less educated, and skilled class immigrants were more likely to enter low income than their family class counterparts. It seems that the rapid rise in highly educated and highly skilled entering immigrants over the 1990s had little effect on low-income outcomes (specifically, the likelihood of entering and exiting low income, and the chronic low-income rate). For example, for the 2003 entering cohort, the probability of entering low income during the first year in Canada was about 2.3 percentage points lower than it would have been had the educational and class characteristics of the entering immigrants not changed.[2] This effect is very small, given the dramatic improvement in these immigrant characteristics. The business cycle has a much bigger effect: the entry rate into low income dropped by about 11.5 percentage points (or 29%) between the peak and the trough of the cycle.

1.3 Chronic low income

To assess the cumulative effect of possible multiple entry, exit and re-entry patterns, the third section of the paper focuses on "exposure" to low income over a five- or ten-year period following entry to Canada. First, a "five-year" rate was computed to allow the results to be as current as possible (including up to the 2000 cohort). The focus was on "chronic" low income, defined as being in low income at least four of the first five years in Canada. For the five-year rate among entering cohorts between 1992 and 2000 (the years for which chronic low income could be measured), about 19% of entering immigrants found themselves in this position. This was about 2.5 times higher than that observed among the Canadian-born population. A "ten-year" rate was only marginally lower. If one defines chronic low income as being in the state for at least seven of the first ten years in Canada, the rate was 16.5%. Thus, chronic low income appears to be quite persistent, even over a ten-year horizon.

Although immigrants in the 2000 entering cohort had much higher education levels and were more likely to be in the skilled class than the 1992 cohort, these changes had only a small positive effect on the chronic low-income rate. The rate for the 2000 cohort was about 2 percentage points (or 10%) lower than it would have been had these characteristics not changed. This is a relatively small improvement for such a massive change in education credentials and immigrant class distribution. Furthermore, when changes in other characteristics such as language, source region, age, or family status are accounted for, overall changes in the characteristics of immigrants have even a smaller effect on the chronic low-income rate between the 1992 and 2000 cohorts.

While changing characteristics had no net effect on the chronic rate, changing economic conditions did. With improvements in economic conditions over the business cycle, chronic low income fell somewhat between 1992 and 2000 cohorts. However, one might think of "structural" chronic low income (abstracting from business cycle effects) as rising over this period, since chronic low-income rates were seen to rise after controlling for the unemployment rate.

2. This is on a base entry rate of around 40%, resulting in only about a 6% drop in the rate due to changing education and immigrant class characteristics of entering cohorts.

Policy analysts often need to know the distribution of chronic low income: which groups account for most chronic low income, and how (if at all) is this changing? We found that changes in entering immigrant characteristics altered the face of the immigrant chronically poor in that more had higher levels of education and were in the skilled economic class. For example, in the 2000 cohort, 52% of those in chronic low income were skilled economic immigrants, and 41% had university degrees.

2. Literature review

Typically, economic outcomes among recent immigrants are defined in terms of earnings patterns. In fact, employment *earnings* of immigrants is the most studied area of immigrant economic integration in Canada. Early findings indicated that newly-arrived immigrants have lower earnings than comparable non-immigrant workers, but their initial earnings gap narrows significantly as they adjust to the labour market in the receiving society (Chiswick, 1978; Meng, 1987). More recent research suggested that the initial earnings gap may not close as quickly as earlier thought, even among groups entering during the 1970s (Hum and Simpson, 2003). Moreover, these gaps increased in the 1980s and 1990s. Subsequent research indicated an emerging trend during the early 1980s of declining earnings among successive waves of immigrants relative to the Canadian born (Bloom and Gunderson, 1991; Abbott and Beach, 1993). As a result, a number of studies have begun to ask if the decline was associated primarily with recessions, or with the changing mix of immigrants by source country, and if this decline abated during the late 1980s (McDonald and Worswick, 1998; Baker and Benjamin, 1994; and Grant, 1999).

Now, some studies conclude that the decline in entry-level earnings of immigrants continued through the early 1990s (Reitz, 2001). Research studies initiated by the research groups of Citizenship and Immigration, and Statistics Canada, using even more recent data, observe relatively little improvement during the late 1990s (Green and Worswick, 2002; Frenette and Morissette, 2003). Others, however, note that although there has been a large decline in entry-level earnings, the rate of growth in earnings with years in Canada is faster than among earlier cohorts (Li, 2003).

Recently, a number of studies have taken a close look at the rise in the earnings gap between recent immigrant cohorts and the Canadian born (Aydemir and Skuterud, 2005; Green and Worswick, 2002; Ferrer, Green and Riddell, 2004; Ferrer and Riddell, 2003; Schaafsma and Sweetman, 2001; and Sweetman 2004). These studies point to issues such as the changing characteristics of entering immigrants, education quality, language skills, credentialism and the returns to years of schooling, declining returns to foreign labour market experience, and a general deterioration in the outcomes for new labour market entrants, of which immigrants are a part. See Picot and Sweetman (2005) for a review of these explanations.

As important as studies of employment earnings are, they provide only part of the picture, as they exclude the unemployed and those out of the labour market. They also exclude changes in all sources of income other than earnings, such as social transfer benefits, changes which are, of course, of interest to those looking at the situation of the immigrant family. Finally, during periods of deteriorating labour market outcomes, such studies may underestimate the decline in immigrants' market earnings, in particular, because they exclude the effects of possibly rising unemployment or the "discouraged worker" effect.

A focus on low income among immigrants overcomes many of these shortcomings. Since low income is a family concept, it provides a better welfare perspective on the immigrant families' economic resource position than individual earnings. It is a simple measure that incorporates the effect of changes in income from all sources, not just earnings, and concentrates on changes in

income among families at the bottom of the income distribution, those of most concern from a welfare standpoint.

Picot and Hou (2003) conclude that immigrant low-income rates were on a continuous, long-term upward trend over the 1980-to-2000 period (abstracting from business cycle effects). At business cycle peaks, successive entering immigrant cohorts had successively higher low-income rates, even though the educational level of each successive cohort was rising rapidly. The rise in low-income rates was widespread, occurring among "recent" immigrants from all age groups, whether they spoke an official language or not, in all family types, and at all educational levels. In fact, the gap in the low-income rate between "recent" immigrants and the Canadian born was highest among university graduates, particularly those with engineering or applied science degrees. A degree, in and of itself, did not protect immigrants from rising low-income rates. Source region did matter, however: the source regions with the largest increase in the share of the immigrant population (Africa, and South, East, and West Asia) also experienced the most rapid increase in low-income rates. Even so, changes in the characteristics of immigrants (language, education, age, source region) accounted for less than half of the overall rise in the low-income rate.

Finally, in the same study, Picot and Hou (2003) note a dichotomy in low-income rate trends between immigrants and the Canadian born, rising among the former, and falling among the latter. In the three major immigrant-receiving cities (Toronto, Vancouver, and Montréal), virtually all of the increase in the cities' low-income rate during the 1990s was concentrated among the immigrant population.

3. Data and measurement

This study uses Statistics Canada's LAD-IMDB database that combines the Longitudinal Administrative Database (LAD) and the Longitudinal Immigration Database (IMDB). The LAD is random, 20% sample of the T1 Family File, which is a yearly cross-sectional file of all taxfilers and their families. Individuals selected for the LAD are linked across years to create a longitudinal profile of each individual. The IMDB contains immigrant landing record and annual tax information for immigrants who have arrived since 1980. The LAD-IMDB database is produced by matching the two databases, with the result that 20% of immigrants on the IMDB are identified on the LAD. The LAD-IMDB allows comparisons of known immigrants and other Canadian taxfilers.

We only include individuals aged 20 years and over when calculating cross-sectional low-income rates. In analyses of low-income dynamics (entry, exit, and chronic low income), we focus only on those aged 25 to 54 at landing. We delete some cases (about 7.5%) based on various checks of family structure for longitudinal consistency, following the approach of a previous study (Finnie and Sweetman, 2003). We also delete cases (less than 0.1%) with missing values in major demographic variables. In modeling the hazard rates of entering and exiting the first low-income spell, we treat observations that cease to be observed from one year to the next as censored cases, even if they reappear in the data a few years later. In examining chronic low income, we include only those who can be observed continuously over the five years after landing.

We define low-income status based on 50% of median adult-equivalent adjusted family income. Adjusted income assumes that certain economies of scale accrue to people who live together in families and is calculated by dividing total family income with the square root of family size. The median adjusted family income is calculated on a constant dollar basis (the consumer price index adjusted to the 2003 value) in each of the years covered by the study (1992 to 2004), and the average of these values is used as the low-income cut-off in all years. The low-income cut-off is

$13,400 (in 2003 constant dollars), adjusted for family size, or put another way, $26,800 for a family of four.

Major demographic variables

In our descriptive tables and multivariate models, we use the following demographic variables of immigrants. (1) Immigrant cohort, defined as all arriving immigrants who were in Canada for one full income-tax year. Hence, immigrants arriving throughout 1992 would be considered to be in the 1993 cohort, since 1993 was their first full income-tax year. (2) Gender. (3) Age at landing, grouped into four categories: 20 to 29, 30 to 39, 40 to 49, 50 and over. (4) Place of residence in each tax year, grouped into six categories: Montréal, Toronto, Vancouver, other metropolitan areas with population over 500,000, small metropolitan areas, and non-metropolitan areas. (5) Family structure in each tax year, grouped into four categories: single, lone parents, couples with children, couples without children present. (6) Self-reported official language ability at landing: speak at least one official language, speak neither official language. (7) Immigrant class: family class, business, skilled workers, refugees, and other immigrants (backlog, live-in-caregivers, and so on). Since immigrants in the business class do not as actively participate in the paid labour market, they are excluded in multivariate analyses. (8) Education at landing, grouped into three categories: high school graduation or less, some post-secondary, university degrees. (9) Intended occupations, grouped into six categories: management, information technology (IT) professionals (including IT professionals, as well as electrical and electronics engineers), engineers (excluding electrical and electronics engineers), other professionals (occupations usually requiring university education or college education, and which are related to natural and applied sciences, health, social science, education, government services and religion, art and culture), sales and services, and other occupations. (10) Immigrant source regions, grouped into eight categories: United States; Caribbean, Central and South America; Northern, Western, and Southern Europe; Eastern Europe; Africa; Southern Asia; Eastern Asia; and other countries.

4. Did low-income rates improve among entering immigrant cohorts after 2000?

As has been noted, in the early 1990s, the immigrant selection process was adjusted to encourage the entry of those immigrants most likely to succeed in a "knowledge-based" economy. These changes dramatically affected the characteristics of the immigrant labour supply in the ways intended. In particular, between the early 1990s and 2004, the educational attainment of landed immigrants rose dramatically (the percent with university degrees among those aged 15 years or older rose from 16.9% in 1992 to 44.7% in 2004), many more were in the "skilled" economic class (rising from 28.8% to 51.0% over the period), and among the skilled principal applicants, a higher percentage was in the information technology or engineering occupations (rising from 6.1% to 44.9% over the period, Table 1).

Table 1 Characteristics of entering immigrants, selected entering cohorts, 1992 to 2004

	1992	1997	2000	2003	2004
Number of entering immigrants	232,750	226,070	189,920	229,040	221,350
	percentage				
Distribution by education among those 15 years of age or older					
High school or less	57.7	53.4	42.6	40.5	40.9
Some post-secondary	25.4	17.6	16.7	13.5	14.4
University degree	16.9	29.0	40.7	46.0	44.7
Distribution by immigrant class					
Family	37.8	30.2	29.1	28.5	31.2
Skilled worker	28.8	43.3	48.7	55.6	51.0
Business	8.4	10.0	6.9	4.8	3.7
Refugee	23.2	12.6	12.8	11.0	11.7
Other	1.8	3.9	2.5	0.1	2.3
Distribution by intended occupation among principal skilled applicants					
Information technology professionals	3.6	16.0	26.8	26.2	27.7
Engineers	2.5	10.2	15.1	16.1	17.2
Other professionals	23.5	43.8	35.1	37.6	35.0
Management	10.6	5.4	5.0	5.8	5.7
Sales and services	22.2	13.4	9.2	8.9	8.8
Other occupations	37.6	11.2	8.9	5.4	5.7

Sources: Citizenship and Immigration Canada (2004) - Facts and Figures 2003 and special tabulations from Citizenship and Immigration Canada.

The question posed here is, in the face of these changes, and given the overall economic situation of the country, how have the economic outcomes of immigrants changed since 2000?[3] More specifically, the post-2000 period was a period of a downturn in the technology sector, which would obviously affect the outcomes of some immigrants. However, in general, the economy was strong over the 2000 to 2004 period, with unemployment rates averaging 7.3%, far below the average 10.3% observed in the first half of the 1990s, or even the 8.8% observed during the second half.

4.1 The rise in immigrant low-income rates between 2000 and 2004

The Longitudinal Administrative Database (LAD) indicates that over the 1992 to 2004 period, the low-income rate for the entire Canadian population aged 20 and over peaked in 1997 at 18.0%, declined to 13.6% in 2001 as the economy improved, and then rose marginally to 14.2% in 2004. Hence, little changed over the 2000 to 2004 period. Ideally, one would split the population into immigrants and the Canadian born to look at trends in the two groups. However, in the LAD, one can only identify immigrants arriving since 1980. Hence, for present purposes, a "comparison group" is created. It consists of all the Canadian born, but also includes those immigrants in Canada for more than ten years, as they tend to have lower low-income rates than other immigrants, and

3. Prior to this paper, the 2001 Census provided the most recent data (for year 2000 income) regarding low income among entering immigrant cohorts. Sources providing routine statistics on earnings and low income (notably the Survey of Labour and Income Dynamics) do not have the sample size to address these issues.

more closely resemble the Canadian born.[4] The Canadian-born portion constituted 83% of the "comparison group" in 2000.

Following 2001, the low-income rate among the comparison group changed little, rising 0.7 percentage point to 13.2% in 2004. Among immigrants in Canada for ten years or less, however, the rate rose 2.6 percentage points, from 31.6% to 34.2% in 2003, and improved in 2004, falling to 32.9% (Table 2 and Chart 1). It is important to note that the increase was observed primarily among immigrants in their first two years in Canada. Among immigrants in Canada for only one year, the rate increased from 38.9% in 2001 to 42.2 % in 2004. Among those in Canada two years, the rate also rose significantly, from 32.9% in 2001 to 37.2% in 2004. Among immigrants in Canada for longer, there was little change, or a smaller rise (Table 2). For the most part, the trends among more settled immigrants (three or more years in Canada) resembled those of the comparison group.

Table 2 Low-income rates for immigrants and Canadian-born populations aged 20 and over, 1992 to 2004

Year	Total population	Comparison group[1]	Immigrants in Canada 1 to 10 full years[2]	Immigrants by year in Canada									
				1[3]	2	3	4	5	6	7	8	9	10
	percentage												
1992	15.0	14.3	31.1	42.4	35.7	30.3	28.3	27.3	27.9	28.2	27.2	26.0	22.8
1993	16.2	15.3	34.5	44.7	38.9	35.1	31.6	30.8	30.2	30.3	30.6	29.1	28.2
1994	16.3	15.4	35.6	44.6	40.3	37.3	35.8	31.9	31.0	30.3	30.3	30.5	28.7
1995	16.9	15.8	37.0	47.4	40.9	39.8	37.8	36.5	32.8	31.3	30.7	31.1	30.8
1996	17.3	16.2	38.2	50.1	42.7	41.0	40.4	38.4	35.7	32.0	30.8	30.8	30.9
1997	18.0	16.9	38.2	51.1	43.1	40.8	40.1	39.4	36.8	34.9	30.8	29.9	29.6
1998	16.1	15.0	35.5	47.3	40.9	37.0	36.9	36.4	35.7	33.2	30.3	27.9	26.0
1999	15.6	14.5	33.6	42.8	38.3	35.9	34.0	33.9	33.6	32.8	31.0	28.8	26.0
2000	15.3	14.3	33.0	39.2	35.0	34.9	33.7	32.8	33.1	32.4	31.6	30.5	27.8
2001	13.6	12.5	31.6	38.9	32.9	31.5	31.9	32.3	30.6	30.7	30.2	29.5	28.0
2002	13.8	12.6	33.3	43.5	35.3	32.4	32.0	33.1	32.4	30.9	31.3	31.1	29.2
2003	14.2	13.1	34.2	44.5	38.2	33.7	32.2	32.3	33.1	32.6	31.3	32.0	30.2
2004	14.2	13.2	32.9	42.2	37.2	34.0	31.0	30.3	31.1	31.2	31.0	30.0	30.3

1. The comparison group includes all Canadian born plus immigrants who have been in Canada more than 10 years.
2. Prior to the income tax year in column 1.
3. Includes immigrants who have been in Canada for one full year, e.g., immigrants entering in 1991 are considered to be in the 1992 cohort, since 1992 is their first full year in Canada.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Relative to the comparison group,[5] the low-income rate among both immigrants in Canada for up to ten years, and for those in Canada for one year only, were at decade-level highs in 2002 and 2003, improving marginally in 2004. The low-income rate among immigrants during their first year in Canada was about three times higher than that of the comparison group over the 1992 to 2000 period, but by 2002 and 2003, it was almost 3.5 times higher (Chart 2). A similar trend is observed among all immigrants in Canada for ten years or less.

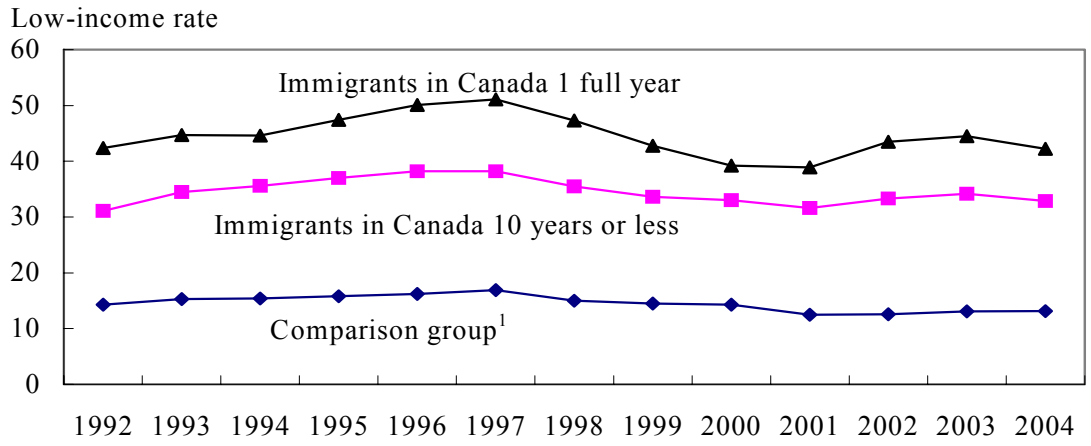
A family's total income includes earnings and other market income (self-employment earnings, investment, pension income, etc.). Individual market earnings followed the same general trend as the low-income rate reported above. Among employed persons over age 20 in the "comparison"

4. Based on census data, in 2000, the low-income rate among the Canadian born was 13.2%, among immigrants in Canada for more than ten years it was 15.8%, and among immigrants in Canada one to ten years, 31.4% (Picot and Hou, 2003).

5. Note that we are not comparing "like with like" in these data. The characteristics of the immigrant and "comparison group" population may differ. The use of the "comparison group" can be thought of as a means of controlling for business cycle and policy effects that influence low-income rate outcomes among the population in general.

group, annual average market earnings rose between 1992 and 2000, and remained stable to 2004 at around $25,500. Among immigrants in Canada for ten years or less, earnings actually improved significantly up to 2001 (rising 12.4%). They fell 4.9% by 2003, but by 2004, they were almost back to the 2001 level. As with the low-income rate, this decline was heavily concentrated among very recently entering immigrants. Among those in Canada for one year (the very recently entered immigrants), after improving between 1992 and 2000, earnings fell 18.0% between 2000 and 2003, before improving marginally in 2004. Similar declines were observed among immigrants in Canada for two years. But for immigrants in Canada four years or more, little decline was observed. Hence, both a rise in the low-income rate and a significant decline in individual market earnings were observed among the very recently entered immigrants.

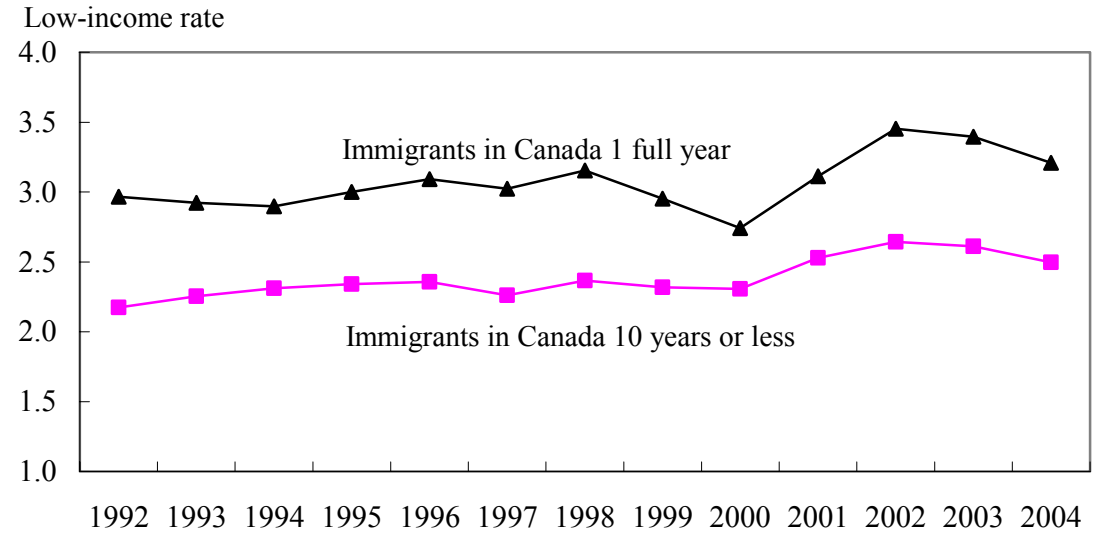
Chart 1 Low-income rates of recent immigrants and the comparison group, aged 20 and over, 1992 to 2004



1. Includes Canadian born plus immigrants in Canada more than 10 years.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Chart 2 Low-income rates of immigrants relative to the comparison group, aged 20 and over, 1992 to 2004



Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

4.2 Was the rise in immigrant low-income rates since 2000 widespread?

Overall, the rising low-income rate up to 2003 was widespread, although the largest increases were observed among immigrants who intended to work as information technology professionals, possibly as a result of the high-tech downturn, coupled with the continued significant inflow of these workers.

Appendix Tables A1 to A5 present the immigrant low-income rates by age group, immigrant class, source region, education and occupation. The following are the salient observations from these tables.

- The increases between 2000 and 2003 in both the absolute and relative (to the comparison group) low-income rates were observed among all *age group*s, but following some recovery in 2004, only entering immigrants over age 50 experienced a consistent upward trend in their relative low-income rate (relative to the comparison group of the same age). This is consistent with the observation that returns to foreign work experience have been declining (Green and Worswick, 2002).

- The increase in relative rates over the 2000 to 2003 period was observed in immigrants from most regions, but following some recovery in 2004.

- By immigrant class, the largest increase in low-income rate was observed among "skilled" immigrants: the rate for the first year in Canada among this group increased from 35.0% in 2000 to 43.2% in 2003, with little recovery in 2004 (42.4%). Their relative rate rose from 2.5 to 3.2 times that of the total comparison group over the period.

- By occupation, immigrants entering as information technology professionals (including computer systems analysts, computer programmers, computer engineers, electrical and electronics engineers, computer and information systems managers, and technicians in computer and information system) saw the most rapid increase in their low-income rate. For the first year in Canada, their rate increased from 27.5% in 2000 to 45.6% by 2003, with virtually no recovery in 2004. This is the only group that registered higher low-income rates in the early 2000s than at any time during the 1990s, including the recession of the early 1990s.

- The occupational results are reflected in the low-income rates by education. The most rapid increase since 2000 among entering immigrants (during their first year) was observed among those with a university education. Low-income rates between 2001 and 2003 rose 20% for this group, compared to 16% for immigrants with trades, or college or some university education, and 7% for those with grade 12 or less. All groups experienced some recovery in 2004. And the university-educated are a large group: among immigrants over age 20, who entered between 2000 and 2003, 45% held university degrees. The number of entering immigrants with degrees increased from 39,000 to 100,000 over the 1992 to 2003 period.

The effect of the high-tech downturn

The high-tech downturn following 2000 no doubt played a role in the rising low-income rates of highly-educated and highly skilled immigrants. At the peak of the high-tech boom in the first quarter of 2001, the computer and communications industries employed 650,000 workers. This number dropped to 586,000 a year later. The unemployment rate rose accordingly, jumping from

3.9% to 6.6% (Bowlby, 2003). During the same period, the number of immigrants entering in the information technology (IT) occupations increased rapidly. In 1993, about 2.4% of all landed immigrants were information technology professionals. By 1999, this had increased to 10%, rising even higher by 2001. The large numbers of immigrants in IT-related occupations had a huge effect on the labour supply. In 2001, about 22% of Canada's IT workforce consisted of immigrants who had arrived during the previous five years. A similar trend was observed for engineers other than IT workers.

Among economic-class principal applicants, the number of immigrants who intended to work as IT professionals increased from less than 2,000 in 1992 to over 17,000 in 2001, and to 11,000 in 2003. The number of intended engineers increased from 900 in 1992, to 10,000 in 2001, and to 7,000 in 2003. Clearly a downturn in the high-tech sector would affect immigrant outcomes.

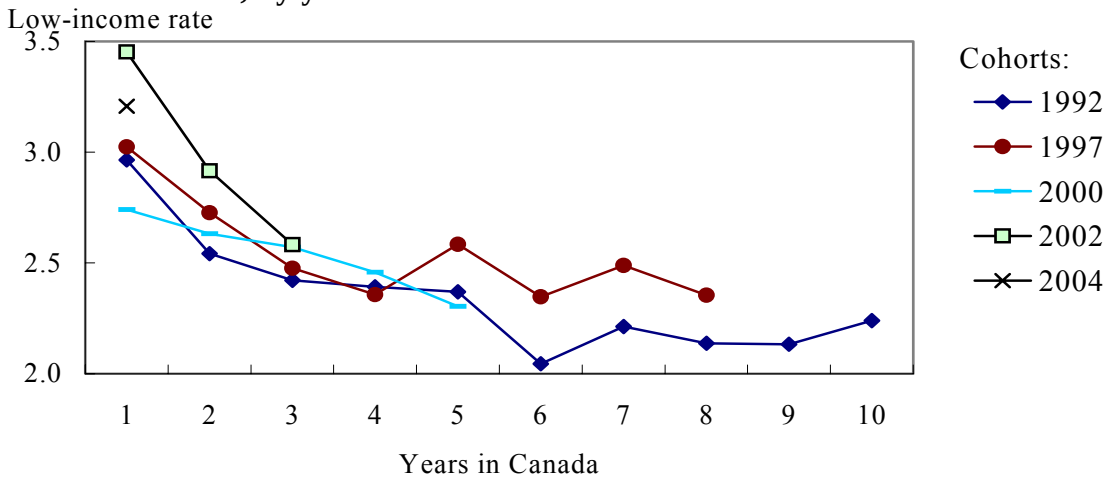
Assessing the exact impact on low-income rates is difficult, however, as low income is a family concept, meaning that individuals' outcomes may have nothing to do with where they work, or their occupation, but rather, may be related to the situation of someone else in the family. Determining which occupation groups relied on the high-tech sector for employment is equally difficult, because at the peak in 2000, immigrants in a range of occupations were likely finding jobs in that sector, often following appropriate training. Others entering in 2001 to 2004 may have hoped to do the same, but were unable to do so.

The deterioration in relative outcomes between 2001 and 2003 was widespread, but following some recovery in 2004, the lingering effects were more concentrated among older entering immigrants, those from Africa and East Asia, those in the skilled class, in IT and engineering, and those with university degrees. Whether this outcome is related to the downturn alone, or is symptomatic of more permanent problems, time will tell. It seems quite likely, though, that even without the downturn, little improvement in economic outcomes for entering immigrants would have been observed after 2000, since there was no group in the data for which this was observed, and certainly not all entering immigrants depend upon the IT sector for employment.

The cross-sectional results are interesting, but one really wants to know what happens to these entering cohorts as they acquire Canadian experience. Do the more recent cohorts tend to "catch up" to earlier cohorts (i.e., their low-income rates fall to levels observed in earlier cohorts, even though they start higher)? In an attempt to address this question, Chart 3 shows the relative low-income rates of selected entering cohorts of immigrants between 1992 and 2004. Again, there is no attempt to compare "like with like": these are aggregate comparisons.

As is well known, the low-income gap between arriving immigrants and the Canadian born decreases with time spent in Canada (Picot and Hou, 2003), and this is observed for all cohorts shown in Chart 3. For example, among the 1992 entering cohort, in the first year in Canada, the low-income rate was 3.0 times that of the Canadian born, but by year ten, it had fallen to 2.2 times higher. There was little difference in the trends among the 1990s cohorts, but the 2002 and 2004 cohorts displayed higher relative rates at entry.

Chart 3 Relative[1] low-income rates for selected entering immigrant cohorts, by years in Canada



1. Ratio of low-income rate of immigrants to that of the comparison group.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

5. Entry and exit hazard rates and survival functions

5.1 Methods

To extend the analysis beyond documenting cross-sectional low-income rates, we begin to untangle the low-income dynamics by modeling entry to the first low-income spell after entry into Canada, and exit from that first spell. A discrete time hazard model is used to estimate, on a year-by-year basis, the rates at which immigrants enter low-income status for the first time post-immigration, and exit the first low-income spell. The hazard model allows the relative likelihood and interval of the selected events to vary with a set of explanatory variables. The major advantage of the hazard model is that it can deal with the problem of censoring.

A cohort of immigrants who arrived in a given year (d=0) is at risk of entering low-income status for the first time in each following year (d =1,2,…,D). The probability that an immigrant i enters low income at year d, given that he/she has not remained in low income up to year d-1, is assumed here to be a standard logit hazard function:

$$h_{it}(d, X) = \frac{\exp[\alpha(d) + X_{it}\beta)]}{1 + \exp[\alpha(d) + X_{it}\beta)]}$$

or

$$\log[h_{it}(d, X)] = \alpha(d) + X_{it}\beta + \mu_{it} \qquad (1)$$

where X_{it} is a set of explanatory variables (described in detail later) which can be fixed (e.g., age at landing) or time-variant (e.g., marital status, place of residence). The above hazard function depends on duration in the spell d and X_{it}. β is a vector of parameters to be estimated, and α (d) is some functional form of how duration of the spell affects the hazard rate. As assumptions on the form of the baseline function α (d) can potentially bias the parameter estimates, we use a fully non-parametric specification with interval-specific dummies for the baseline hazard.

The same logit hazard function is used to estimate the probability that a low-income immigrant i, after falling in low income for the first time, will exit low income in each following year.

Using the above flexible baseline hazard specification can mitigate the effects of unobserved heterogeneity (Jenkins, 2005), which results from omitted variables and/or measurement errors in observed survival time or regressors. A hazard model which does not take account of unobserved heterogeneity may overestimate the degree of negative duration dependence in the hazard and underestimate the effects of regressors. To test whether unobserved heterogeneity is relevant to our fully non-parametric baseline hazard models, we estimate the following model, assuming the error term e has a normal distribution with mean zero (Jenkins, 2005). This model uses a panel data estimator to estimate the hazard function, and determines if the heterogeneity affects the hazard rate.

$$\log\left[h_{it}(d, X \mid e)\right] = \alpha(d) + X_{it}\beta + e_i + \mu_{it} \qquad (2)$$

We test this model with the 1992 cohort (which has the longest duration in our data) and control for demographic variables discussed in the data section. The results show that heterogeneity is not statistically significant for the hazard model for exit from the first low-income spell. Statistically significant heterogeneity exists only in the hazard model for entry to the first low-income spell. However, the differences between the two models in estimated hazard rates by duration and immigrant characteristics are very small. For instance, the estimated hazard rate of entering the first low-income spell was 37.9% at year one and 6.9% at year five, without taking into account unobserved heterogeneity. With heterogeneity, the estimated rates were 37.6% and 7.1% respectively. Without controlling for unobserved heterogeneity, those with high school or less education had 1.19 times larger hazard rates than university holders at year one, and 1.31 times larger rates at year five. With heterogeneity, these rates were 1.20 at year one, and 1.32 at year five.

Essentially, whether or not heterogeneity is controlled for makes little difference to our empirical results. Since the computing time is extremely long when accounting for unobserved heterogeneity and running the full models on data for all entering cohorts (discussed later), and since there is little difference in any case, the results in the following section are based on models that do not account for unobserved heterogeneity.

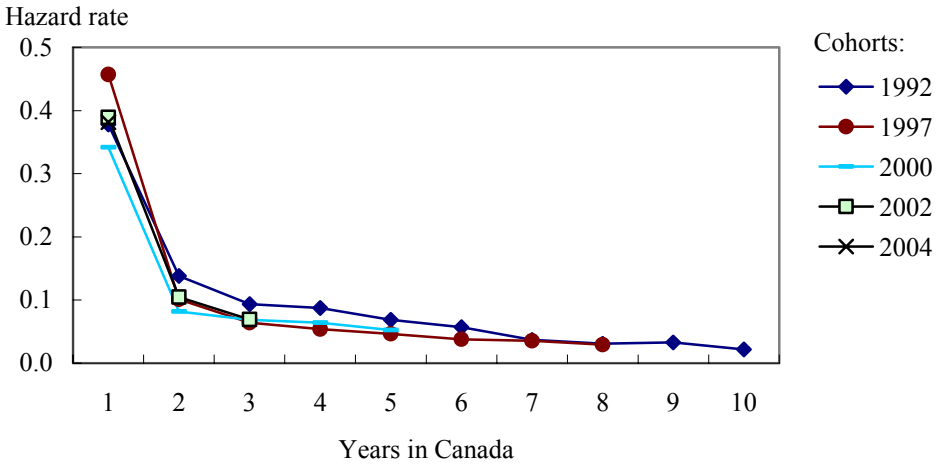
For each of the above two outcome variables (entry and exit), we estimate four models sequentially. The first contains immigrant cohorts, and the interaction between cohort and duration. This is a sort of base-line model with no variables describing immigrant characteristics. The second model adds to the first the demographic variables discussed earlier. The purpose of this model is to show to what extent changes in demographic composition affect cohort differences in the outcomes. To this, the third model adds annual unemployment rates among men aged 25 to 54 in the three largest metropolitan areas or provinces. These rates were based on place of residence in a given year. Adding unemployment rates of prime working-age men is a way to control for the impact of macro-economic conditions. To the third model, the fourth model adds the interaction terms between cohort and four demographic variables: age at landing, education, intended occupation, and immigrant class. This final model permits trends in outcomes among the sub-groups within each of the four demographic groups to vary across cohorts, allowing us to determine if relative outcomes changed over cohorts, particularly by education and immigrant class.

5.2 Entry rates for the first low-income spell

The low-income entry rates presented in Chart 4 are predicted from the logistic hazard model 1, which interacts duration with cohort to allow for different slopes on the hazard function for different cohorts. Since there are no controls for demographics in this model, the results are, in essence, the results from the raw data. The coefficients are provided in Appendix Table A6.

The probability of entering low income is very high in the first year in Canada (ranging from 0.34 in the 2000 cohort to 0.46 in the 1997 cohort), falls rapidly by the second year (to around 0.10), and then slowly declines with time. Most immigrants who end up in low income do so in the first year. Those who do not enter in the first year have much lower probabilities of entry in later years.

Chart 4 Entry hazard rates for the first low-income spell

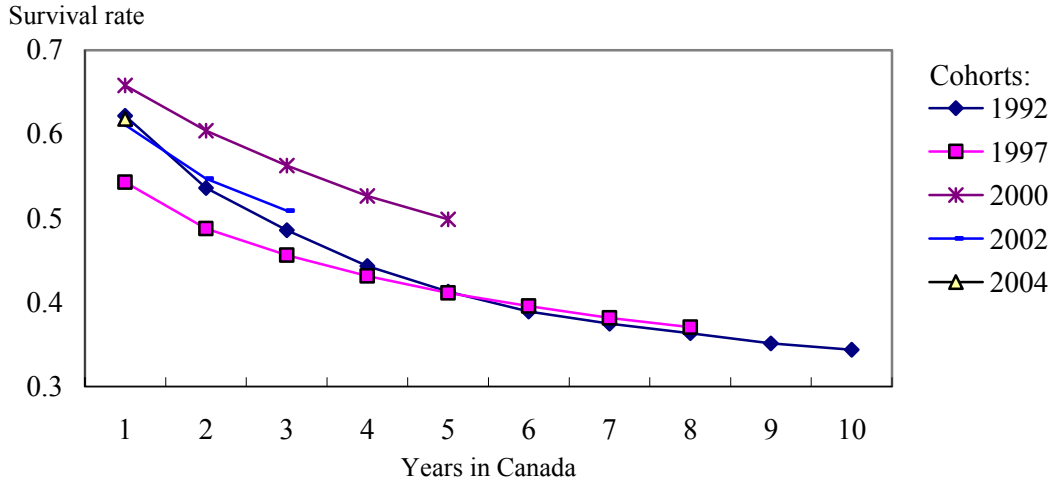


Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Regarding variation among cohorts, outcomes were worst in 1997 (low-income rates in Canada peaked in 1996 during the last business cycle), improved with economic conditions to reach the peak of the cycle in 2000, and then deteriorated following 2001, even though the low-income rate in Canada as a whole did not rise significantly after 2000. The likelihood of entering low income the first full year in Canada rises from the 1992 cohort (at 0.38), peaking with the 1997 cohort (at 0.46), then falling with the improved economic conditions for the 2000 cohort (falling to 0.34). It rises again after 2000, increasing to 0.40 for the 2003 cohort, and falling to 0.38 in 2004. This is consistent with the earlier cross-sectional findings.

Expressed in survival rate terms, these results indicate that about 35% of immigrants aged 20 to 54 at entry will never be exposed to low income during their first ten years in Canada, while 65% experience at least one spell over that same period (Chart 5).

Chart 5 Survival rates of the proportion remaining out of low income, by number of years in Canada

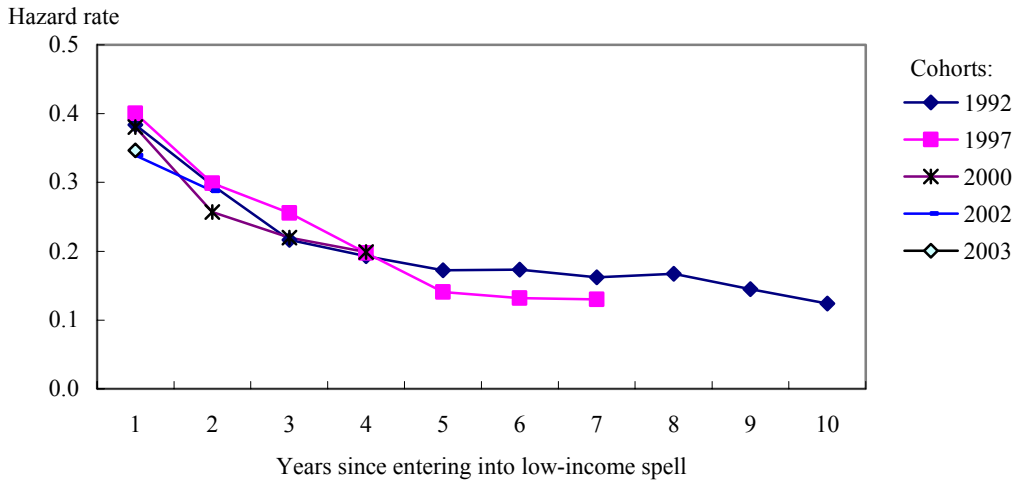


Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

5.3 Exit rates from the first low-income spell

The exit hazard is first estimated based on model 1, with independent variables for cohorts, and interacting the cohort with duration, to allow the slope to vary across cohorts. The familiar declining hazard is displayed. The probability of exit starts at between 0.34 and 0.41 during the first year (depending upon the cohort), and falls to around 0.15 after six years or so. As in Table 3, the proportion exiting after one year fell significantly, dropping from 0.40 in the 1997 cohort to around 0.35 for the 2003 cohort. By the early 2000s, the probability of entering the first year was rising, and the probability of exiting early in the spell was falling.

Chart 6 Exit hazard rates from the first low-income spell



Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

How long do the first spells last? After three years, less than one-third of the 1997 cohort were still in the first low-income spell, and among the 2001 cohort, this had risen to 36% (Table 3). Focusing on cohorts from the early/mid 1990s, meanwhile, about one-quarter of immigrants in low income remained in the first spell after five years, and after ten years, about 10% did so.

Table 3 Proportion exiting first low-income spell, by number of years in low income

By cohort	Proportion exiting after 1 year	Proportion remaining in first low-income spell after		
		3 years	5 years	10 years
	percentage			
1992	38.4	34.0	22.7	9.8
1995	38.1	33.1	20.8	…
1997	40.0	31.3	21.6	…
2000	38.1	35.9	…	…
2001	34.9	36.2	…	…
2002	33.9	…	…	…
2003	34.7	…	…	…

… not applicable

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

5.4 The association between education and the entry and exit hazard rates

As noted earlier, over the 1990s and into the 2000s, there were significant changes in the characteristics of immigrants entering Canada. The immigration selection system was altered to attract more economic migrants, with higher levels of education, with a view to improving the match between the needs of the labour market and the skills of the immigrants, thus improving overall outcomes. Here, we examine the relative advantage of having a university degree (relative to high school), or being in the skilled class (relative to the family class), as measured by the likelihood of entering or exiting low income, and whether that relative advantage changed as increasing numbers of immigrants entered in these categories.

We estimate the entry and exit rates using model 4 (described earlier), a logistic model with controls for demographic differences among cohorts, and interaction between duration and cohort in the exit models to allow for variation in the slope of the hazard among cohorts. We add one more feature to the model, interacting education and immigrant class with cohort to allow for variation across cohorts in the relative values of the coefficients by education and immigrant class (model 4 in Appendix Table A6).

The entry rates are provided in Table 4 for the pooled cohorts, 1992 to 2004, and then for selected cohorts over the period (Table 5). There are at least two relevant observations from these data. First, although the probability of entering low income was higher for immigrants with less than a high school education than among the university educated, as one would expect, the magnitude of the difference may not be as great as expected: the pooled cohorts model indicates that those with less than high school were 1.26 times as likely to enter low income during the first ten years in Canada as those with a university education.

When focusing on the model which interacts cohort with education, this relative difference by education appears to decrease for the 2000 and subsequent cohorts. Over the first five years in Canada, the relative probability of entry for the 2000 cohort was 1.18, down from 1.30 for the 1993 cohort and 1.32 for the 1997 cohort. And looking at the relative probability of entry during the first year, it fell from 1.18 in the 1993 cohort, to 1.16 in 1997, 1.12 in 2000, and 1.08 in 2004. Hence, the

relative advantage of having a university degree (in terms of reduced probability of entering low income) fell for the entering cohorts of 2000 and beyond.

Table 4 Predicted rate of entering first low-income spell[1] by immigrants aged 20 to 54 at entry into Canada, by education, pooling cohorts of 1992 to 2004

	Years since entering Canada									
	1	2	3	4	5	6	7	8	9	10
High school or less	0.424	0.124	0.089	0.073	0.061	0.049	0.038	0.033	0.032	0.027
Some post-secondary	0.390	0.109	0.078	0.063	0.053	0.043	0.033	0.029	0.028	0.023
University degree	0.366	0.100	0.071	0.058	0.048	0.039	0.030	0.026	0.025	0.021
Relative probability										
High school or less versus university degree	1.16	1.25	1.26	1.27	1.27	1.28	1.28	1.28	1.28	1.29
Average relative probability over 10 years… 1.26										

1. Controlling for demographic differences and unemployment rate.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table 5 Predicted relative rate of entering first low-income spell[1] of immigrants aged 20 to 54 at entry into Canada, by education, selected cohorts

	Years since entering Canada									
	1	2	3	4	5	6	7	8	9	10
Relative probability High school or less versus university degree										
1993 cohort	1.18	1.27	1.28	1.29	1.30	1.31	1.31	1.32	1.32	1.32
1997 cohort	1.16	1.29	1.31	1.31	1.32	1.32	1.32	1.33	…	…
2000 cohort	1.12	1.18	1.18	1.18	1.18	…	…	…	…	…
2003 cohort	1.12	1.19	…	…	…	…	…	…	…	…
2004 cohort	1.08	…	…	…	…	…	…	…	…	…

… not applicable
1. Controlling for demographic differences among cohorts and the unemployment rate, interacting cohort with years since entering Canada, and education, age and immigrant class.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

What of the likelihood of exiting the first low-income spell once in it? While the more highly educated enjoy a marginally higher probability of exit, the difference is quite small. The coefficient on the university dummy was significantly different from the reference group ($t = 6.3$) in the pooled cohort model, but the magnitude of the relative difference was only 1.07 (Table 6). That is to say, immigrants with university degrees were 1.07 times as likely to exit low income (averaged over the first ten years) as those with high school or less.

Table 6 Predicted rate of exiting from first low-income spell by immigrants aged 20 to 54 at entry into Canada, pooling cohorts of 1992 to 2003

	Years in low income									
	1	2	3	4	5	6	7	8	9	10
High school or less	0.363	0.274	0.224	0.194	0.170	0.155	0.139	0.135	0.120	0.121
Some post-secondary	0.384	0.293	0.241	0.209	0.183	0.168	0.150	0.146	0.130	0.131
University degree	0.382	0.291	0.239	0.207	0.182	0.166	0.149	0.145	0.129	0.130
Relative probability										
University degree versus high school or less	1.05	1.06	1.07	1.07	1.07	1.07	1.07	1.07	1.08	1.08
Average relative probability over 10 years… 1.07										

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

However, if anything, this relative advantage increased from the 1993 to the 2003 cohorts. For example, focusing on the exit probability during the first year, university degree holders were 1.02 times as likely to exit as those with high school or less in the 1993 cohort, and this increased marginally, over time, reaching 1.12 in the 2003 cohort (Table 7).

Table 7 Predicted relative rate of exiting from first low-income spell[1] by immigrants aged 20 to 54 at entry into Canada, by education, selected cohorts

	Years since entering low income									
	1	2	3	4	5	6	7	8	9	10
Relative probability University degree versus high school or less										
1993 cohort	1.02	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
1997 cohort	1.05	1.06	1.06	1.07	1.08	1.08	1.08	…	…	…
2000 cohort	1.08	1.09	1.10	1.10	…	…	…	…	…	…
2002 cohort	1.20	1.22	…	…	…	…	…	…	…	…
2003 cohort	1.12	…	…	…	…	…	…	…	…	…

… not applicable

1. Controlling for demographic differences among cohorts and the unemployment rate, interacting cohort with years since entering Canada, and education, age and immigrant class.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

To summarize, over the period when the focus was increasingly on attracting the university-educated, the likelihood of entering low income was initially somewhat lower for the more highly educated, but this slight advantage was reduced among the 2000 and more recent cohorts. However, while the likelihood of exiting low income was only very marginally higher among the university-educated, this relative advantage increased marginally over the period.

5.5 The association between immigrant class and the entry and exit hazard rates

Throughout the 1990s, more arriving immigrants were in the economic "skilled" class, fewer in the family class. When focusing on family welfare outcomes, such as low-income status, how significant was this adjustment? What effect did it have on low-income status of immigrants? To answer such a question, one needs to know the relative probabilities of low-income entry and exit for the two classes, and how these changed as the share of immigrants in the skilled class rose.

In our investigation, we include principal applicants plus other family members in the skilled immigrant class, since low income is a family concept. For example, the labour market outcomes of the principal applicants affect not only their own low-income status, but that of other family members. Similarly, if other family members are working, then the low-income status of the principal applicant can change.

On average, for the 1992 to 2004 entering cohorts, refugees were much more likely to enter low income, and much less likely to exit than were members of the skilled or family class. During the first year in Canada, refugees were 1.4 times as likely to enter low income as economic immigrants, and after one year in low income, only 0.88 times as likely to exit. Such results are not surprising.

But what of the difference between economic and family immigrants? On average, over the same cohorts, skilled applicants were 1.18 times *more* likely to enter low income (Table 8), and equally likely to exit as immigrants in the family class (Table 9). It may be that many family class immigrants, at entry are affiliated with families that have already established themselves in Canada. Hence, for those family class immigrants, the low-income rate, which is based on family income, may be lower.

Table 8 Predicted entry hazard[1] in first low-income spell, by immigrant class,[2] pooling cohorts of 1992 to 2004

	Years since entering Canada									
	1	2	3	4	5	6	7	8	9	10
Family	0.350	0.095	0.068	0.055	0.046	0.038	0.029	0.025	0.025	0.021
Skilled	0.391	0.112	0.080	0.066	0.055	0.045	0.035	0.031	0.030	0.025
Refugee	0.515	0.174	0.128	0.106	0.090	0.074	0.058	0.051	0.050	0.042
Relative probability										
Skilled versus family	1.12	1.18	1.18	1.19	1.19	1.19	1.20	1.20	1.20	1.20
Average over 10 years… 1.18										

1. Controlling for demographic characteristics, and unemployment rate.
2. Immigrants aged 20 to 54 at entry into Canada. Excludes business class.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table 9 Predicted exit hazard[1] from first low-income spell, by immigrant class,[2] pooling cohorts of 1992 to 2003

	Years since entering low income									
	1	2	3	4	5	6	7	8	9	10
Family	0.383	0.293	0.240	0.208	0.182	0.166	0.148	0.144	0.128	0.129
Skilled	0.380	0.290	0.237	0.206	0.180	0.164	0.147	0.142	0.127	0.127
Refugee	0.339	0.255	0.207	0.178	0.155	0.141	0.126	0.122	0.108	0.109
Relative probability										
Skilled versus family	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Average over 10 years… 0.99										

1. Controlling for demographic characteristics and unemployment rate.
2. Immigrants aged 20 to 54 at entry into Canada. Excludes business class.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Yet when focusing on the model which allows these relative probabilities to vary across cohorts (model 4, Appendix Table A7), we find significant changes in relative entry probabilities between the 1993 and 2004 cohorts. Among the 1993 cohort, skilled applicants were marginally less likely to enter low income (0.98 times as likely) (Table 10) and marginally more likely to exit (1.05 times more likely) as immigrants in the family class (Table 11). But the relative probability of entry changed significantly over the period: by the time of the 1997 cohort, during the first year in Canada immigrants in the skilled class were 1.15 times more likely to enter low income. This remained about the same for the 2000 cohort, but by the 2004 cohort, immigrants in the skilled class were 1.47 times as likely to enter low income as family class members, representing a significant difference, and a dramatic change since the early 1990s. Meanwhile, we find that the relative probability of exit remained much the same across the cohorts, with the exception of the 1997 cohort, for reasons unknown (Table 11).

Table 10 Predicted relative entry hazard,[1] by immigrant class,[2] selected cohorts

	Years since entering Canada									
	1	2	3	4	5	6	7	8	9	10
Relative probability Skilled versus family class										
1993 cohort	0.98	0.97	0.97	0.96	0.96	0.96	0.96	0.96	0.96	0.96
1997 cohort	1.15	1.26	1.27	1.28	1.28	1.28	1.29	1.29	…	…
2000 cohort	1.11	1.16	1.17	1.17	1.17	…	…	…	…	…
2002 cohort	1.25	1.38	1.40	…	…	…	…	…	…	…
2003 cohort	1.35	1.56	…	…	…	…	…	…	…	…
2004 cohort	1.47	…	…	…	…	…	…	…	…	…

…not applicable
1. Controlling for demographic differences among cohorts and the unemployment rate, interacting cohort with years since entering Canada, and education, age and immigrant class.
2. Immigrants aged 20 to 54 years at entry into Canada.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table 11 Predicted relative exit hazard,[1] by immigrant class,[2] selected cohorts

	Years since entering low income									
	1	2	3	4	5	6	7	8	9	10
Relative probability										
Skilled versus family class										
1993 cohort	1.05	1.06	1.06	1.06	1.06	1.06	1.07	1.07	1.07	1.07
1997 cohort	0.93	0.91	0.91	0.90	0.89	0.89	0.89	…	…	…
2000 cohort	1.01	1.01	1.01	1.01	…	…	…	…	…	…
2002 cohort	1.02	1.02	…	…	…	…	…	…	…	…
2003 cohort	1.04	…	…	…	…	…	…	…	…	…

…not applicable

1. Controlling for demographic differences among cohorts and the unemployment rate, interacting cohort with years since entering Canada, and education, age and immigrant class.
2. Immigrants aged 20 to 54 years at entry into Canada.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

5.6 The overall effect of rising educational attainment and more skilled class immigrants on entry and exit rates

To summarize the previous results, regarding educational differences, the university-educated were only slightly less likely to enter low income than were the high school-educated in the early 1990s, and by the early 2000s, half of this relative advantage had disappeared. There was little difference in the likelihood of exiting low income once in it (controlling for other demographic differences in all cases). Regarding immigrant class differences, by the early 2000s, those in the skilled class were much more likely to enter low income than their family class counterparts (controlling for other demographic differences), representing a significant change since the early 1990s; both groups were equally likely to exit. Clearly, a shift in the characteristics of entering immigrants towards the more highly educated and highly skilled did little to improve the low-income outcomes among successive entering cohorts of immigrants.

This is demonstrated in Table 12. In the raw data in column one, which allows for changes in the education and immigrant class distributions, the probability of entering low income during the first year increased by 2.0 percentage points between the 1992 cohort and the 2003 cohort. This is what actually happened over the period. If one holds education and immigrant class distributions fixed at their average value over the 1992 to 2003 cohorts (i.e., we do not allow changes in the characteristics across these two variables to take place), then the entry rate would have risen by 4.3 percentage points (everything else constant).

Table 12 Probability of entering low income during the first full year in Canada

First full year in Canada	Raw data	Holding education and immigrant class fixed[1]	Holding all characteristics fixed[1,2]
1992	0.378	0.366	0.366
1993	0.393	0.381	0.390
1994	0.378	0.375	0.385
1995	0.406	0.404	0.411
1996	0.444	0.437	0.445
1997	0.457	0.452	0.457
1998	0.425	0.425	0.427
1999	0.381	0.382	0.383
2000	0.342	0.346	0.343
2001	0.342	0.346	0.342
2002	0.389	0.397	0.388
2003	0.398	0.409	0.400
2004	0.382	0.393	0.383
Difference			
1992 to 2003	0.020	0.043	0.033
1992 to 2004	0.004	0.027	0.016

1. At average values over all entering cohorts between 1992 to 2003.
2. Includes age, education, immigrant class, intended occupation, source region, family status, and census metropolitan area of residence.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Thus, altering the education and immigrant class characteristics had some positive effect: the rate rose only 2.0 points rather than the 4.3 point increase that would have occurred had the distributions not changed. But this effect was very small: only 2.3 percentage points on a base entry rate of around 40%, or 6%. The change in the distributions was enormous: the proportion of immigrants aged 15 years or older with a degree in the entering cohort went from 17% to 44%, and the proportion in the skilled immigrant class from 29% to 51%. But this only dropped the probability of entry by about 2.3 percentage points. As a point of comparison, business cycles have a much larger effect on the entry rates, altering them by about 12 percentage points.

Many other characteristics changed between the 1992 and 2004 cohorts, including changing distributions by source region, language, age, occupation, and family status. However, overall, the changes in all characteristics of successive entering cohorts had little effect on the probability of entry into low income. The predicted entry rates in column 3 of Table 12 (based on model 2 in Appendix Table A6), holding all demographic variables fixed at their average values over the 1992 to 2004 cohorts, are little different than those observed in the raw data reported in column 1.

Similar results are observed for the exit rates during the first year in low income, and the proportion remaining in low income after three years. Holding the immigrant class and education variables fixed, results in little difference in the change in exit rates between the 1992 and 2003 cohorts, as compared to the raw data (comparing column 2 with 1 in Table 13), in which these characteristics changed significantly. Changes in *all* characteristics included in the model resulted in the exit rates following one year in low income being 1.3 percentage point (3.7 minus 2.4) higher than would have been the case had the characteristics remained constant over the period.

Table 13 Predicted proportion exiting first low-income spell, by number of years in low income

	No controls		Holding education and immigrant class fixed[1]		Holding all characteristics fixed[1,2]	
	Proportion exiting after 1 year	Proportion remaining after 3 years	Proportion exiting after 1 year	Proportion remaining after 3 years	Proportion exiting after 1 year	Proportion remaining after 3 years
Cohort						
1992	0.384	0.340	0.385	0.341	0.381	0.363
1993	0.382	0.355	0.383	0.355	0.377	0.377
1994	0.372	0.354	0.372	0.356	0.366	0.378
1995	0.381	0.331	0.381	0.333	0.375	0.354
1996	0.376	0.322	0.377	0.322	0.372	0.343
1997	0.400	0.313	0.402	0.314	0.400	0.329
1998	0.387	0.328	0.386	0.330	0.384	0.346
1999	0.408	0.328	0.407	0.331	0.407	0.343
2000	0.381	0.359	0.380	0.362	0.387	0.367
2001	0.349	0.362	0.349	0.365	0.354	0.371
2002	0.339	…	0.338	…	0.348	…
2003	0.347	…	0.344	…	0.357	…
Difference						
1992 to 2003	-0.037	…	-0.040	…	-0.024	…
1992 to 2001	…	0.022	…	0.024	…	0.008

… not applicable

1. At average values over all entering cohorts between 1992 to 2003.
2. Includes age, education, immigrant class, intended occupation, source region, family status, and census metropolitan area of residence.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

6. Chronic low income among entering immigrants

Entry and exit hazards are very informative to understand relative flows, but do not provide a straightforward way of assessing the cumulative low-income experience of an individual over, say, a decade, when entry, exit and re-entry may occur many times. To assess this, we turn to a simple "exposure" measure; the number of years an individual is in low income during the five- (or ten-) year period following entry to Canada. Except for those in low income for all five years, these data cannot necessarily be interpreted as a continuous spell of low income. For example, a person in low income for four of the five years may have had two or even three short spells, separated by a brief period out of low income. However, this statistic provides a very useful measure of the chronic nature of low income for the family. Continuous entry, exit and re-entry to low income represent a chronic low-income problem.

6.1 The level of chronic low income

During the 1990s, immigrants' exposure to low income during the first few years in Canada was very high, but this might not be surprising. Of more interest is whether immigrants find themselves in persistent low income, here defined as being in low income at least four of the first five years. On average, among the 1992 and 2000 cohorts, almost one-fifth of entering immigrants found themselves in persistent low income (Table 14). Of these 19% persistently poor, most (about 60%) were in low income all five years.

By way of contrast, among the (mostly Canadian born) comparison group aged 25 to 54, persistent low income measured during the same five years as for each entering immigrant cohort stood at around 7.5% over the same period.

One could argue that new labour market entrants, which include recent immigrants, are likely to have a higher rate because of the difficulty of breaking into the labour market. To approximate this phenomenon, we focus on the comparison group aged 25 to 29, the years during which many enter the labour market. The rate of persistent low income was marginally higher, at around 8% for this group of mostly Canadian-born young adults. As before, there is no attempt to compare "like with like" in these calculations, since the data on non-immigrants, such as education, occupation, etc., do not exist. On that basis, persistent low income is about 2.5 times higher among entering immigrants than among the comparison group during the first five years following entry to Canada.

To determine whether the persistent low income falls significantly among entering immigrants, as they acquire Canadian experience and economic conditions improve, we turn to a measure of the "exposure" to low income over the first ten years after entering Canada. An individual is said to be persistently poor if he/she is in low income for at least seven of the ten years. On that basis, 16.5% of immigrants entering between 1992 and 1994 were in persistent low income during their first ten years in Canada, not a large improvement over the five-year persistent low-income rate of around 19%. By way of contrast, the comparison group aged 25 to 29 (new labour market entrants) had a ten-year persistent rate of 6.8%. Thus, persistent low income was around 2.3 times greater among entering immigrants in the early 1990s than among predominantly Canadian-born new labour market entrants over the same period.

However, persistent low income fell among successive cohorts through the 1990s as the economy improved. Among the 1993 cohort, the five-year chronic low-income rate was 20.5%; during the five years from 1993 to 1997, the average unemployment rate among prime working-age Canadian men was 10.0%. Among the 2000 cohort, the chronic low-income rate fell to 16.2%; during the five years from 2000 to 2004, the average unemployment rate among prime working-age Canadian men was 7.3%.

Beyond improvements in economic conditions, the entering immigrants of the late 1990s possessed certain characteristics that could have reduced chronic low income, other things being equal. For example, they were much more highly educated (in 2000, 41% entering immigrants aged 15 years or older had a university degree, compared to 17% in 1992), more likely to be in the skilled class (49% compared to 29%), and more likely to be an information technology (IT) professional or engineer (15.3% compared to 3.1%).

To determine the effect of changing demographic composition and falling unemployment rates, we run three logistic regression models, and compute the aggregate predicted probabilities of being in chronic low income (reported in Table 14, with coefficients in Appendix Table A8). The first model simply has cohort dummies, and hence, matches the raw data for each cohort. The second model controls for differences among cohorts in education, immigrant class, intended occupation, family type, self-reported official language knowledge, and source region. The coding of these variables was discussed in the data section. The predicted probabilities of being in chronic low income (i.e., four out of the first five years) for the cohorts from 1992 to 2000 differ little from the raw data results. Changes in composition of *all* demographic variables (age, education, immigrant class, family status, intended occupation, and self-reported language) had little effect on the trend in chronic low-income rates.

Table 14 Cohort differences in the probability of being in chronic[1] low income, immigrant cohorts[2] entering between 1992 and 2000

	Cohort for year[3]								
	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Raw data (Model 1 Appendix Table A8)	0.191	0.205	0.197	0.185	0.188	0.185	0.182	0.170	0.162
Controlling for demographic differences[4] among cohorts (Model 2)	0.182	0.202	0.200	0.188	0.189	0.183	0.184	0.173	0.164
Controlling for demographic plus unemployment rate (Model 3)	0.134	0.165	0.181	0.189	0.206	0.212	0.217	0.206	0.195

1. In low income for at least four of the five years following entry into Canada.
2. Immigrants aged 20 to 54 at entry to Canada.
3. Cohort year refers to the first full year in Canada (e.g., immigrant entering in September 1991 would be considered to be in the 1992 cohort).
4. Controlling for differences among cohorts in age, education, immigrant class, intended occupation, family type, reported official language knowledge and source region.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

As this paper focuses on education and immigrant class, we question whether changes in these two characteristics significantly affected chronic low income. To this end, we replicate the analysis of the previous section in Table 15. The raw data are shown in column 1 (i.e., the actual trends, allowing for changes in characteristics), and in column 2, the immigrant class and educational attainment distributions of entering immigrants are held fixed at their average level over all cohorts. The results indicate that the changes in education and class reduced the change in the chronic low-income rate by 2.0 percentage points (or 10%) as compared to what it would have been had the distributions not changed (i.e., 2.8 minus 0.9). Hence, changing education and class characteristics had some positive effect, albeit small compared to the dramatic changes in the education and class characteristics. And when changes in *all* characteristics are considered, there was little effect on chronic low income.

Although controlling for demographics had little effect on the chronic low-income rates, adding an unemployment rate variable to the model changes the aggregate results significantly. The unemployment rate used is the average rate for males aged 25 to 54 for the five-year period following entry to Canada for any given cohort (e.g., 1993 to 1997 for the 1993 cohort). The male rate is used to reflect general aggregate economic conditions. The unemployment rate is that of the metropolitan area for immigrants living in Toronto, Vancouver, or Montreal, (the vast majority of recent immigrants), and the provincial unemployment rate for those living outside these cities. After incorporating the unemployment rate controls in model 3 (Table 14), the expected rate of chronic low income rises substantially between the 1993 and 2000 cohorts, jumping from 16.5% to 19.5%. The model controlling for demographics results in a 3.8 percentage point decline between the 1993 and 2000 cohorts, but after controlling for the unemployment rate, we see a 3.0 percentage points increase between these same years.

Hence, for a given level of economic conditions, the chronic low-income position of each successive cohort of entering immigrants deteriorated through the 1990s. Put another way, the improvement in the chronic low-income rate observed between the 1992 and 2000 cohorts was the result of short-term cyclical variation in economic conditions. If one focuses on more "structural" trends by controlling for changes in the unemployment rate, then a rise in the chronic low-income rate is observed throughout the 1990s. Given the cross-section low-income rate data for the early 2000s, this was unlikely to have been reversed.

Table 15 The effect of altering education and immigrant class on cohort difference in chronic low income

	No controls	Holding education and immigrant class fixed[1]	Holding all characteristics fixed[1,2]
Entering Cohort			
1992	0.191	0.185	0.182
1993	0.205	0.183	0.202
1994	0.197	0.197	0.200
1995	0.185	0.195	0.188
1996	0.188	0.185	0.189
1997	0.185	0.186	0.183
1998	0.182	0.185	0.184
1999	0.170	0.187	0.173
2000	0.162	0.176	0.164
Difference 1992 to 2000	-0.028	-0.009	-0.018

1. At average values over all entering cohorts between 1992 and 2003.
2. Includes age, education, immigrant class, intended occupation, source region, family status, and census metropolitan area of residence.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

6.2 Among which immigrant groups is persistent low income concentrated?

The variation in the chronic low income among different immigrant groups can be viewed from two different perspectives. First, it is important to know which entering groups have a greater propensity towards chronic low income, and hence, the focus on the *rate* of persistent low income. Such information is useful when assessing admissions criteria, for example. But when attempting to address the issue of chronic low income, it is important to know which groups account for the majority of the observed chronic low income. A group with a very high propensity (such as single parents) may be quite small, and thus, account for a very small proportion of total immigrant chronic low income. Knowledge of the characteristics of the persistently poor can help focus the research to determine the causes of the persistent low income, and can assist in the development of programs to address the issue. To provide such information, one needs to focus on the *distribution* of chronic low income among entering immigrants.

Table 16 presents the data on the chronic low-income *rate*, the *distribution* of chronic low income, and the change over time in these two variables, focusing on the entering cohorts of 1993 and 2000. These data are presented for the following characteristics: immigrant class, education, age, occupation, family type, source region, and declared language ability. The following are the salient observations derived from these tables:

- Not surprisingly, refugees are more likely to experience chronic low income than other classes; in the 2000 entering cohort, their rate was 27.1%, compared to 13.4% in the family class (controlling for demographic differences), and 15.6% in the skilled class (also controlling for demographic differences). But they constitute a small proportion of immigrants (13% of landed immigrants in 2000), and thus, they account for a relatively small share of immigrant chronic low income: 24% among the 2000 cohort. In contrast, skilled workers accounted for fully 52% of all immigrants in chronic low income in that cohort, even though they had a below average chronic rate.

- The chronically-poor immigrants are not restricted to those with lower levels of education. Over 40% of the chronically poor in the 2000 cohort had a university degree, up from 13% in the 1993 cohort. Once again, this increase was largely because graduates constituted a much greater share of all immigrants in the 2000 cohort than in the 1993 cohort. Overall, their rate of chronic low income remained below that of immigrants with less education.

- The older the immigrant at landing, the higher the likelihood of being in chronic low income. Among the 2000 cohort, the rate was 14% among those aged 20 to 29, and 27% among those over age 50 at landing (controlling for other differences). This is consistent with the recent observation that returns to foreign labour market experience have declined.

- As with the Canadian born, lone parents are much more likely to be in chronic low income than other groups. However, they constitute such a small percentage of immigrants at landing (2.8% in the 2000 cohort), that their contribution to chronic low income is small (accounting for only 8% in the 2000 cohort). Over half of the chronic low income observed in the 2000 cohort was among two-parent families with children.

- Source region matters. The prevalence of chronic low income is very low among entering immigrants from North America and Europe; the rate in the 2000 cohort was in the 8% range (controlling for other demographic differences among source regions), whereas immigrants from Africa and East Asia had the highest rates (19% to 24%). Asian immigrants had the highest share of entering immigrants in chronic low income; they accounted for one-half of those in chronic low-income in the 2000 cohort.

To summarize, during the 1990s, the propensity for chronic low income varied among groups as one might expect: it decreased with education, increased with age at landing, was higher among the refugee class, with little difference between skilled and family class, was much higher among single parents, higher among East Asian and African immigrants, and lower among labour market related occupations such as engineering and information technology professionals. It is not yet possible to know if some of these correlations will change in the 2000s, given the increased cross-sectional low-income rates observed among the information technology groups, the highly educated, and the skilled immigrants.

If one asks among which groups persistent low income is concentrated, then the answers are often quite different. Among the latest cohort observed (2000), skilled immigrants constituted the largest group, accounting for about one-half of those in chronic low income, and 40% had a university degree. Over the 1990s, the change in the characteristics of immigrants had little effect on the aggregate rate of chronic low income, as noted earlier. However, the groups with rising shares of immigrants (the skilled class, the highly educated, two-parent families with children, and the more highly skilled occupations) constituted an increasing share of the chronically poor.

Table 16 Chronic low-income rates and distributions among entering immigrant cohorts[1] of 1993 and 2000

	Predicted chronic low-income rate, from regression model 4 with controls[2]		Chronic low-income rate, raw data		Percentage distribution of entering immigrants		Percentage distribution of entering immigrants in chronic low income	
	1993	2000	1993	2000	1993	2000	1993	2000
	percentage							
Immigrant class								
Family	18.8	13.4	18.8	13.4	35.1	27.5	32.0	22.7
Skilled	16.9	15.6	15.4	15.0	22.0	55.6	16.5	51.5
Refugee	31.3	27.1	31.8	29.5	16.3	13.4	25.3	24.4
Others[3]	19.1	6.1	20.2	6.3	26.6	3.4	26.2	1.3
Education								
High school or less	22.5	19.0	24.5	21.3	48.2	24.9	57.5	32.7
Some post-secondary or college	19.6	15.6	18.3	15.5	33.5	27.6	29.9	26.2
University degree	16.4	15.0	14.2	14.1	18.2	47.4	12.6	41.1
Occupation								
Management	26.8	20.9	21.6	18.8	1.6	1.0	1.6	1.1
Clerical, sales, services	17.8	16.8	16.9	14.4	12.0	5.6	9.9	5.0
Information technology	16.4	13.9	10.0	11.4	2.5	11.6	1.2	8.2
Other professional	18.0	17.7	13.6	15.7	9.1	15.8	6.0	15.3
Other occupation	21.2	16.3	22.4	17.7	74.0	59.4	80.6	64.9
Engineering (excluding electrical and computer service)	22.4	15.2	16.7	13.4	0.9	6.7	0.7	5.5
Age at entry								
20 to 29	19.8	14.4	20.3	14.1	40.7	34.5	40.2	29.8
30 to 39	20.4	16.0	20.1	16.4	41.2	44.8	40.4	45.1
40 to 49	21.2	18.8	20.8	18.6	15.4	17.8	15.5	20.3
50 and over	29.8	27.2	28.3	25.8	2.8	3.0	3.9	4.8
Family type								
Single	21.8	17.7	22.6	17.3	26.0	17.4	28.6	18.5
Lone parent	42.0	36.0	43.8	43.5	4.2	2.8	9.0	7.6
Attached	15.7	12.5	15.5	11.2	27.8	29.8	20.9	20.6
Attached with kids	20.6	16.6	20.3	17.3	42.0	50.0	41.6	53.2
Source region								
North America	11.1	7.9	8.1	4.3	1.9	1.4	0.7	0.4
Caribbean, South and Central America	17.2	12.5	22.4	9.6	15.1	6.1	16.5	3.6
Europe (excluding Eastern Europe)	11.3	8.0	8.7	7.2	7.4	6.5	3.1	2.8
Eastern Europe	12.8	9.2	13.0	11.1	13.0	15.0	8.2	10.2
Africa	25.6	19.2	31.7	23.6	8.0	8.5	12.4	12.3
South Asia	20.8	15.4	19.2	16.2	17.4	21.1	16.3	20.9
East Asia	31.0	23.8	25.1	19.1	13.1	25.1	16.0	29.4
Self-reported official language knowledge								
No knowledge of English or French	22.3	17.7	24.0	18.5	30.4	30.7	35.5	34.9
Some knowledge	19.7	15.5	19.0	15.3	69.6	69.3	64.5	65.1

1. Immigrants aged 20 to 54 at entry to Canada. Excludes business class.
2. Controls for cohort, immigrant class, education, occupation, age at entry, family type, source region and self-reported language skills. Cohort is interacted with class, education, age and occupation.
3. The "others" category includes a large number of "backlogged" cases in 1993. As the number of immigrants entering in the backlog category declined over the 1990s, the size of the "others" category fell significantly.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

7. Conclusion

This paper focuses on three issues. First, did outcomes in family welfare (as measured by the low-income rate) improve after 2000, the last year for which data were previously available? Second, what can entry and exit rates tell us about the dynamics of low income among entering cohorts? Third, how common is "chronic" low income among entering immigrants, and how (if at all) did this change over the 1990s? The issue common to all these questions is the effect on outcomes of the changes in the selection of entering immigrants.

Family welfare outcomes among entering immigrants continued to deteriorate after 2000, in spite of the significant changes brought about by the selection process. Relative (to Canadian born) and absolute low-income rates rose, the probability of entering low income rose, and the probability of exiting fell. However, the increase in low-income rates after 2000 was associated almost exclusively with immigrants who had been in Canada for two years or less. The rise seemed to be associated with increased difficulty in very short-term economic integration (the first two years).

Although the share of successive cohorts who had university degrees and/or were in the skilled class rose significantly, changes in these and other characteristics had little effect on the outcomes for successive entering cohorts in this study, whether talking about entry rates, exit rates, or the chronic low-income rate.

The movement to having *more highly educated immigrants* and the shift to accepting more *skilled class immigrants* had only a small effect. Regarding education, the differences in the probability of the outcomes between the less and more highly educated is not as great as one might expect. Furthermore, the advantage that the more highly educated had in the early 1990s was reduced by 2000, as their number increased, and after 2000, as economic conditions in the technology sector declined.

Regarding changes in immigrant class, the skilled class immigrants were, in fact, more likely than the family class immigrants to enter low income upon entry to Canada, and to find themselves in chronic low income during the first years in the country. This may be because family class immigrants find themselves in a family that is already established to some extent, hence reducing the negative family welfare effect of the earlier period. Whatever the reason, the relatively inferior situation among the skilled class (as compared to the family class) worsened significantly over the 1990s as their number increased substantially and the high-tech sector slowed down after 2000. It is important to note that economic outcomes measured on an individual rather than a family basis (say, individual earnings) show a different pattern, as those of skilled class immigrants are superior, on average, to people entering in the family class.

The shift to more educated and skilled class immigrants changed the face of the chronically poor over the 1990s. If one is going to address issues of chronic poverty, it is necessary to know something of the groups that constitute the majority in this class. For example, U.S. welfare reform has focused on single mothers, since they constitute the majority of the welfare cases. Yet in Canada, over the 1990s, the chronically poor increasingly looked like highly educated, skilled immigrants. In the 2000 cohort, one-half were in the skilled class, and more than one-third had degrees.

What of the basic features of low-income dynamics among immigrants? The entry and exit hazards decline with time, as one would expect. The extremely high probability of entry to low income during the first year is not a surprise, but the sharp drop in the second and subsequent years means

that if families are not exposed to low income immediately, they have a good chance of escaping it altogether. However, the majority do not, as 65% experience low income at some time during the first decade or so. The "five-year" chronic low-income rate, at around 19%, 2.5 times that of the (largely) Canadian born is high, and this high rate is widespread. There is more variation among source regions than other variables included in the study, such as education and class. Immigrants from Africa and East Asia have particularly high rates of chronic low income (after controlling for demographic differences among source regions). Finally, the fact that the "ten-year" chronic rate is only marginally lower than the five-year rate suggests considerable persistence in chronic low income.

This paper focuses on relatively short-run family welfare outcomes. It asks about the economic welfare of family members with different characteristics during the first five years, or, at most, a decade in Canada, and how the short-run family welfare of entering immigrants changed over the 1990s. Other work suggests that perhaps one need not be as pessimistic about the longer-term outcomes. In a recent paper, Green and Worswick (2006) calculate the present value of estimated long-term earnings streams for entering immigrant cohorts, arguing that this "life-cycle" approach to earnings comparisons among cohorts is more meaningful than focusing only on entry earnings declines. They conclude that, although immigrant entry earnings fell during the 1990s as compared to the 1980s cohorts, on a present value basis, earnings of the 1990s closely resembled those of the 1980s cohorts, because the slope of the earnings trajectory changed during the 1990s for entering immigrants.

Finally, even focusing on the longer-term outcomes of entering immigrants may, in some ways, not go far enough. The outcome of the second generation (the children of immigrants) is an important dimension both for the receiving country and for the entering immigrant. Studies (the most recent by Aydemir, Chen and Corak, 2005) have shown that second-generation outcomes remain very positive, and the possibly poor outcomes of the immigrant parents are not necessarily passed on to the second- generation children. However, this work could only be conducted for immigrants entering before the 1980s, and the downturn occurred during the 1980s and 1990s. It remains to be seen how the children of these immigrants fare.

8. Appendix

Table A1 Low-income rates by age

	1992	1997	2000	2001	2002	2003	2004
	percentage						
Age at landing							
20 to 29							
Total population	21.1	24.7	20.3	18.0	18.2	19.2	19.3
Comparison group	20.4	23.7	19.6	17.2	17.2	18.2	18.5
Immigration 10 years or less	33.1	38.3	31.0	29.7	31.9	32.9	31.2
Canada 1 year	40.0	43.0	33.3	32.7	37.4	36.7	34.7
Immigration 10 years or less versus comparison group	1.6	1.6	1.6	1.7	1.9	1.8	1.7
Canada 1 year versus comparison group	2.0	1.8	1.7	1.9	2.2	2.0	1.9
30 to 39							
Total population	15.3	19.0	17.0	15.4	15.7	16.3	16.6
Comparison group	14.7	17.7	15.9	14.2	14.3	14.9	15.3
Immigration 10 years or less	25.9	32.6	28.0	27.0	28.4	29.3	27.8
Canada 1 year	38.5	46.4	34.8	35.6	40.7	41.4	38.9
Immigration 10 years or less versus comparison group	1.8	1.8	1.8	1.9	2.0	2.0	1.8
Canada 1 year versus comparison group	2.6	2.6	2.2	2.5	2.8	2.8	2.5
40 to 49							
Total population	12.8	16.3	15.0	13.0	13.3	13.9	14.0
Comparison group	12.3	15.2	14.0	12.0	12.2	12.8	13.0
Immigration 10 years or less	26.2	34.0	29.7	28.1	29.4	30.2	29.3
Canada 1 year	42.5	55.9	44.6	40.7	44.4	45.9	43.9
Immigration 10 years or less versus comparison group	2.1	2.2	2.1	2.3	2.4	2.4	2.3
Canada 1 year versus comparison group	3.5	3.7	3.2	3.4	3.6	3.6	3.4
50 and over							
Total population	12.4	15.2	12.5	11.1	11.3	11.4	11.2
Comparison group	11.7	14.1	11.5	10.1	10.3	10.4	10.3
Immigration 10 years or less	44.2	54.1	48.4	47.1	49.1	50.1	49.2
Canada 1 year	59.1	70.5	59.7	62.3	64.4	65.6	65.2
Immigration 10 years or less versus comparison group	3.8	3.8	4.2	4.7	4.8	4.8	4.8
Canada 1 year versus comparison group	5.0	5.0	5.2	6.2	6.3	6.3	6.4

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A2 Low-income rates by immigrant class

	1992	1997	2000	2001	2002	2003	2004
	percentage						
Family							
Comparison group	14.3	16.9	14.3	12.5	12.6	13.1	13.2
In Canada 10 years or less	32.6	40.9	34.8	33.3	34.6	35.9	35.4
In Canada 1 year	43.0	47.0	35.3	35.7	39.4	40.7	38.3
In Canada 10 years or less versus comparison group	2.3	2.4	2.4	2.7	2.7	2.8	2.7
In Canada 1 year versus comparison group	3.0	2.8	2.5	2.9	3.1	3.1	2.9
Skilled							
Comparison group	14.3	16.9	14.3	12.5	12.6	13.1	13.2
In Canada 10 years or less	22.4	29.0	26.3	25.6	27.9	28.7	27.4
In Canada 1 year	32.8	47.4	35.0	35.1	41.9	43.2	42.4
In Canada 10 years or less versus comparison group	1.6	1.7	1.8	2.1	2.2	2.2	2.1
In Canada 1 year versus comparison group	2.3	2.8	2.5	2.8	3.3	3.3	3.2
Refugee							
Comparison group	14.3	16.9	14.3	12.5	12.6	13.1	13.2
In Canada 10 years or less	35.7	42.1	37.6	37.7	39.4	40.7	39.0
In Canada 1 year	57.0	64.1	54.9	55.5	54.7	54.8	54.7
In Canada 10 years or less versus comparison group	2.5	2.5	2.6	3.0	3.1	3.1	3.0
In Canada 1 year versus comparison group	4.0	3.8	3.8	4.4	4.3	4.2	4.2

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A3 Low-income rates by education

	1992	1997	2000	2001	2002	2003	2004
	percentage						
12 years or less of schooling							
In Canada 10 years or less	36.1	43.8	38.3	37.1	38.8	40.1	39.3
In Canada 1 year	48.2	57.6	46.4	46.7	49.1	49.8	48.9
Trade, college, some university							
In Canada 10 years or less	27.1	32.8	28.2	27.2	29.1	30.6	29.8
In Canada 1 year	39.4	47.3	37.3	37.3	41.6	43.3	39.7
University degree							
In Canada 10 years or less	21.8	30.5	27.4	26.5	28.6	29.4	27.9
In Canada 1 year	32.9	45.6	35.4	34.9	41.3	42.0	39.5

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A4 Low-income rates by occupation

	1992	1997	2000	2001	2002	2003	2004
	percentage						
Informatic technology professional							
In Canada 10 years or less	14.5	22.9	20.3	20.8	26.1	27.5	25.9
In Canada 1 year	29.0	35.8	27.5	31.0	45.9	45.6	45.4
Engineering (except electrical)							
In Canada 10 years or less	16.1	30.0	26.5	26.4	29.7	29.5	27.9
In Canada 1 year	31.7	50.2	38.7	39.3	45.8	46.4	44.8
Other professional							
In Canada 10 years or less	19.1	28.7	26.2	25.3	26.5	26.8	25.3
In Canada 1 year	32.9	49.6	36.5	35.0	36.3	37.9	35.2
Management							
In Canada 10 years or less	31.0	40.6	41.7	40.8	43.9	45.9	42.8
In Canada 1 year	47.3	58.3	45.2	47.8	50.4	53.4	45.8
Clerical, sales, services							
In Canada 10 years or less	27.0	30.3	24.8	23.6	23.9	25.2	24.5
In Canada 1 year	39.8	44.5	35.0	31.0	33.3	36.4	30.0
Other occupations							
In Canada 10 years or less	34.0	40.8	35.2	33.8	35.5	36.6	35.5
In Canada 1 year	43.9	52.7	41.3	41.1	44.8	45.6	43.6

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A5 Low-income rates by source region

	1992	1997	2000	2001	2002	2003	2004
	percentage						
Comparison group[1]	14.3	16.9	14.3	12.5	12.6	13.1	13.2
North America							
In Canada 10 years or less	16.3	18.0	18.1	15.3	15.4	16.3	15.8
In Canada 1 year	14.4	15.2	13.7	13.1	14.5	15.9	11.6
In Canada 10 years or less versus comparison group	1.1	1.1	1.3	1.2	1.2	1.2	1.2
In Canada 1 year versus comparison group	1.0	0.9	1.0	1.1	1.1	1.2	0.9
Caribbean, South and Central America							
In Canada 10 years or less	34.6	36.3	28.0	26.3	27.2	28.1	27.5
In Canada 1 year	44.2	43.6	29.0	31.7	33.5	37.2	35.8
In Canada 10 years or less versus comparison group	2.4	2.2	2.0	2.1	2.2	2.2	2.1
In Canada 1 year versus comparison group	3.1	2.6	2.0	2.5	2.7	2.8	2.7
Europe (excluding Eastern Europe)							
In Canada 10 years or less	19.2	22.1	20.8	19.2	20.3	20.5	19.6
In Canada 1 year	24.9	29.3	21.7	22.5	25.4	24.8	21.4
In Canada 10 years or less versus comparison group	1.3	1.3	1.5	1.5	1.6	1.6	1.5
In Canada 1 year versus comparison group	1.7	1.7	1.5	1.8	2.0	1.9	1.6
Eastern Europe							
In Canada 10 years or less	25.6	29.4	23.3	22.5	23.4	24.4	23.4
In Canada 1 year	43.6	48.7	36.1	38.1	38.3	39.6	38.8
In Canada 10 years or less versus comparison group	1.8	1.7	1.6	1.8	1.9	1.9	1.8
In Canada 1 year versus comparison group	3.0	2.9	2.5	3.1	3.0	3.0	2.9
Africa							
In Canada 10 years or less	35.5	44.8	38.8	37.3	39.1	39.7	37.3
In Canada 1 year	51.0	55.0	46.3	45.6	48.9	50.6	47.8
In Canada 10 years or less versus comparison group	2.5	2.7	2.7	3.0	3.1	3.0	2.8
In Canada 1 year versus comparison group	3.6	3.3	3.2	3.6	3.9	3.9	3.6
South Asia							
In Canada 10 years or less	31.3	41.0	33.0	31.6	32.8	33.9	31.7
In Canada 1 year	39.5	52.0	36.4	35.8	39.6	39.7	35.9
In Canada 10 years or less versus comparison group	2.2	2.4	2.3	2.5	2.6	2.6	2.4
In Canada 1 year versus comparison group	2.8	3.1	2.5	2.9	3.1	3.0	2.7
East Asia							
In Canada 10 years or less	38.2	49.6	44.4	42.5	44.9	45.3	44.1
In Canada 1 year	45.3	61.7	47.6	46.6	56.1	59.7	59.9
In Canada 10 years or less versus comparison group	2.7	2.9	3.1	3.4	3.6	3.5	3.4
In Canada 1 year versus comparison group	3.2	3.7	3.3	3.7	4.4	4.6	4.5

1. The comparison group includes all Canadian born plus immigrants who have been in Canada over than 10 years.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A6 Discrete time hazard models of entry to the first low-income spell

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
Cohort 1993	0.063	2.97	0.107	4.87	0.134	6.09	-0.020	-0.16
Cohort 1994	0.002	0.10	0.085	3.81	0.210	9.29	0.135	1.06
Cohort 1995	0.119	5.39	0.202	8.74	0.479	19.19	0.267	1.93
Cohort 1996	0.275	12.49	0.352	15.30	0.606	24.61	0.146	0.92
Cohort 1997	0.327	15.07	0.405	17.88	0.761	29.53	0.391	2.58
Cohort 1998	0.196	9.10	0.274	12.10	0.699	25.98	0.104	0.68
Cohort 1999	0.014	0.60	0.077	3.22	0.573	19.47	0.006	0.03
Cohort 2000	-0.157	-7.10	-0.110	-4.76	0.476	15.55	-0.067	-0.42
Cohort 2001	-0.158	-7.53	-0.116	-5.27	0.380	13.67	-0.029	-0.22
Cohort 2002	0.047	2.31	0.099	4.60	0.533	20.41	-0.134	-1.00
Cohort 2003	0.086	4.11	0.152	6.94	0.588	22.12	-0.021	-0.15
Cohort 2004	0.016	0.73	0.075	3.32	0.564	20.04	-0.180	-1.18
Year2	-1.334	-42.26	-1.269	-38.85	-1.238	-37.84	-1.232	-37.66
Year3	-1.771	-45.39	-1.684	-41.99	-1.558	-38.60	-1.546	-38.29
Year4	-1.844	-43.50	-1.743	-40.19	-1.471	-33.15	-1.455	-32.75
Year5	-2.107	-42.66	-1.998	-39.91	-1.752	-34.48	-1.735	-34.17
Year6	-2.304	-41.08	-2.169	-37.97	-1.820	-31.14	-1.799	-30.78
Year7	-2.765	-38.87	-2.630	-36.48	-2.201	-29.92	-2.182	-29.61
Year8	-2.949	-36.76	-2.805	-34.58	-2.307	-27.84	-2.288	-27.55
Year9	-2.885	-36.51	-2.738	-34.30	-2.151	-26.12	-2.134	-25.87
Year10	-3.312	-33.56	-3.160	-31.82	-2.659	-26.41	-2.645	-26.26
Year11	-3.408	-32.52	-3.247	-30.79	-2.813	-26.42	-2.800	-26.30
Year12	-3.402	-32.74	-3.236	-30.96	-2.793	-26.46	-2.779	-26.31
Year13	-3.172	-32.97	-2.974	-30.67	-2.484	-25.25	-2.467	-25.09
Cohort93*year2	-0.061	-1.37	-0.096	-2.09	-0.029	-0.64	-0.036	-0.77
Cohort93*year3	0.074	1.39	0.045	0.82	0.167	3.03	0.159	2.88
Cohort93*year4	-0.048	-0.81	-0.054	-0.89	-0.103	-1.69	-0.112	-1.85
Cohort93*year5	-0.154	-2.17	-0.153	-2.13	-0.066	-0.92	-0.074	-1.03
Cohort93*year6	-0.303	-3.64	-0.318	-3.77	-0.265	-3.13	-0.276	-3.26
Cohort93*year7	-0.133	-1.32	-0.147	-1.44	-0.097	-0.95	-0.106	-1.04
Cohort93*year8	-0.080	-0.71	-0.102	-0.90	-0.035	-0.31	-0.043	-0.38
Cohort93*year9	-0.366	-3.08	-0.390	-3.25	-0.505	-4.21	-0.513	-4.28
Cohort93*year10	0.026	0.20	0.002	0.01	-0.095	-0.70	-0.100	-0.74
Cohort93*year11	0.128	0.92	0.097	0.69	0.082	0.58	0.077	0.55
Cohort93*year12	-0.039	-0.27	-0.034	-0.24	-0.014	-0.10	-0.018	-0.13
Cohort94*year2	0.085	1.93	0.049	1.09	0.168	3.69	0.160	3.52
Cohort94*year3	0.102	1.90	0.077	1.38	0.078	1.40	0.068	1.22
Cohort94*year4	-0.214	-3.44	-0.231	-3.64	-0.272	-4.27	-0.283	-4.44
Cohort94*year5	-0.233	-3.20	-0.249	-3.36	-0.194	-2.61	-0.205	-2.76
Cohort94*year6	-0.407	-4.74	-0.448	-5.15	-0.425	-4.88	-0.439	-5.03
Cohort94*year7	-0.002	-0.02	-0.039	-0.39	-0.005	-0.05	-0.018	-0.18
Cohort94*year8	-0.164	-1.42	-0.209	-1.80	-0.336	-2.90	-0.349	-3.01
Cohort94*year9	-0.214	-1.87	-0.246	-2.13	-0.531	-4.58	-0.542	-4.67
Cohort94*year10	0.140	1.06	0.095	0.72	-0.088	-0.66	-0.097	-0.73
Cohort94*year11	0.235	1.71	0.220	1.60	0.148	1.08	0.142	1.03

Table A6 Discrete time hazard models of entry to the first low-income spell (continued)

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
cohort95*year2	-0.158	-3.35	-0.197	-4.06	-0.246	-5.08	-0.253	-5.22
cohort95*year3	-0.170	-2.91	-0.204	-3.42	-0.248	-4.14	-0.257	-4.30
cohort95*year4	-0.526	-7.66	-0.564	-8.07	-0.691	-9.86	-0.704	-10.03
cohort95*year5	-0.513	-6.46	-0.559	-6.95	-0.592	-7.36	-0.606	-7.52
cohort95*year6	-0.466	-5.24	-0.527	-5.86	-0.567	-6.30	-0.585	-6.49
cohort95*year7	-0.285	-2.65	-0.344	-3.17	-0.556	-5.11	-0.572	-5.25
cohort95*year8	-0.274	-2.29	-0.339	-2.81	-0.691	-5.70	-0.708	-5.83
cohort95*year9	-0.240	-2.05	-0.312	-2.65	-0.727	-6.11	-0.741	-6.22
cohort95*year10	0.022	0.16	-0.010	-0.07	-0.299	-2.16	-0.308	-2.22
cohort96*year2	-0.505	-10.27	-0.546	-10.79	-0.477	-9.41	-0.483	-9.51
cohort96*year3	-0.694	-10.88	-0.738	-11.37	-0.697	-10.73	-0.707	-10.86
cohort96*year4	-0.842	-11.74	-0.891	-12.23	-0.928	-12.72	-0.942	-12.90
cohort96*year5	-0.660	-8.32	-0.713	-8.88	-0.627	-7.80	-0.643	-7.99
cohort96*year6	-0.846	-9.01	-0.928	-9.80	-1.039	-10.96	-1.060	-11.18
cohort96*year7	-0.550	-5.06	-0.627	-5.71	-0.886	-8.05	-0.906	-8.23
cohort96*year8	-0.194	-1.74	-0.274	-2.42	-0.578	-5.10	-0.597	-5.26
cohort96*year9	-0.353	-3.06	-0.401	-3.45	-0.754	-6.45	-0.770	-6.58
cohort97*year2	-0.678	-13.56	-0.718	-13.95	-0.680	-13.19	-0.684	-13.26
cohort97*year3	-0.732	-11.65	-0.783	-12.19	-0.774	-12.03	-0.785	-12.19
cohort97*year4	-0.842	-12.07	-0.905	-12.76	-0.946	-13.33	-0.962	-13.53
cohort97*year5	-0.740	-9.43	-0.814	-10.28	-0.918	-11.59	-0.935	-11.80
cohort97*year6	-0.755	-8.47	-0.842	-9.34	-1.120	-12.34	-1.140	-12.56
cohort97*year7	-0.367	-3.61	-0.449	-4.38	-0.787	-7.62	-0.806	-7.80
cohort97*year8	-0.375	-3.28	-0.425	-3.67	-0.790	-6.80	-0.809	-6.95
cohort98*year2	-0.737	-14.53	-0.789	-15.14	-0.751	-14.38	-0.754	-14.43
cohort98*year3	-0.551	-9.14	-0.611	-9.92	-0.574	-9.32	-0.583	-9.45
cohort98*year4	-0.757	-11.13	-0.826	-11.95	-1.028	-14.80	-1.043	-14.98
cohort98*year5	-0.558	-7.46	-0.635	-8.39	-0.879	-11.54	-0.895	-11.74
cohort98*year6	-0.409	-5.03	-0.513	-6.22	-0.842	-10.10	-0.862	-10.33
cohort98*year7	-0.262	-2.63	-0.322	-3.20	-0.690	-6.78	-0.706	-6.92
cohort99*year2	-0.468	-8.99	-0.518	-9.68	-0.458	-8.55	-0.460	-8.58
cohort99*year3	-0.551	-8.44	-0.621	-9.32	-0.748	-11.19	-0.757	-11.31
cohort99*year4	-0.435	-6.40	-0.513	-7.41	-0.854	-12.18	-0.869	-12.36
cohort99*year5	-0.309	-4.06	-0.404	-5.23	-0.703	-9.01	-0.718	-9.19
cohort99*year6	-0.207	-2.47	-0.274	-3.21	-0.635	-7.36	-0.651	-7.54
cohort2000*year2	-0.428	-8.66	-0.477	-9.38	-0.597	-11.71	-0.601	-11.76
cohort2000*year3	-0.180	-3.13	-0.239	-4.06	-0.521	-8.74	-0.530	-8.89
cohort2000*year4	-0.177	-2.85	-0.250	-3.97	-0.665	-10.28	-0.679	-10.48
cohort2000*year5	-0.127	-1.79	-0.166	-2.31	-0.510	-7.00	-0.522	-7.16
cohort2001*year2	-0.238	-5.28	-0.276	-5.95	-0.374	-8.03	-0.377	-8.08
cohort2001*year3	-0.004	-0.07	-0.066	-1.21	-0.249	-4.53	-0.258	-4.69
cohort2001*year4	-0.377	-6.12	-0.417	-6.64	-0.700	-11.00	-0.710	-11.14
cohort2002*year2	-0.361	-8.13	-0.402	-8.80	-0.427	-9.33	-0.423	-9.25
cohort2002*year3	-0.377	-6.88	-0.413	-7.39	-0.484	-8.64	-0.487	-8.68
cohort2003*year2	-0.498	-10.70	-0.527	-11.01	-0.503	-10.50	-0.493	-10.29

Table A6 Discrete time hazard models of entry to the first low-income spell (concluded)

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
Aged 30 to 39	…	…	0.003	0.41	0.003	0.40	-0.060	-2.42
Aged 40 to 49	…	…	0.146	13.96	0.147	14.10	-0.009	-0.24
Aged 50 and over	…	…	0.510	25.24	0.511	25.28	0.409	6.42
Female	…	…	0.029	3.98	0.030	4.07	0.037	4.99
Some post-secondary	…	…	-0.150	-16.43	-0.153	-16.73	-0.131	-5.15
University	…	…	-0.254	-24.46	-0.260	-25.01	-0.339	-10.35
Clerical, sales, services	…	…	-0.088	-2.80	-0.089	-2.86	-0.235	-2.79
Information technology	…	…	-0.196	-6.27	-0.195	-6.22	-0.522	-4.65
Other professional	…	…	-0.090	-3.01	-0.091	-3.04	-0.386	-4.59
Other occupational	…	…	-0.078	-2.65	-0.074	-2.54	-0.264	-3.31
Engineers	…	…	0.093	2.81	0.098	2.96	-0.256	-1.92
Skilled	…	…	0.187	18.50	0.188	18.56	-0.142	-4.53
Refugee	…	…	0.729	61.93	0.725	61.48	0.646	19.91
Other class	…	…	0.024	1.75	0.022	1.58	-0.031	-1.00
Speak English, French	…	…	-0.239	-28.65	-0.239	-28.57	-0.223	-26.37
Caribbean, South and Central America	…	…	0.423	12.38	0.426	12.43	0.389	11.32
Europe (excluding Eastern Europe)	…	…	-0.015	-0.42	-0.029	-0.82	-0.037	-1.05
Eastern Europe	…	…	0.347	10.32	0.359	10.65	0.353	10.43
Africa	…	…	0.731	21.45	0.734	21.51	0.718	20.99
South Asia	…	…	0.670	20.26	0.683	20.60	0.664	19.98
East Asia	…	…	1.084	32.79	1.097	33.08	1.071	32.18
Other	…	…	0.571	17.34	0.588	17.79	0.580	17.51
Lone Parent	…	…	1.190	55.91	1.189	55.69	1.188	55.63
Attached no kids	…	…	-0.627	-59.08	-0.629	-59.18	-0.629	-58.93
Attached with kids	…	…	-0.319	-33.65	-0.320	-33.73	-0.326	-34.13
Toronto	…	…	-0.609	-57.11	-0.328	-22.81	-0.339	-23.44
Vancouver	…	…	-0.494	-37.65	-0.245	-15.72	-0.247	-15.77
Other CMA[3] 500,000 and more	…	…	-0.660	-50.06	-0.303	-16.84	-0.298	-16.47
Other CMA[3] 100,000 to 499,999	…	…	-0.588	-38.07	-0.333	-18.91	-0.332	-18.75
Other locations	…	…	-0.327	-21.15	-0.065	-3.64	-0.056	-3.10
Unemployment	…	…	…	…	0.101	29.24	0.101	29.07
							plus interaction of cohort with education, occupation, immigrant class, and age	
Constant	-0.498	-32.96	-0.273	-5.87	-1.608	-24.55	-1.231	-12.20
N (number of person-years)	828,000	…	828,000	…	828,000	…	828,000	…

… not applicable
1. b = regression coefficients.
2. t = t-statistics.
3. CMA = Census Metropolitan Area.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A7 Discrete time hazard models of exit from the first low-income spell

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
Cohort1993	-0.009	-0.32	-0.020	-0.71	-0.037	-1.34	0.128	0.83
Cohort1994	-0.051	-1.82	-0.065	-2.30	-0.158	-5.46	-0.190	-1.20
Cohort1995	-0.014	-0.47	-0.025	-0.84	-0.234	-7.15	-0.242	-1.44
Cohort1996	-0.034	-1.16	-0.040	-1.35	-0.230	-7.11	-0.185	-0.98
Cohort1997	0.070	2.42	0.082	2.77	-0.183	-5.37	-0.173	-0.99
Cohort1998	0.011	0.39	0.014	0.47	-0.305	-8.43	-0.209	-1.12
Cohort1999	0.100	3.18	0.112	3.49	-0.262	-6.54	-0.042	-0.19
Cohort2000	-0.013	-0.42	0.023	0.74	-0.420	-9.92	-0.564	-2.54
Cohort2001	-0.150	-5.08	-0.120	-3.97	-0.495	-12.82	-0.339	-1.87
Cohort2002	-0.193	-6.67	-0.145	-4.84	-0.473	-12.95	-0.552	-2.83
Cohort2003	-0.160	-5.16	-0.106	-3.33	-0.430	-11.35	-0.279	-1.25
Year2	-0.393	-11.48	-0.367	-10.58	-0.385	-11.07	-0.384	-11.07
Year3	-0.813	-18.81	-0.766	-17.63	-0.858	-19.57	-0.854	-19.51
Year4	-0.958	-18.70	-0.880	-17.09	-1.082	-20.40	-1.074	-20.23
Year5	-1.095	-18.36	-0.992	-16.45	-1.165	-18.98	-1.160	-18.90
Year6	-1.089	-16.19	-0.967	-14.27	-1.221	-17.44	-1.213	-17.35
Year7	-1.168	-14.89	-1.022	-12.86	-1.350	-16.38	-1.339	-16.27
Year8	-1.131	-13.10	-0.980	-11.18	-1.363	-14.98	-1.351	-14.88
Year9	-1.303	-12.68	-1.143	-10.92	-1.588	-14.60	-1.571	-14.47
Year10	-1.483	-11.96	-1.324	-10.52	-1.714	-13.39	-1.697	-13.27
Year11	-1.800	-11.74	-1.636	-10.55	-1.979	-12.65	-1.964	-12.57
Year12	-1.346	-9.14	-1.161	-7.75	-1.487	-9.87	-1.476	-9.79
Cohort93*year2	-0.127	-2.65	-0.112	-2.29	-0.166	-3.40	-0.164	-3.36
Cohort93*year3	0.005	0.08	0.028	0.47	-0.065	-1.08	-0.063	-1.04
Cohort93*year4	0.051	0.73	0.067	0.95	0.107	1.51	0.104	1.46
Cohort93*year5	0.221	2.75	0.246	3.04	0.176	2.15	0.180	2.20
Cohort93*year6	0.075	0.80	0.100	1.07	0.045	0.48	0.049	0.52
Cohort93*year7	0.041	0.38	0.056	0.51	0.015	0.14	0.019	0.18
Cohort93*year8	-0.132	-1.07	-0.110	-0.88	-0.156	-1.24	-0.148	-1.19
Cohort93*year9	-0.152	-1.03	-0.131	-0.87	-0.051	-0.34	-0.046	-0.31
Cohort93*year10	-0.110	-0.62	-0.092	-0.51	-0.020	-0.11	-0.017	-0.10
Cohort93*year11	0.038	0.18	0.054	0.25	0.090	0.42	0.093	0.43
Cohort94*year2	-0.094	-1.93	-0.080	-1.62	-0.175	-3.51	-0.171	-3.45
Cohort94*year3	0.132	2.21	0.158	2.62	0.161	2.68	0.162	2.69
Cohort94*year4	0.191	2.72	0.219	3.09	0.253	3.56	0.252	3.55
Cohort94*year5	0.217	2.63	0.245	2.94	0.187	2.24	0.191	2.28
Cohort94*year6	0.151	1.60	0.178	1.88	0.143	1.51	0.148	1.56
Cohort94*year7	-0.015	-0.14	0.004	0.04	-0.018	-0.16	-0.014	-0.13
Cohort94*year8	-0.263	-2.04	-0.245	-1.88	-0.150	-1.15	-0.150	-1.15
Cohort94*year9	-0.266	-1.74	-0.241	-1.55	-0.034	-0.22	-0.039	-0.25
Cohort94*year10	0.197	1.14	0.234	1.34	0.389	2.23	0.384	2.20

Table A7 Discrete time hazard models of exit from the first low-income spell (continued)

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
Cohort95*year2	-0.046	-0.90	-0.034	-0.66	0.002	0.04	0.001	0.02
Cohort95*year3	0.217	3.48	0.244	3.89	0.277	4.42	0.279	4.44
Cohort95*year4	0.212	2.85	0.239	3.19	0.329	4.38	0.330	4.38
Cohort95*year5	0.130	1.47	0.155	1.74	0.164	1.84	0.171	1.92
Cohort95*year6	-0.042	-0.41	-0.019	-0.18	0.001	0.01	0.010	0.10
Cohort95*year7	-0.323	-2.56	-0.308	-2.42	-0.143	-1.11	-0.138	-1.07
Cohort95*year8	-0.400	-2.81	-0.388	-2.70	-0.115	-0.79	-0.111	-0.76
Cohort95*year9	-0.257	-1.51	-0.251	-1.46	0.077	0.44	0.079	0.45
Cohort96*year2	0.077	1.51	0.091	1.78	0.032	0.63	0.036	0.70
Cohort96*year3	0.268	4.27	0.294	4.67	0.258	4.09	0.261	4.14
Cohort96*year4	0.213	2.84	0.235	3.12	0.253	3.36	0.255	3.38
Cohort96*year5	0.106	1.17	0.126	1.39	0.051	0.56	0.060	0.65
Cohort96*year6	-0.232	-2.14	-0.217	-1.98	-0.140	-1.27	-0.134	-1.22
Cohort96*year7	-0.388	-3.01	-0.395	-3.04	-0.193	-1.48	-0.190	-1.45
Cohort96*year8	-0.275	-1.98	-0.282	-2.02	-0.036	-0.26	-0.034	-0.24
Cohort97*year2	-0.058	-1.15	-0.042	-0.83	-0.078	-1.54	-0.078	-1.53
Cohort97*year3	0.146	2.36	0.180	2.87	0.167	2.66	0.166	2.66
Cohort97*year4	-0.040	-0.53	-0.008	-0.11	0.016	0.21	0.012	0.16
Cohort97*year5	-0.310	-3.34	-0.285	-3.05	-0.216	-2.31	-0.217	-2.32
Cohort97*year6	-0.389	-3.68	-0.373	-3.49	-0.168	-1.56	-0.172	-1.60
Cohort97*year7	-0.329	-2.71	-0.326	-2.66	-0.066	-0.53	-0.071	-0.58
Cohort98*year2	0.026	0.52	0.044	0.87	0.010	0.19	0.013	0.25
Cohort98*year3	0.077	1.21	0.113	1.78	0.082	1.29	0.086	1.35
Cohort98*year4	-0.101	-1.31	-0.070	-0.90	0.083	1.07	0.083	1.06
Cohort98*year5	-0.184	-2.00	-0.162	-1.74	0.018	0.19	0.019	0.20
Cohort98*year6	-0.369	-3.44	-0.349	-3.23	-0.109	-0.99	-0.105	-0.96
Cohort99*year2	-0.067	-1.23	-0.046	-0.82	-0.098	-1.77	-0.095	-1.71
Cohort99*year3	-0.160	-2.29	-0.130	-1.84	-0.036	-0.51	-0.034	-0.48
Cohort99*year4	-0.233	-2.78	-0.206	-2.44	0.052	0.60	0.049	0.56
Cohort99*year5	-0.237	-2.37	-0.219	-2.16	0.001	0.01	0.001	0.01
Cohort2000*year2	-0.184	-3.40	-0.172	-3.15	-0.085	-1.55	-0.083	-1.50
Cohort2000*year3	0.031	0.46	0.061	0.91	0.273	3.97	0.275	3.99
Cohort2000*year4	0.051	0.64	0.080	0.99	0.399	4.82	0.399	4.80
Cohort2001*year2	0.014	0.27	0.036	0.70	0.103	1.99	0.104	2.01
Cohort2001*year3	0.278	4.40	0.309	4.84	0.449	6.97	0.451	6.99
Cohort2002*year2	0.153	3.07	0.176	3.49	0.196	3.88	0.197	3.90
Aged 30 to 39	…	…	-0.067	-6.35	-0.067	-6.34	0.008	0.29
Aged 40 to 49	…	…	-0.124	-9.50	-0.125	-9.59	-0.039	-0.97
Aged 50 and over	…	…	-0.445	-18.62	-0.447	-18.68	-0.366	-5.24
Female	…	…	-0.061	-6.36	-0.063	-6.55	-0.070	-7.20
Some postsecondary	…	…	0.091	8.02	0.094	8.35	0.068	2.28
University	…	…	0.081	6.07	0.084	6.34	0.052	1.32
Clerical, sales, services	…	…	0.215	5.25	0.213	5.19	0.199	1.93
Information technology	…	…	0.114	2.68	0.109	2.57	0.121	0.82
Other professional	…	…	0.091	2.30	0.088	2.21	0.092	0.89
Other occupational	…	…	0.072	1.84	0.065	1.67	0.125	1.27
Engineers	…	…	0.147	3.33	0.141	3.20	-0.063	-0.36

Table A7 Discrete time hazard models of exit from the first low-income spell (concluded)

	Model 1		Model 2		Model 3		Model 4	
	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]	b[1]	t[2]
Skilled	…	…	-0.016	-1.17	-0.014	-1.01	0.074	1.89
Refugee	…	…	-0.204	-14.48	-0.196	-13.93	-0.143	-3.85
Other class	…	…	0.041	2.52	0.046	2.80	-0.086	-2.40
Speak English, French	…	…	-0.026	-2.48	-0.027	-2.61	-0.024	-2.31
Caribbean, South and Central America	…	…	0.146	2.82	0.145	2.79	0.149	2.86
Europe (excluding Eastern Europe)	…	…	0.141	2.61	0.151	2.79	0.151	2.77
Eastern Europe	…	…	0.336	6.52	0.332	6.40	0.325	6.25
Africa	…	…	-0.190	-3.65	-0.193	-3.69	-0.193	-3.68
South Asia	…	…	0.021	0.41	0.006	0.13	0.009	0.18
East Asia	…	…	-0.320	-6.27	-0.331	-6.44	-0.332	-6.45
Other	…	…	-0.127	-2.50	-0.138	-2.70	-0.150	-2.94
Lone Parent	…	…	-0.470	-21.90	-0.472	-21.99	-0.471	-21.86
Attached no kids	…	…	0.140	10.27	0.143	10.48	0.147	10.74
Attached with kids	…	…	-0.017	-1.48	-0.015	-1.26	-0.008	-0.68
Toronto	…	…	0.369	28.15	0.144	7.39	0.155	7.93
Vancouver	…	…	0.333	20.23	0.142	6.90	0.152	7.36
Other CMA[3] 500,000 and over	…	…	0.439	26.60	0.178	7.58	0.185	7.85
Other CMA[3] 100,000 to 4999,999	…	…	0.287	14.67	0.084	3.52	0.094	3.92
Other locations	…	…	0.140	6.70	-0.056	-2.29	-0.053	-2.16
Unemployment	…	…	…	…	-0.077	-15.64	-0.075	-15.20
							plus interaction of cohort with education, occupation, immigrant class, and age	
Constant	-0.473	-23.94	-0.727	-10.79	0.295	3.15	0.196	1.46
N (number of person-years)	278,000	…	278,000	…	278,000	…	278,000	…

… not applicable
1. b = regression coefficients.
2. t = t-statistics.
3. CMA = Census Metropolitan Area.
Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

Table A8 Logistic models of chronic low income[1]

	Model 1		Model 2		Model 3		Model 4	
	b[2]	t[3]	b[2]	t[3]	b[2]	t[3]	b[2]	t[3]
Cohort1993	0.093	3.26	0.142	4.73	0.266	8.68	0.151	0.64
Cohort1994	0.042	1.44	0.124	4.12	0.395	11.90	0.409	1.71
Cohort1995	-0.038	-1.24	0.044	1.38	0.451	11.96	0.196	0.76
Cohort1996	-0.021	-0.68	0.053	1.65	0.565	13.86	-0.045	-0.16
Cohort1997	-0.039	-1.31	0.010	0.31	0.606	14.06	0.143	0.53
Cohort1998	-0.058	-1.96	0.017	0.54	0.640	14.62	-0.027	-0.10
Cohort1999	-0.138	-4.42	-0.063	-1.91	0.567	12.51	-0.127	-0.40
Cohort2000	-0.195	-6.51	-0.136	-4.27	0.495	11.16	0.107	0.39
Aged 30 to 39	…	…	0.084	4.54	0.086	4.61	-0.071	-1.44
Aged 40 to 49	…	…	0.256	11.35	0.259	11.48	-0.067	-0.97
Aged 50 and over	…	…	0.818	21.34	0.822	21.39	0.553	4.80
Female	…	…	0.139	8.88	0.142	9.06	0.156	9.86
Some post-secondary	…	…	-0.233	-12.45	-0.237	-12.66	-0.143	-2.88
University	…	…	-0.365	-16.07	-0.372	-16.33	-0.476	-7.00
Clerical, sales, services	…	…	-0.371	-5.43	-0.371	-5.41	-0.526	-3.16
Information technology	…	…	-0.567	-7.77	-0.563	-7.69	-0.672	-2.93
Other professional	…	…	-0.251	-3.82	-0.254	-3.85	-0.519	-3.07
Other occupational	…	…	-0.234	-3.65	-0.226	-3.52	-0.432	-2.77
Engineers	…	…	-0.233	-3.02	-0.227	-2.94	-0.165	-0.60
Skilled	…	…	0.148	6.52	0.144	6.37	-0.240	-3.63
Refugee	…	…	0.812	34.66	0.809	34.47	0.842	13.46
Other class	…	…	0.013	0.46	0.005	0.18	0.146	2.42
Speak English, French	…	…	-0.183	-10.15	-0.180	-9.92	-0.172	-9.41
Caribbean, South and Central America	…	…	0.562	6.25	0.581	6.43	0.541	5.95
Europe (excluding Eastern Europe)	…	…	0.027	0.28	0.018	0.19	0.017	0.18
Eastern Europe	…	…	0.153	1.71	0.183	2.03	0.173	1.91
Africa	…	…	1.080	12.06	1.100	12.23	1.087	12.02
South Asia	…	…	0.779	8.85	0.822	9.28	0.799	8.97
East Asia	…	…	1.366	15.60	1.409	15.99	1.382	15.60
Other	…	…	0.890	10.16	0.934	10.60	0.941	10.63
Lone Parent	…	…	1.042	27.50	1.041	27.39	1.042	27.18
Attached no kids	…	…	-0.420	-18.57	-0.425	-18.78	-0.432	-18.94
Attached with kids	…	…	-0.069	-3.40	-0.074	-3.62	-0.078	-3.79
Toronto	…	…	-0.801	-37.00	-0.264	-7.72	-0.298	-8.63
Vancouver	…	…	-0.649	-24.74	-0.230	-6.84	-0.258	-7.63
Other CMA[4] 500,000 and over	…	…	-0.907	-32.37	-0.282	-6.75	-0.300	-7.12
Other CMA[4] 100,000 to 499,999	…	…	-0.779	-23.53	-0.321	-8.13	-0.338	-8.53
Other locations	…	…	-0.571	-15.90	-0.135	-3.22	-0.143	-3.40
Unemployment	…	…	…	…	0.179	20.32	0.177	19.95
							plus interaction of cohort with education, occupation, immigrant class, and age	
Constant	-1.445	-69.72	-1.395	-12.66	-3.559	-23.01	-3.155	-14.73
N (number of person-years)	135,000	…	135,000	…	135,000	…	135,000	…

… not applicable

1. Chronic low income defined as in low income for at least four of the five years following entry into Canada.
2. b = regression coefficients.
3. t = t-statistics.
4. CMA = Census Metropolitan Area.

Sources: Statistics Canada, Longitudinal Administrative Database and Longitudinal Immigration Database.

References

Abbott, Michael G. and Charles M. Beach. 1993. "Immigrant earnings differentials and birth-year-effects for men in Canada: Post-war-1972." *Canadian Journal of Economics*. 26, 3: 505–524.

Aydemir, A., W.H. Chen and M. Corak. 2005 *Intergenerational Earnings Mobility Among the Children of Canadian Immigrant.* Analytical Studies Research Paper Series. Catalogue No. 11F0019MIE2005267. Ottawa: Statistics Canada.

Aydemir, Abdurrahman and Mikal Skuterud. 2005 "Explaining the Deteriorating Entry Earnings of Canada's Immigrant Cohorts: 1966-2000." *Canadian Journal of Economics*. 38, 2: 641–672.

Baker, Michael and Dwayne Benjamin. 1994. "The performance of immigrants in the Canadian labor market." *Journal of Labor Economics.* 12, 3: 369–405.

Bloom, David E. and Morley Gunderson. 1991. "An analysis of the earnings of Canadian immigrants." In *Immigration, Trade and the Labor Market*. John M. Abowd and Richard B. Freeman (eds.). Chicago: The University of Chicago Press.

Bowlby, Geoff. 2003 "High-tech: two years after the boom" *Perspectives on labour and income*. 15, 4: 27–30. Catalogue no. 75-001-XPE. Ottawa: Statistics Canada.

Chiswick, Barry R. 1978. "The effect of Americanization on the earnings of foreign-born men." *Journal of Political Economy*. 86, 5: 897–921.

Ferrer, Ana, David Green and Craig Riddell. 2004. *The Effect of Literacy on Immigrant Earnings.* Catalogue no. 89-552-MIE. International Adult Literay Survey Series, no. 12. Ottawa: Statistics Canada.

Ferrer, Ana and Craig Riddell. 2003. "Education, Credentials and Immigrant Earnings." University of British Columbia, Department of Economics.

Finnie, Ross and Arthur Sweetman. 2003. "Poverty dynamics: Empirical evidence for Canada." *Canadian Journal of Economics.* 36, 2: 291–325.

Frenette, Marc and René Morissette. 2003. *Will they ever converge? Earnings of immigrant and Canadian-born workers over the last two decades.* Analytical Studies Research Paper Series. Catalogue No. 11F0019MIE2003215. Ottawa: Statistics Canada.

Grant, Mary L. 1999. "Evidence of new immigrant assimilation in Canada." *Canadian Journal of Economics*. 32, 4: 930–955.

Green, David A. and Christopher Worswick. 2002. *Earnings of Immigrant Men in Canada: The Roles of Labour Market Entry Effects and Returns to Foreign Experience.* University of British Columbia, Department of Economics. Paper prepared for Strategic Research and Statistics, Citizenship and Immigration Canada.

Green, David A. and Christopher Worswick. 2006. "Immigrant Earnings Profiles in the Presence of Human Capital Investment: Measuring Cohort and Macro Effects." Mimeo. University of British Columbia, Department of Economics, March.

Hum, Derek and Wayne Simpson. 2003. "Reinterpreting the Performance of Immigrant Wages from Panel Data." University of Manitoba, Department of Economics.

Jenkins, Stephen. 2005. Survival Analysis. Institute for Social and Economic Research, University of Essex. Download from http://www.iser.essex.ac.uk/teaching/degrees/stephenj/.

Li, Peter S. 2003. "Initial Earnings and Catch-up Capacity of Immigrants." *Canadian Public Policy*. XXIX, 3: 319–327.

McDonald, James Ted and Christopher Worswick. 1998. "The earnings of immigrant men in Canada: Job tenure, cohort, and macroeconomic conditions." *Industrial and Labour Relations Review.* 51, 3: 465–482.

Meng, Ronald. 1987. "The earnings of Canadian immigrant and native-born males." *Applied Economics*. 19, 8: 1107–1119.

Picot, Garnett and Feng Hou. 2003. *The rise in low-income rates among immigrants in Canada.* Analytical Studies Research Paper Series. Catalogue No. 11F0019MIE2003198. Ottawa: Statistics Canada.

Picot, Garnett and Arthur Sweetman 2005. *The Deteriorating Economic Welfare of Immigrants and Possible Causes: Update 2005.* Analytical Studies Research Paper Series. Catalogue No. 11F0019MIE2005262. Ottawa: Statistics Canada.

Reitz, Jeffrey. 2001. "Immigrant success in the knowledge economy: institutional change and the immigrant experience in Canada, 1970-1995." *Journal of Social Issue.* 57, 3: 579–613.

Schaafsma, Joseph and Arthur Sweetman. 2001. "Immigrant earnings: Age at immigration matters." *Canadian Journal of Economics*. 34, 4: 1066–1099.

Sweetman, Arthur. 2004. *Immigrant Source Country School Quality and Canadian Labour Market Outcomes.* Analytical Studies Research Paper Series. Catalogue No. 11F0019MIE2004234. Ottawa: Statistics Canada.