

Immigrant Skill Utilization: Trends and Policy Issues

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Abstract Since 1996, the problem of underutilization of immigrant skills in Canada has grown significantly. University-educated immigrants are more numerous, and census analysis shows their access to skilled occupations in the professions and management decline between 1996 and 2006. The decline in access since 2001 coincided with increased program efforts, including foreign credential assessment, bridge training, and others. Policy differences among provinces, or in occupational groups targeted, also have had little impact on aggregate trends. The value (in today's dollars) of work lost to the Canadian economy grew from about \$4.80 billion annually in 1996 to about \$11.37 billion in 2006.

Keywords Immigrant employment · Human capital analysis · Skill utilization · Canada · Credential assessment · Policy assessment

Underutilization of the skills of Canada's immigrants—'brain waste'—emerged as a problem in the 1990s, costing the economy \$2 to \$3 billion annually (Reitz 2001; Watt and Bloom 2001), and representing one of the most significant disappointments for immigrants settling in Canada. Immigrant skill underutilization is related to the lower value of immigrant human capital and is an important component of the overall immigrant employment disadvantage (Li 2000, 2004; Pendakur and Pendakur 2002; Skuterud 2010). A number of policy initiatives have been directed at the problem,

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particularly in the past decade, including credential assessment services, regulations to ensure fair access for professional licensing, and bridge training programs to fill gaps in immigrant skills that may arise from foreign-acquired education or experience. As well, settlement services, including language training programs, have been adapted to more effectively serve the needs of immigrant professionals.

Has progress been made? Have policy initiatives addressed skill underutilization? This study examines recent trends and assesses policy impacts based on Canadian census data from 1996, 2001, and 2006. First, we review trends in skilled immigration in Canada since the mid-1990s, based on immigration statistics, noting some researchers' explanations of immigrant employment and earnings outcomes. Second, we summarize policies to address labour market barriers, noting time of implementation and differences by province and by occupation. Third, we assess trends in the success of immigrants with university degrees, including graduate and professional degrees, in gaining access to highly skilled professional and managerial occupations. Fourth, using human capital earnings analysis, we estimate the earning deficits of immigrants due to skill underutilization, both at the individual level and in the aggregate across the population. We conclude by identifying implications for future policy development. Policy initiatives appearing since 2006 cannot be assessed in the census series ending in 2006, of course. However, analysis of policy development and trends to that time will help focus discussion of policy requirements for the future.

Skilled Immigration and Skill Utilization in Canada, 1994–2010

Skilled immigration received a substantial boost in the mid-1990s, when selection criteria were changed to emphasize formal education, particularly university education. Immigration data in Table 1 show that the proportion of immigrants with university degrees rose dramatically from 20.8 % in 1994 to 45.6 % in 2001, and remained there through 2009. This increase was led by the 'economic class' immigrants, whose employment-related skills were a key to their selection as immigrants, and among whom the proportion with university degrees increased from 39.0 % in 1994 to 77.7 % in 2001. Educational levels for the spouses and dependents of principal applicants, and for family-class (sponsored) immigrants, also increased over time. Refugees and 'other' immigrants (a small category) were not affected by the changes to selection criteria. A decline in educational levels of economic class immigrants occurred after 2005, from nearly 80 % with bachelor's degrees for principal applicants down to 68 %, and from 45 % for spouses and dependents to 39 %. This may reflect changes in selection criteria away from education and toward experience in occupations in demand in the labour market. The educational levels of the family-class immigrants continued to rise after 2005. The proportions of all immigrants with a bachelor's degree remained between 43 and 45 % from 2005 to 2009.

More skilled immigrants mean that the issue of skilled immigrant employment matters more. In the growing body of research, explanations have emphasized both

Table 1 Percentage of new permanent residents with a BA or higher, by entry class 1994–2009

Year	Economic (principal)	Economic (spouse/dependent)	Family	Refugee	Other	Total
1994	39.0	21.4	12.2	17.5	18.2	20.8
1995	48.3	27.1	12.3	13.6	11.4	25.0
1996	55.0	27.8	13.7	14.0	7.1	28.9
1997	61.6	31.4	14.7	13.0	5.9	33.4
1998	64.5	35.6	17.2	11.9	6.3	35.4
1999	72.4	40.6	20.4	12.0	4.2	40.7
2000	77.3	43.4	21.8	11.1	8.7	43.9
2001	77.5	43.8	23.0	12.6	11.7	45.6
2002	79.2	44.1	21.2	12.2	25.5	46.0
2003	79.9	44.0	28.1	11.9	21.7	44.7
2004	79.6	45.0	29.1	13.7	13.7	45.6
2005	79.5	44.0	28.6	15.8	13.1	45.8
2006	76.7	41.7	28.2	14.4	16.4	42.7
2007	74.4	40.8	31.0	12.2	18.3	43.0
2008	72.4	40.6	32.9	11.3	20.1	44.9
2009	68.2	39.2	33.3	11.7	19.3	43.6

Source: Citizenship and Immigration Canada. Years 1994–1995 Facts and Figs. 2003; Years 1996–2005 Facts and Figs. 2005; Years 2006–2009 Facts and Figs. 2009

the quality of immigrant skills and discriminatory disadvantage faced by immigrants (Aydemir and Skuterud 2005; Reitz 2007; Bonikowska et al. 2011; Frenette and Morissette 2005; Nadeau and Seckin 2010; Picot and Sweetman 2005). To some extent, immigrant education may be not equivalent to native education, or less relevant to employer needs (Sweetman 2004). Using the International Adult Literacy Survey, Bonikowska et al. (2008, p. 65) argue that the poorer results of immigrants on literacy tests reflect lower levels of cognitive skills that are ‘usable in the Canadian Economy’, and suggest these are a major factor in immigrant earnings differentials. However, literacy test results may reproduce cultural biases, which are also affecting employer decisions. In any case, there are substantial sample variances in the estimated impact of measured immigrant skill differences in these studies (Ferrer et al. 2006; Wald and Fang 2008). At the same time, there is convincing evidence of the significance of processes of discriminatory disadvantage affecting skilled immigrants (Reitz and Banerjee 2007, pp. 500–3; see also Pendakur and Pendakur 2002; Oreopoulos 2011; Skuterud 2010).

Policy Context

A review of Canadian immigration policies addressing employment barriers experienced by skilled immigrants must take account of policy development over time, variation by provincial jurisdiction, and variation by occupational groups or sectors targeted by policy or more accessible to policy intervention. Over time, two phases of

policy making regarding barriers to immigrant skill utilization can be distinguished. In the first, the focus of policy development was on credential assessment and recognition. In the second, the complexity and extent of skill underutilization were recognized; programs such as licensing regulation, bridge training, and mentoring were introduced, and traditional settlement programs were modified to include assistance to professionals. These two periods coincide roughly with the data points provided by the census—1996 to 2001, and 2001 to 2006. However, identifying expected effects within specific time periods is difficult because the timing of policy implementation varies across provinces.

Foreign Credential Recognition

Before 2001, policies aiming to improve immigrant skill utilization focused on creating provincial credential assessment services and on establishing best-practice models of doing so. Québec led the way in 1970, followed by Alberta in 1994, British Columbia in 1995, Manitoba in 1998, and World Education Services in Ontario in 2000 (Alberta's service also operates in Saskatchewan and the Northwest Territories). Provincial mandates vary. The Ontario service is a private not-for-profit organization, provided with start-up funding, ongoing project-based funding, and government endorsement. In Québec, Manitoba, and Alberta, credential assessment services are integrated into provincial government ministries.

The impact of credential assessment services in helping immigrants get skilled jobs has not been formally evaluated. Obviously, the fact they are used suggests that immigrants see them as worthwhile. One survey suggests that the propensity to use credential assessment services corresponds to the level of labour demand, with employers in high-demand sectors like information technology willing to test new employees on the job rather than investigate paper credentials (Sangster 2001).

Supplementing the provincial services, Human Resources and Skills Development Canada (HRSDC 2005) launched the Foreign Credential Recognition Program in 2003, with \$84.16 million funding over 7 years. This initiative could strengthen service provision, but the explicit mandate is to work with regulatory authorities and industry sectors and institutions responsible for non-regulated occupations to 'minimize barriers to full labour market integration' (CIC 2010a, p. 11). Further, although the existence of a national program may help spur action across the country, there are still no national standards. After Canada ratified the UNESCO Convention on the Recognition of Studies, Diplomas and Degrees in 1999, the Councils of Education Ministers in Canada established the Canadian Information Centre for International Credentials to help Canada conform to the Convention. The Alliance of Credential Evaluation Services of Canada (2009, pp. 15, 20) has documented discrepancies in the interpretation of international qualifications across its members, so significant provincial differences remain, owing to different provincial standards and different procedures for submitting and assessing qualifications (Owen and Lowe 2008, p. 13).

Seeking to move beyond the evaluation of institutional certificates, HRSDC has been working to link its Foreign Credential Recognition Program with its program on literacy and essential skills. In 2010, it sponsored three nationwide consultations with immigrant service organizations, colleges responsible for administering language training and bridging programs, employers, and other stakeholders in the credential

recognition process to promote tools developed by its Office of Literacy and Essential Skills. These tools, such as 350 Essential Skills Profiles covering occupations in the National Occupational Classification (NOC), are designed to help employers translate job descriptions into tasks that can determine what a job candidate can actually do, regardless of what paper credentials say (HRSDC 2012).

A more aggressive move is Ontario's *Fair Access to Regulated Professions Act* (2006) mandating that professional licensing agencies operate in a 'transparent, objective, impartial' manner in assessing immigrant qualifications (Office of the Fairness Commissioner 2011, p. 1). This is a strategic effort because recognition of foreign qualifications is technically feasible when educational requirements for specific jobs are delineated, and this is more likely when regulatory bodies set required qualifications. In addition, the existence of regulators facilitates access to the process. However, the need for legislation reflects widespread perception that these regulators sometimes impede fair recognition of immigrant credentials.

Toward Skill Utilization

A number of policies have addressed the fact that barriers to immigrant skill utilization go beyond simple lack of recognition of foreign-acquired qualifications. Some immigrants are well trained but lack some specific knowledge or skills required in Canada. Some find that their lack of Canadian work experience concerns employers. Other problems include lack of social networks useful in job seeking and lack of knowledge of Canadian professional 'lingo.' Perceptions of these barriers among immigrants were probed by Statistics Canada's Longitudinal Survey of Immigrants to Canada (Statistics Canada 2003, 2005). Overall, 71 % of immigrants reported encountering at least one barrier to gaining access to a job at their level of skill. Lack of Canadian experience was identified by 26 % as their primary barrier 6 months after arrival, and the same figure of 26 % was found 7 to 24 months after arrival. Other perceived barriers included a lack of acceptance or recognition of foreign work experience or qualifications and language barriers.

Community groups can help develop more comprehensive policy (Alboim 2010). The Toronto Immigrant Employment Council (TRIEC), established in 2003, includes representatives from employers, labour, occupational regulatory bodies, post-secondary institutions, assessment service providers, community organizations, and all three levels of government (federal, provincial, and municipal). In 2009, TRIEC reported that its mentoring partnership program matched 5,000 skilled immigrants with Canadian professional mentors. Career Bridge internships, which TRIEC helped initiate, provided 1,300 skilled immigrants with Canadian experience, and 600 skilled immigrants made connections through multiple networking events. Buoyed by these successes, the TRIEC model has diffused across Canada.

Where immigrant credentials are assessed as deficient, bridge training programs may be a useful alternative to starting over, but problems frequently go beyond a simple need to fill in technical gaps. In TRIEC, educational institutions, employers, regulatory bodies, and others work together to address multiple barriers (TRIEC 2006; Birrell and McIsaac 2006), creating programs that include academic and technical writing, workplace culture and communication ('soft skills'), occupation-specific language training, licensure exam preparation, job interview preparation, and

internship, mentorship or clinical placement. The Enhanced Language Training program, launched by Citizenship and Immigration Canada (CIC) in 2003, provides language skills tailored to requirements in a particular occupational field, and gives participants job-seeking assistance (Weiner 2008).

Some programs have targeted immigrants prior to arrival, such as the Canadian Orientation Abroad (COA) program. Realistic expectations may help prospective immigrants prepare for arrival in Canada, while deterring those with limited prospects. In cooperation with the International Organization for Migration, CIC delivered COA sessions to over 68,000 people between 1998 and 2006 (International Organization for Migration 2011).

General Settlement Program Trends

Settlement programs are not aimed exclusively at labour market integration but may provide some help. There are three main components: the Immigrant Settlement and Adaptation Program (ISAP) encompasses services such as reception, orientation, translation, interpretation, referral to community resources, counseling, general information, and employment-related services; the Language Instruction for Newcomers to Canada (LINC) program supports locally based language training in English or French for adult immigrants, in a full- or part-time format; the Host Program matches immigrants with volunteers trained by Service Providing Organizations who help newcomers adapt. There are also supplementary grants to provinces and a Resettlement Assistance Program for refugees.

Over the period 1996–2006, annual settlement program spending by CIC jumped from \$235.4 million to \$445.0 million (CIC 1997, p. 10; 2006b, p. 31); spending increased to \$965.7 million by 2010 (CIC 2010b, p. 28). LINC and ISAP account for the largest share. Because of the local nature of service provision, systematic outcome evaluation is not available.

Provincial Differences

Although policy development has proceeded unevenly across provinces, the leading role of Ontario suggests that immigrant skill utilization may be more advanced there. The TRIEC initiative has been influential not only in Toronto but across Ontario. By 2006, Ontario's Ministry of Citizenship and Immigration had funded the most extensive number of bridge training programs for internationally trained individuals in Canada (TRIEC 2006). Beginning with pilot programs in pharmacy and nursing in 2001, it now includes myriad programs from midwifery to biotechnology (TRIEC 2006).

Focal Occupations

Labour market initiatives to assist immigrants have been directed at many occupations, but health-related and engineering professions stand out as consistent targets. The Internationally Educated Health Care Professionals Initiative launched in 2005 was allocated a budget of \$75 million over 5 years to improve labour market integration in seven priority professions: medicine, nursing, pharmacy,

physiotherapy, occupational therapy, medical laboratory technology, and medical radiation technology (CIC 2010a, p. 13). It was estimated at the time that the funding would help integrate up to 1,000 physicians, 800 nurses, and 500 other health-care professionals (Health Canada 2005). The Canadian Council of Professional Engineers introduced its own credential assessment service for engineering credentials obtained outside Canada in 2003 (Canadian Council of Professional Engineers 2008). That same year, the Council embarked on a three-phase project funded by HRSDC (\$2.9 million) designed to gain an overview of immigrant experience and licensing procedures and to recommend improvements (Canadian Council of Professional Engineers 2004; Weiner 2008). One result was a provisional license allowing immigrants to gain work experience needed to obtain the P. Eng. degree (Owen and Lowe 2008).

Trend Analysis: Census Data for 1996, 2001, and 2006

Trend analysis of census data is useful for tracking immigrant skill underutilization and may provide some clues to policy impact over time. While each policy deserves separate evaluation, it is also of interest to track the trends, to assess the overall status of the problem, and to learn how the policies are working in the aggregate.

The 1996 census was used previously to describe immigrant skill underutilization in terms of the total earnings lost when immigrants are employed at occupations below the level at which similarly qualified native-born workers are employed. The economic impact turns out to be around \$2.4 billion (Reitz 2001). Replicating this 1996 analysis to 2001 and 2006 provides a trend line which is useful in tracking changes in the significance of the problem, in terms of the numbers affected and the extent of skill underutilization. Detailed examination of the trend data also helps reveal variation by gender, recency of immigration, and possibly other demographic characteristics. In addition, it enables analysis of differences in experiences in different regions or provinces where different strategies may have been pursued, or in different occupational sectors. Such a trend analysis, while useful, is by no means to be interpreted as an 'evaluation' of policy in general, or of any specific policy. As well, many innovations have occurred since 2006, and their impact will not be seen until a later point in time.

Ensuring comparability of the census analyses requires attention to changes in variable definitions. Two key variables critical to our analysis, levels of education and occupational skill levels, have been revised slightly in the censuses. In the case of education, the 2006 coding shifted attention toward specific employment credentials and away from the attempt to measure years of education. This is fine for the present purpose since the focus is on university degrees at the bachelor's and post-graduate levels, and definitions of these categories are identical across censuses. Regarding occupation, our descriptive analysis distinguishes only two categories: professional and senior or middle management occupations. These account for most of the skill and earning variations across occupations. The professional occupations were defined identically across the three censuses, but the relevant managerial occupational categories were revised in 2006. In the 1996 and 2001 censuses, 'Senior' and 'Middle' managers as well as general 'Supervisors' and 'Craft and trade' supervisors were differentiated. In the 2006 census, these categories were aggregated into two categories only: 'Managers' and

‘Supervisors’. To achieve comparability of the 2006 data with the two earlier censuses, we recoded the earlier versions to match the 2006 coding.

The analysis is restricted to persons between the ages of 20 and 64. We begin by describing the employment trends of university-educated immigrants, paying close attention to immigrants in professional or managerial occupations. We then estimate overall earnings lost due to the immigrant skill underutilization, that is, to employment in occupations below those at which comparably qualified native-born persons are working. The method follows Reitz (2001), who based the analysis on human capital regression equations for immigrants and native-born men and women, using a substitution procedure explained below. The earnings equations include measures tapping economic and sociodemographic variables. The educational qualifications include a measure of bachelor’s degree, as well as a second variable that captures professional and graduate degrees together (i.e. master’s, PhD, and professional degrees combined). In the regression analysis, occupation is measured with a series of nine categorical variables that have been recoded to maintain continuity between census periods. We control for age, city of residence (Toronto, Montreal, Vancouver), visible minority status (Black, Chinese, South Asian, Filipino, Other visible minority), and knowledge of an official language. Age in years is used as a proxy for work experience, with 20 subtracted since 20 years is the minimum age of the sampled population.¹ A squared term is used to capture the non-linear component of the effect of work experience. Individual years of age were substituted with age categories in the 2006 microdata, so the earlier censuses were recoded to match these. We include dummy variables for knowledge of French, knowledge of French and English, and knowledge of neither official language. English knowledge only is the reference category. For immigrants, the number of years since arrival in Canada is represented as a series of dummy variables for arrival in 5-year intervals. We isolate three 5-year periods (‘last 1–5 years’, ‘last 6–10 years’, and ‘last 11–15 years’) as well as a reference group of immigrants living in Canada 16 years and above.

Trends in Employment of University-Educated Immigrants: 1996–2006

The rising level of the university-based education of immigrants in Canada is reflected in the 1996–2001–2006 census series in Table 2. Table 2 shows the proportions of immigrant men and women with 4-year bachelor’s degrees and the proportions possessing a graduate or professional degree, by arrival cohort for each census; a native-born comparison group is also included. The data show that the most recent cohorts in every comparison are better educated than earlier cohorts. This holds for both men and women and at both the BA and post-graduate or professional levels, for all three census years. Because of the increasing selection standards for economic immigrants from 1990 forward, this trend becomes more pronounced from 1996 to 2006. Education levels for the most recent arrivals (5 years before the census) increased rapidly over time. These trends have a cumulative effect on the immigrant

¹ A method for measuring potential work experience is age minus years of education minus 5. This measure cannot be used here because years of education as an explicit variable is not available for 2006. For 1996 and 2001, the two measures produce similar results.

Table 2 Percent at each educational level, for immigrants by arrival cohort, and for the native-born, by gender; persons aged 20–64, for census years 1996, 2001, and 2006

		Men					Women				
		BA	Prof./grad.	Total	Other	(N)	BA	Prof./grad.	Total	Other	(N)
1996	Last 5 years	16.5	8.0	24.5	75.6	(8658)	14.3	4.9	19.2	80.8	(10,107)
	6–10 years	13.1	7.2	20.3	79.7	(9,099)	12.4	4.1	16.5	83.5	(9,631)
	11–15 years	13.2	7.3	20.5	79.5	(4,800)	11.7	4.4	16.1	83.9	(5,428)
	16+	11.3	6.9	18.2	81.8	(39,443)	9.7	3.2	12.9	87.2	(45,513)
	Native born	9.6	3.2	12.8	87.2	(239,466)	9.8	1.8	11.6	88.4	(252,911)
2001	Last 5 years	27.5	17.0	44.5	55.5	(7,512)	26.1	10.5	36.6	63.3	(7,921)
	6–10 years	17.0	8.6	25.6	74.4	(9,501)	16.4	5.1	21.5	78.5	(10,798)
	11–15 years	15.0	7.4	22.4	77.7	(8,776)	14.6	4.3	18.9	81.1	(9,184)
	16+	13.2	7.7	20.9	79.2	(38,936)	11.1	3.9	15.0	85.1	(41,380)
	Native born	10.5	3.5	14.0	86.0	(240,698)	11.7	2.4	14.2	85.8	(249,497)
2006	Last 5 years	28.4	15.8	44.2	55.8	(7,464)	27.5	11.2	38.7	61.2	(8,640)
	6–10 years	25.5	14.4	39.9	60.1	(8,770)	24.5	9.2	33.7	66.3	(9,381)
	11–15 years	18.5	18.5	37.0	73.0	(8,844)	17.2	5.2	22.4	77.6	(10,263)
	16+	13.9	7.3	21.2	78.8	(41,080)	12.6	4.0	16.6	83.4	(44,507)
	Native born	11.3	3.8	15.0	85.0	(256,815)	13.2	3.0	15.2	83.8	(269,890)

Source: Statistics Canada, Census microdata files, 1996, 2001, 2006; authors' analysis

population, so that in 2006, higher levels of education are seen for all cohorts arriving in the previous 15 years. Over this period, educational levels also rose for the native-born, but less rapidly than for immigrants. Among immigrants arriving 5 years before 1996, the proportion with university degrees was nearly twice as high for immigrants as for the native-born population (24.5 v. 12.8 % for men, 19.2 v. 11.6 % for women). For the most recent immigrants in 2006, the proportion with university degrees was nearly three times as high as for native-born population for men (44.2 v. 15.0 %), and nearly two and one half times as high for women (38.7 v. 15.2 %).

Access to High-Skilled Occupations

With more immigrants seeking high-skilled occupations, how successful have they been? Has their rate of success improved over time? These questions can be answered by examining the occupational status of those immigrants who were working, according to levels of qualification, in Table 3. The baseline situation in 1996 shows a substantial disadvantage for immigrant men and a greater disadvantage for immigrant women. Among men arriving in the 5 years before the census, 50.4 % of those with a university degree worked in a managerial or professional occupation in Canada, compared to 70.7 % of their native-born counterparts. For those with

Table 3 Percentage of immigrant men and women in managerial/professional jobs by cohort and education, persons aged 20–64 with positive earnings

	Men				Women			
	BA	Prof./graduate	Total high education	Other	BA	Prof./graduate	Total high education	Other
1996								
Last 5 years	41.3 (1,114)	67.8 (584)	50.4 (1,698)	12.5 (4,196)	28.0 (968)	54.2 (323)	34.6 (1,291)	8.0 (4,008)
6–10 years	44.1 (1,006)	71.1 (584)	54.1 (1,590)	11.6 (5,322)	34.3 (927)	55.4 (316)	39.7 (1,243)	9.7 (4,594)
11–15 years	53.8 (539)	76.9 (311)	62.2 (850)	13.0 (2,851)	45.8 (513)	69.7 (201)	52.5 (714)	10.6 (2,681)
16+	65.2 (3,860)	87.6 (2,381)	73.8 (3,241)	19.7 (21,384)	54.8 (3,320)	78.7 (1,083)	60.7 (4,403)	15.6 (18,182)
Native born	65.4 (20,972)	86.8 (6,841)	70.7 (27,813)	13.5 (156,348)	60.9 (21,807)	83.6 (4,152)	64.5 (25,959)	13.7 (135,924)
2001								
Last 5 years	45.6 (1,777)	67.8 (1,135)	54.2 (2,912)	12.9 (2,887)	35.2 (1,433)	58.9 (610)	42.3 (2,043)	9.0 (2,658)
6–10 years	51.5 (1,407)	75.4 (711)	59.5 (2,118)	13.4 (5,213)	39.4 (1,387)	60.7 (465)	44.7 (1,852)	10.6 (5,192)
11–15 years	54.1 (1,149)	75.7 (577)	61.3 (1,726)	13.9 (5,365)	41.0 (1,130)	66.6 (338)	46.9 (1,468)	10.8 (4,811)
16+	66.4 (4,215)	85.2 (2,423)	73.3 (6,638)	21.0 (19,602)	57.5 (3,651)	77.8 (1,335)	62.9 (4,956)	17.8 (17,272)
Native born	67.6 (22,634)	87.2 (7,272)	72.4 (29,906)	14.6 (158,181)	63.6 (25,693)	84.9 (5,391)	67.3 (31,084)	14.3 (136,550)
2006								
Last 5 years	35.8 (1,801)	57.3 (1,020)	43.5 (2,821)	11.0 (2,929)	28.6 (1,720)	48.4 (713)	34.4 (2,433)	9.1 (2,786)
6–10 years	47.4 (2,017)	69.3 (1,140)	55.3 (3,157)	11.7 (3,932)	35.1 (1,787)	59.6 (695)	41.9 (2,482)	12.2 (3,845)
11–15 years	50.7 (1,401)	72.9 (656)	57.8 (2,057)	13.5 (4,810)	39.8 (1,433)	65.4 (439)	45.8 (1,872)	11.2 (4,786)
16+	63.9 (4,445)	83.9 (2,227)	70.6 (6,672)	19.8 (20,099)	57.2 (4,239)	78.1 (1,347)	62.3 (5,586)	16.6 (23,179)
Native born	65.8 (25,178)	86.2 (8,150)	70.8 (33,328)	14.2 (165,492)	63.0 (30,404)	84.1 (6,981)	66.9 (37,385)	14.7 (146,948)

For 1996, $N=492,086$; for 2001, $N=527,167$; for 2006, $N=574,392$; N for each percentage in parentheses. Source: Statistics Canada, Census microdata files, 1996, 2001, 2006; authors' analysis

graduate degrees, the figure was 67.8 %, compared to 86.8 % of their native-born counterparts. The relative success rate is lower for women. Among immigrant women in the recent arrival cohort with a university degree, only 34.8 % had a managerial or professional occupation, compared to 64.5 % of their native-born counterparts; of those with a post-graduate or professional degree, 54.2 % had a managerial or professional occupation, compared to 83.6 % of the native-born. The immigrant/native-born percentage differences are around 20 % for men and 30 % for women.

Immigrants in the country for longer have higher success rates, suggesting that assimilation into the labour market raises the rate of success. In fact, in 1996, for immigrants who had been in the country for 16 years or more, the proportions of those with university degrees attaining a professional or managerial occupation are about equal to the native-born, for both men and women. But earnings parity relative to the native born is not the same.

Most recent cohorts fared worse in 2006 than in 1996, despite a trend toward improvement in 2001. For male university graduates arriving 5 years before each census, the percentage in high-skill occupations was 50.4 in 1996, rising to 54.2 in 2001, but then falling to 43.5 in 2006. For women, the percentage in highly skilled occupations went from 34.6 in 1996 to 42.3 in 2001, only to fall to 34.4 in 2006. Those with more advanced degrees fared even worse.

Although business-cycle effects explain the fluctuation to a degree, they do not explain the extent of the downturn in the most recent period. Labour demand was generally weak in the early 1990s, so an improvement for immigrants arriving in the late 1990s is expected—the drop in the early 2000s is not. The unemployment rate, in the double digits in the early 1990s, fell to roughly 8 % percent in the late 1990s and remained at that level until 2005 (Statistics Canada 2010). Hence, labour demand was stronger from 2000 to 2005 than in the recession of the early 1990s, yet the occupational success of immigrants was significantly less for those arriving in the latter period. Picot and Hou (2008) suggest that the ‘IT bust’ soon after 2000 had a particularly negative impact on immigrants. Note that the shift to non-European origins, a major trend in Canadian immigration beginning in the 1970s, was largely completed by 1995 and would not affect trends since that time.²

Employment of the Highly Skilled in Low-Skilled Occupations

A stereotype vividly symbolizing immigrant underemployment is immigrant professionals driving taxis. Actually, only about 1 % of immigrants with university degrees work as taxi drivers, according to the census, but this is many times higher than for their native-born counterparts. To see whether the employment of highly skilled immigrants in the lowest-skilled occupations has changed in any way over time, we focus on the two lowest skill categories common to all three microdata census files: the lowest-skilled sales and service occupations (cashiers, ‘food couriers,’ kitchen helpers, cleaners) and manual labourers. According to the NOC list, these two

² About 80 % of Canada’s immigrants now come from Asia, Africa, the Caribbean, and Latin America (Reitz 2012, p. 522).

categories represent Skill Level D, the lowest of four possible classifications (taxi drivers are Level C). In the 1996 census, the proportion of university-educated immigrants across all cohorts working in such low-skill occupations was 3.9 %, compared to 2.6 % in the native-born population. In 2001, the percentages rose to 6.8 % for immigrants and 2.9 % for the native-born. By 2006, the percentages of university-educated immigrants in low-skill occupations declined to 4.3 %, but the proportion in the native-born population declined even further, to 1.8 %. Thus, over time, the proportion of university-educated persons in low-skill occupations rose and fell, but the relative proportions of immigrants in such occupations rose steadily, from 1.5 times the proportion for the native-born to 2.3 times and then to 2.4 times. University-educated men are more often in low-skill occupations than university-educated women, but among immigrants, the relative proportions are greater among women. Relative proportions grew steadily from census to census for both men and women.

Differences by Province and Skill Sector

Based on more extensive policy development in certain occupations such as health care and the sciences and in certain provinces such as Ontario, we are interested in variations in employment trends by occupation and province. These analyses are presented in Tables 4 and 5, respectively. The trends for Ontario, Québec, and British Columbia, the three most immigrant-intensive provinces, are similar. In Québec, university-educated immigrants have higher rates of success gaining access to skilled occupations than in BC, and more in BC than in Ontario. However, comparing the most recent arrivals in all three provinces over time shows that recent arrivals had more difficulty in 2006 than in 1996. Probably the trend over time is more negative in Québec since the new arrivals in 1996 had a much higher success rate than in either of the other two provinces, but in 2006, it was similar across all three.

Immigrants are more likely to be employed in the health care or scientific occupations, compared to the native-born. However, while the success of the most recently arrived immigrants in gaining entry into such occupations improved between 1996 and 2001, it was less in 2006 than in 1996.

Trends in the Aggregate Cost of Immigrant Skill Underutilization Due to Lost Earnings

The evidence presented above indicates that immigrant skill underutilization has grown for two reasons: an increase in the numbers of immigrants affected, particularly from 1996 to 2001, and a decline in the success of immigrants in gaining skilled employment because of negative trends between 2001 and 2006. A more precise estimate of the magnitude of the problem can be gained by calculating the total earnings lost to immigrants as a result of skill underutilization in each of the three census years.

To do so, we use decomposition procedures inspired by Oaxaca (1973) and adapted from Reitz (2001, pp. 369–72). Native-born and immigrant earnings

Table 4 Percentage of immigrant men in managerial/professional jobs by cohort, education, and province, persons aged 20–64 with positive earnings

	Ontario			Québec			British Columbia					
	Higher educ.	Other		Higher educ.	Other		Higher educ.	Other				
Men												
1996												
Last 5 years	47.8	(928)	11.0	(2,296)	60.6	(246)	10.0	(528)	50.4	(363)	19.6	(9,000)
6–10 years	52.4	(904)	12.5	(3,145)	61.2	(237)	8.4	(699)	54.0	(291)	14.4	(861)
11–15 years	61.7	(459)	14.2	(1,549)	70.5	(139)	12.9	(419)	52.6	(133)	11.8	(459)
16+	73.4	(3,265)	20.2	(11,681)	78.4	(836)	18.5	(2,614)	70.5	(1,154)	19.7	(3,839)
Native born	69.1	(10,554)	15.0	(50,163)	75.5	(7,370)	13.2	(41,980)	67.5	(3,160)	14.2	(18,983)
2001												
Last 5 years	53.4	(1,804)	15.0	(1,741)	59.7	(367)	14.5	(447)	52.7	(488)	14.9	(610)
6–10 years	59.5	(1,224)	15.2	(3,164)	68.4	(272)	13.4	(663)	53.2	(440)	17.8	(1,132)
11–15 years	61.9	(1,005)	14.6	(3,432)	61.9	(252)	16.0	(717)	57.8	(301)	18.2	(847)
16+	72.9	(3,475)	22.4	(11,237)	78.5	(898)	22.0	(2,511)	68.2	(1,093)	22.1	(3,447)
Native born	72.4	(11,316)	16.9	(52,798)	75.6	(7,722)	14.0	(42,467)	70.0	(3,512)	16.8	(19,039)
2006												
Last 5 years	41.7	(1,553)	10.3	(1,576)	44.4	(584)	12.1	(478)	44.5	(402)	13.4	(493)
6–10 years	54.6	(1,946)	11.0	(2,174)	57.7	(416)	12.7	(536)	50.6	(545)	14.6	(780)
11–15 years	58.5	(1,255)	13.2	(1,818)	57.8	(263)	13.1	(603)	54.8	(403)	14.2	(972)
16+	69.8	(3,810)	20.0	(11,647)	73.5	(893)	17.5	(2,250)	67.1	(1,191)	21.4	(3,401)
Native born	70.3	(12,635)	15.5	(53,656)	74.2	(8,504)	13.6	(43,786)	68.1	(3,965)	15.8	(19,464)

Table 4 (continued)

	Ontario		Québec		British Columbia	
	Higher educ.	Other	Higher educ.	Other	Higher educ.	Other
Women						
1996						
Last 5 years	33.1 (674)	8.37 (2,186)	39.3 (173)	4.6 (432)	37.5 (296)	9.9 (939)
6–10 years	38.0 (736)	9.95 (2,733)	51.5 (136)	9.0 (503)	37.4 (230)	10.7 (803)
11–15 years	51.3 (349)	10.4 (1,473)	64.4 (115)	8.6 (339)	47.9 (140)	11.7 (446)
16+	60.1 (2,369)	15.7 (10,217)	68.0 (526)	13.8 (1,984)	58.7 (772)	16.6 (3,315)
Native born	62.6 (10,090)	14.6 (45,034)	67.6 (6,588)	13.5 (35,215)	63.8 (2,863)	14.4 (16,791)
2001						
Last 5 years	42.9 (1,247)	10.2 (1,622)	52.3 (216)	8.3 (220)	36.6 (380)	13.2 (600)
6–10 years	43.6 (1,059)	11.6 (3,186)	55.5 (397)	10.2 (626)	43.0 (381)	12.5 (1,107)
11–15 years	48.5 (877)	13.5 (3,056)	48.3 (178)	10.4 (608)	44.1 (254)	10.3 (861)
16+	63.2 (2,631)	19.8 (10,189)	70.1 (599)	15.8 (1,937)	58.9 (885)	20.0 (3,307)
Native born	66.2 (11,870)	16.8 (47,412)	70.9 (7,900)	14.0 (36,674)	65.2 (3,535)	16.0 (16,795)
2006						
Last 5 years	32.3 (1,314)	9.5 (1,495)	37.7 (432)	10.4 (442)	37.6 (407)	7.1 (495)
6–10 years	40.0 (1,510)	13.1 (2,116)	50.8 (311)	11.8 (484)	41.3 (475)	11.0 (852)
11–15 years	45.9 (1,132)	11.5 (2,785)	56.7 (231)	10.1 (594)	44.9 (372)	11.1 (988)
16+	62.2 (3,260)	17.1 (10,257)	64.5 (676)	13.7 (2,128)	60.6 (1,026)	17.8 (3,118)
Native born	65.7 (14,224)	16.0 (48,641)	71.3 (9,661)	13.6 (38,137)	64.4 (4,263)	15.1 (17,733)

For 1996, $N=310,280$; for 2001 $N=315,082$; for 2006, $N=323,822$; N 's for each percentage in parentheses. Source: Canadian census microdata, 1996, 2001, 2006; authors' analysis

differences are analysed to estimate the component due to lower returns to human capital and related characteristics; this component is further analysed to estimate the subcomponent specifically due to lower access to skilled occupations. The result can be summed across the immigrant population to determine the aggregate financial impact. There are two sets of such equations for the native-born and for immigrants, one with only human capital and related variables as earnings determinants,³ and the other with added occupational categories reflecting skill levels.⁴ These four equations, estimated for men and for women, and for each of the three time periods, make 24 equations. The analysis is restricted to those with positive earnings. Detailed regression results in Appendix present variable means and coefficient estimates for each equation.

The basic human capital equations are used to estimate the earnings impact of immigrants' lower returns to human capital, separately for men and women, following the traditional Oaxaca (1973) method. Specifically, the native-born/immigrant difference in the earnings value of each characteristic (the difference in regression coefficients) multiplied by the mean for that characteristic in the immigrant population estimates the impact of lower returns,⁵ telling us how much higher immigrant earnings might have been had immigrants' education and other characteristics been valued as for the native-born assumed also to be white and not recent arrivals. This is then divided into two components, according to the extent to which it arises from reduced access to highly skilled occupations and the higher earnings that go with such

³ Earnings equations for the native-born include human capital characteristics of education (bachelor's degree and graduate or professional degree dummies), work experience (measured as age minus 20, with a squared term), and official language knowledge (English, French). As in the previous analysis (Reitz 2001a), coefficients for urban area of residence are included and assumed to reflect differences in returns to human capital. The origins terms are included so that their role can be examined. For the native-born, the basic regression equations are:

$$W_{NG} = K_{NG} + \sum_{i=1}^n X_{NGi} \beta_{NGi}, \tag{1}$$

where W_{NG} are mean native-born earnings for gender G , K_{NG} is a constant, X_{NGi} is the mean for each characteristic $i, = 1, \dots, n$, as described, and β_{NGi} is the respective coefficient estimates. For immigrants, the regression equations are of the same form:

$$W_{IG} = K_{IG} + \sum_{i=1}^n X_{IGi} \beta_{IGi} \tag{2}$$

where W_{IG} are mean immigrant earnings for gender G . The equations include four dummy variables unique to immigrants: three recent half-decade arrival cohort dummies (earlier arrival being the reference category), and knowledge of a non-official language. The native-born are assigned reference-category status on those variables.

⁴ A second set of equations adds a set of occupation category dummy variables representing skill levels. The equations for the native-born are:

$$W_{NG}^{\circ} = W_{NG} = K_{NG}^{\circ} + \sum_{i=1}^n X_{NGi} \beta_{NGi}^{\circ} + \sum_{j=n+1}^{n+m} X_{NGj} \beta_{NGj}^{\circ}, \tag{3}$$

with X_{NGj}° the mean for each of m occupation categories $j=n+1, \dots, n+m$. and β_{NGj}° the respective coefficients. The second set of equations for immigrants is:

$$W_{IG}^{\circ} = W_{IG} = K_{IG}^{\circ} + \sum_{i=1}^n X_{IGi} \beta_{IGi}^{\circ} + \sum_{j=n+1}^{n+m} X_{IGj} \beta_{IGj}^{\circ}, \tag{4}$$

with X_{IGj} the mean for each of m occupation categories $j=n+1, \dots, n+m$, and β_{IGj}° the respective coefficients.

⁵ The native-born/immigrant difference in earnings can be divided into components:

$$W_{NG} - W_{IG} = (K_{NG} - K_{IG}) + \sum_{i=1}^n X_{IGi} (\beta_{NGi} - \beta_{IGi}) + \sum_{i=0}^n (X_{NGi} - X_{IGi}) \beta_{NGi}^{\circ}, \tag{5}$$

where $\sum_{i=1}^n X_{IGi} (\beta_{NGi} - \beta_{IGi})$ represents the impact of differences in the earnings value of characteristics.

Table 5 Percentage of immigrant men and women in the health/science occupations by cohort and education, persons aged 20–64 with positive earnings

		Men				Women			
		Higher educ.		Other		Higher educ.		Other	
1996	Last 5 years	29.3	(1,698)	4.8	(4,196)	18.5	(1,291)	4.47	(4,008)
	6–10 years	28.2	(1,590)	5.8	(5,322)	21.2	(1,243)	7.4	(4,594)
	11–15 years	31.3	(850)	7.0	(2,851)	19.6	(714)	9.0	(2,681)
	16+	28.2	(6,241)	8.2	(21,384)	17.1	(4,403)	9.5	(18,182)
	Native born	20.8	(27,813)	6.4	(156,348)	14.2	(25,959)	9.2	(135,924)
2001	Last 5 years	40.6	(2,912)	8.6	(3,142)	23.6	(2,043)	6.8	(2,983)
	6–10 years	36.1	(2,118)	8.6	(5,542)	24.8	(1,850)	8.1	(5,541)
	11–15 years	32.5	(1,726)	9.1	(5,635)	21.3	(1,468)	9.1	(5,136)
	16+	30.3	(6,638)	8.6	(20,432)	18.7	(4,986)	10.7	(18,209)
	Native born	22.9	(29,906)	7.8	(161,730)	16.5	(31,084)	9.9	(141,585)
2006	Last 5 years	28.6	(2,821)	6.9	(2,929)	17.0	(2,415)	7.7	(2,786)
	6–10 years	37.9	(3,157)	8.3	(3,932)	22.9	(2,482)	8.8	(3,845)
	11–15 years	35.4	(2,057)	7.8	(4,810)	23.8	(1,872)	9.1	(4,786)
	16+	31.2	(20,099)	8.9	(20,099)	20.8	(5,586)	10.7	(17,593)
	Native born	23.3	(33,328)	7.8	(165,492)	17.0	(37,385)	10.4	(146,948)

For 1996, $N=427,292$; for 2001, $N=454,666$; for 2006, $N=484,422$; N for each percentage in parentheses. Source: Canadian census microdata, 1996, 2001, 2006; authors' analysis

occupations, as opposed to the lower value of immigrant characteristics within occupational skill levels. The latter estimates the earnings impact of immigrants' lower returns to education within occupations, done in a second decomposition, using the expanded set of regression equations, including occupations as predictors.⁶ Earnings lost due to lower access to skilled occupations constitute the difference between this figure and the total earnings lost due to lower returns to education. This is the skill underutilization component.⁷

⁶ The decomposition for the equations with occupational categories is:

$$W_{NG}^{\circ} - W_{IG}^{\circ} = W_{NG} - W_{IG} = (K_{NG}^{\circ} - K_{IG}^{\circ}) + \sum_{i=1}^n X_{IGi} (\beta_{NGi}^{\circ} - \beta_{IGi}^{\circ}) + \sum_{j=n+1}^{n+m} X_{IGj} (\beta_{NGj}^{\circ} - \beta_{IGj}^{\circ}) + \sum_{i=1}^n (X_{NGi} - X_{IGi}) \beta_{NGi}^{\circ} + \sum_{j=n+1}^{n+m} (X_{NGj} - X_{IGj}) \beta_{NGj}^{\circ}, \quad (6)$$

where $\sum_{i=1}^n X_{IGi} (\beta_{NGi}^{\circ} - \beta_{IGi}^{\circ}) + \sum_{j=n+1}^{n+m} X_{IGj} (\beta_{NGj}^{\circ} - \beta_{IGj}^{\circ})$ represents the impact of differences in the value of characteristics which is not explained by occupational attainment.

⁷ The method used here is inspired by, but differs from, the one developed by Oaxaca. The objective here is to identify inter-group differences in returns to characteristics and to decompose this difference into the portion due to differences resulting from selection into particular occupations and from other reasons. The issue is the role of occupational selection in a causal sequence; hence, the analysis uses a sequence of regression equations, one with only human capital variables, and one with occupation.

Focusing on education, regression results show that although the labour market value of university credentials grew for most Canadians from 1996 to 2006, it was less for immigrants than for the native-born for both men and women. Table 6 figures are based on metric regression coefficients for possession of a bachelor's degree, and possession of a graduate or professional degree beyond the bachelor's degree, on unlogged earnings. They are ratios of the dollar value for immigrants to the dollar value for the native-born. For immigrant men, the dollar value of a bachelor's degree declined from 80 % of native-born to 67 %; the dollar value of a graduate or professional degree declined from 98 to 70 %. For women, there was more stability over time; all the ratios are in the range from 70 to 80 %. For immigrant women, the relative value of education was less than for men in 1996, but declined less rapidly so is actually somewhat higher than for men in 2006.

Most of the earnings disadvantages for immigrants remain after taking account of occupational attainments, indicating that lower access to such occupations is only one component of their lost earnings. Immigrants are paid considerably less than the native-born even when they have similar qualifications, are at similar ages, live in the same cities, have similar language knowledge, have similar racial backgrounds, and even work in the same occupational levels. However, our interest here is in the disadvantages that arise because of lack of access to skilled occupations, and that estimate is gained by subtracting the disadvantages for those working in skilled occupations from the overall disadvantage. This calculation is presented in Table 7. All earning figures are inflated to 2011 values. The overall earning deficits for immigrants are the amounts that immigrants would have received if their university qualifications had had the same labour market value as those of the native-born whites (row 2), over and above the actual mean earnings (row 1). The deficit due to inequity within occupations is calculated the same way, with occupational levels in the prediction equation (row 3). The difference is the deficit due to lower access to skilled occupations (row 4). These deficits are then summed across the population (row 5) to yield the aggregate earnings lost due to employment in less skilled occupations (row 6). The

Table 6 Immigrant education coefficients in earnings regressions, as ratio to native-born, 1996–2006

		Men	Women
1996	Immigrant bachelor's degree coefficient, ratio to native-born	0.80	0.78
	Immigrant professional or graduate degree coefficient, ratio to native-born	0.98	0.77
2001	Immigrant bachelor's degree coefficient, ratio to native-born	0.74	0.71
	Immigrant professional or graduate degree coefficient, ratio to native-born	0.79	0.77
2006	Immigrant bachelor's degree coefficient, ratio to native-born	0.67	0.79
	Immigrant professional or graduate degree coefficient, ratio to native-born	0.70	0.74

Regression estimates for unlogged earnings include terms for bachelor's degree, graduate or professional degree, age minus 20 (with quadratic), urban area of residence, official language knowledge, and three recent half-decade arrival cohorts. Source: Canadian census microdata, 1996, 2001, 2006; authors' analysis

Table 7 Earnings impacts of immigrant skill underutilization, 1996–2006, ages 20–64

	Men	Women	Total
1996 (1) Annual immigrant earnings, mean ^a	\$45,913	\$29,114	
(2) Immigrant earnings deficit—lower value of characteristics ^b	\$9,548	\$5,793	
(3) Immigrant deficit—lower value not explained by occupations ^c	\$8,814	\$2,690	
(4) Difference: deficit due to working in less skilled occupations ^d	\$734	\$3,103	
(5) Population estimate ^e	1,411,344	1,212,876	
(6) Aggregate earnings deficit due to less skilled occupations, \$ billion ^f	\$1.04	\$3.76	\$4.80
2001 (1) Annual immigrant earnings, mean ^a	\$46,209	\$30,246	
(2) Immigrant earnings deficit—lower value of characteristics ^b	\$10,978	\$6,273	
(3) Immigrant deficit—lower value not explained by occupations ^c	\$9,991	\$3,378	
(4) Difference: deficit due to working in less skilled occupations ^d	\$987	\$2,895	
(5) Population estimate ^e	1,698,633	1,501,756	
(6) Aggregate earnings deficit due to less-skilled occupations, \$ billion ^f	\$1.68	\$4.35	\$6.02
2006 (1) Annual immigrant earnings, mean ^a	\$51,882	\$33,172	
(2) Immigrant earnings deficit—lower value of characteristics ^b	\$22,192	\$10,453	
(3) Immigrant deficit—lower value not explained by occupations ^c	\$19,604	\$5,210	
(4) Difference: deficit due to working in less skilled occupations ^d	\$2,589	\$5,243	
(5) Population estimate ^e	1,520,922	1,418,506	
(6) Aggregate earnings deficit due to less skilled occupations, \$ billion ^f	\$3.94	\$7.44	\$11.37

Regression estimates based on bachelor's degree, and graduate or professional degree; additional variables include age minus 20 (with quadratic), urban area of residence, official language knowledge, and three recent half-decade arrival cohorts. Source: Canadian census microdata, 1996, 2001, 2006; authors' analysis

^a Adjusted to May 2011 dollars

^b Additional earnings assuming native-born education coefficients, white, not recent arrival

^c Similar to footnote b, with earnings estimated with occupational skills in equation. Regression identical to (footnote b), with professional and managerial occupations added

^d Row 2 minus row 3

^e Weighted N

^f Row 4 times row 5

aggregate earning losses are \$4.80 billion⁸ in 1996, rising to \$6.02 billion in 2001 and \$11.37 billion in 2006.

The losses are greater for women than for men in each of the three calculations. This reflects the fact noted earlier, that immigrant women with university and professional qualifications have less access to high skilled occupations than immigrant men. However, trends for men were more negative, so the earnings loss experienced by immigrant women declined somewhat as a proportion of the

⁸ This estimate of \$4.8 differs from the \$2.4 billion based on 1996 data reported in Reitz (2001, p. 370). First, the measures of education were adjusted to provide the same measures across the three censuses, resulting in an estimate for 1996 of \$3.1 billion. Second, all figures were inflated to 2011 dollars, resulting in the increase for 1996 data from \$3.1 billion to \$4.8 billion.

total, though it remained the largest share. Of the overall earnings lost due to lack of access to highly skilled occupations, women absorbed 78 % of the loss in 1996, 72 % of the loss in 2001, and 65 % of the loss in 2006.

Discussion and Conclusion

Our findings confirm that immigrant skill underutilization not only persists in Canada but has grown; its economic significance in real terms is now more than twice what it was in the mid-1990s. Skilled immigrants are a larger proportion of the immigrant population now than they were when the problem of 'brain waste' was identified. While they are a growing proportion of the Canadian workforce, their success in gaining access to professional and managerial occupations has declined over time; it is less in 2006 than it was in 2001. Based on census data, the economic impact measured in total annual earnings lost due to immigrant skill utilization has grown from about \$4.80 billion in 1996 to over \$11.37 billion in 2006 (figures inflated to May 2011 values).

These census-based figures represent maximum estimates based on the assumption of full equivalence of immigrant and native-born skill quality. Reitz (2001, pp. 363–372) suggested, based on evidence of the equivalence of foreign education and experience, that a downward adjustment of one third may be appropriate. In more limited data, lower literacy test scores for immigrants confirm the need for downward adjustment (Ferrer et al. 2006; Bonikowska et al. 2008), but available estimates vary widely and represent only rough approximations. More precise measurement of actual skill quality is needed but remains elusive.

At the same time, our data show that the low value of immigrant skills leads immigrants to be paid less than equally qualified native-born Canadians even when they work in occupations at the same skill level. This may be an artifact of the measurement of occupational skill, and using only ten occupational categories may allow significant variation in occupational skill levels within those categories. Nevertheless, skill underutilization is not the largest component of earnings disadvantage for immigrants; a larger—and growing—component is that immigrants are less well paid even when working in occupations at the same skill levels as native-born Canadians.

On balance, barriers to immigrant skill utilization persist in Canada. The impact of policies addressing this problem before 2006 has had little aggregate effect in producing meaningful change. Given the significance of immigration for Canadian economic development, the evaluation of current policies and consideration of future directions seem urgent. Despite the recent turn in policy away from skilled immigration toward immigrants with arranged employment, Canada will likely continue to have many traditional economic-class immigrants.

Although some policy changes described above were introduced since 2006, the fact that little impact is seen in the various initiatives up to 2006 is concerning. When the 2011 census data become available, they will provide a more up-to-date assessment. However, the data used here come from the long-form census, and the shift to a voluntary survey means that the 2011 census may be an unreliable tracking instrument for recent immigrants, particularly those struggling in employment.

There are, of course, many reasons why barriers persist. One is the sheer complexity of the problem. Not only does each professional group have its own qualifications and evaluation procedures, many occupations outside the regulated professions seek analytic and problem-solving skills, and education plays an increasing role as a qualifying criterion—jobs like sales supervision, human resource management, or public relations. In those occupations, addressing barriers to foreign-acquired skills poses enormous organizational challenges. Because of the lack of systematic standards in many unregulated fields, it is difficult for immigrants to demonstrate the value of their specific skills.

Racial and cultural difference is another problematic factor. Assessment of qualifications or professional competence is affected by social characteristics, including race and national origin, as well as gender, age, and other individual qualities (Esses et al. 2006). When discounting immigrant qualifications disproportionately affects visible minorities, as in Canada, this is racial discrimination. The discriminatory aspect of immigrant underemployment is clearly illustrated in cases coming before the Canadian Human Rights Commission. In a tribunal finding at Health Canada in 1997, denigration of minority qualifications was a key piece of evidence. The view that ethnic minorities may possess technical qualifications but lack ‘soft skills’ such as communication and decision-making perspective was found to play a significant role in low rates of promotion to management.

One reason for the continuing lack of improvement in the skill utilization of immigrants may be that labour market integration policies are unfocused and lack a systematic strategy. Immigrant service providers target programs based on relationships to sectors and/or employers that have evolved over time. For example, COSTI, one of the largest immigrant service providers in Ontario, offers a childcare program mainly because of its experience in that area, unrelated to immigrant settlement needs. The funding model in place at the federal and provincial levels, distributing resources to local service providers who identify needs, encourages this diffuse approach. Given the complexity of the basic problem and the diverse approaches to it, many immigrants remain unaware of programs that could help them.

Recent changes in immigrant selection introduced by the government in 2006 seek to get immigrants into employment more quickly, arguably helping reduce skill underutilization. First, in the selection of economic-class immigrants, selection criteria have shifted away from formal education toward official language knowledge and experience in particular occupational categories in current demand. These include professional fields like medicine, dentistry, and nursing, but also crane operators, drillers and blasters, and heavy-duty equipment mechanics. Second, use of temporary rather than permanent foreign workers has increased sharply, and there are new opportunities in the Canadian Experience Class for temporary workers to gain permanent status. Third, provinces nominate immigrants they believe will contribute most to the needs of local communities.

Notwithstanding the difficulties faced by skilled immigrants, evidence in Canada and elsewhere confirms that the highly skilled have more labour market success than less-skilled immigrants. Although many highly educated immigrants experience employment frustration over long periods, the statistics consistently show they do better than less educated and unskilled immigrants. Many well-educated immigrants achieve a significant degree of success in Canada; as noted, in 2006, over half of

university-educated immigrants worked in professional or semi-professional fields, and another 23 % worked as managers, supervisors, or in other skilled occupations. Highly educated immigrants are the hallmark of the success of Canadian immigration, and in the long run, they will always be more successful. Their skills mean they have greater ability to adapt to disappointment and create new opportunities even when their skills are not recognized.

Appendix

Regression estimates and means for native-born and immigrant men and women aged 20–64 with positive earnings, with human capital characteristics (top panel), and with occupational categories (bottom panel); 1996, 2001, and 2006 (see equations in notes 3 and 4 in the text)

Variable	Men				Women			
	Native-born		Immigrants		Native-born		Immigrants	
	Eq. 1	β	Eq. 2	B	Eq. 1	B	Eq. 2	B
Constant, K		8,713		22,969		6,706		13,113
Bachelor's degree	0.126	18,642	0.154	14,992	0.150	14,170	0.16197	11,002
Prof., Grad. Degree	0.040	37,629	0.090	36,785	0.028	28,229	0.05349	21,757
Age-20	18.524	3,300	22.415	2,233	17.903	1,928	21.26687	1,363
(Age-20)	465.204	-60	627.417	-40	437.420	-38	570.31682	-26
French	0.130	-7,884	0.025	-6,291	0.139	-3,729	0.02618	-1,367
French and English	0.224	-1,216	0.136	117	0.219	983	0.12558	3,029
Non-off. language			0.030	-8,000		0	0.03829	-6,053
Toronto	0.098	9,910	0.362	3,560	0.105	9,479	0.37289	6,244
Montreal	0.114	2,669	0.113	-3,799	0.117	3,229	0.10163	-1,662
Vancouver	0.051	7,398	0.127	1,905	0.053	7,093	0.13291	4,427
Black	0.004	-10,116	0.062	-10,095	0.005	-5,027	0.07524	133
Chinese	0.004	-5,060	0.117	-9,558	0.005	472	0.12882	312
South Asian	0.002	-7,629	0.105	-7,312	0.002	-6,051	0.09362	-2,684
Filipino	0.000	-13,756	0.029	-10,486	0.000	-9,168	0.05441	-821
Other visible minority	0.004	-5,824	0.125	-9,055	0.004	-1,259	0.11163	-2,148
Cohort 0–5 years			0.121	-18,882			0.12766	-13,063
Cohort 6–10 years			0.155	-11,631			0.15372	-8,075
Cohort 11–15 years			0.085	-6,760			0.09124	-4,684
	Eq. 3		Eq. 4		Eq. 3		Eq. 4	
	X	β	X	β	X	β	X	β
Constant, K		5,410		18,414		2,819		8,431
Bachelor's degree	0.126	10,888	0.154	7,576	0.150	6,880	0.162	4,827
Prof., grad. degree	0.040	27,825	0.090	25,520	0.028	18,207	0.053	12,257
Age-20	18.524	2,919	22.415	1,990	17.903	1,526	21.267	1,174
(Age-20)	465.204	-54	627.417	-35	437.420	-30	570.317	-22
French	0.130	-6,455	0.025	-5,180	0.139	-2,929	0.026	-210

French and English	0.224	-2,089	0.136	-1,267	0.219	171	0.126	1,154
Non-off. language		0	0.030	-5,546		0	0.038	-2,407
Toronto	0.098	8,687	0.362	3,525	0.105	8,197	0.373	5,749
Montreal	0.114	2,358	0.113	-2,990	0.117	2,743	0.102	-857
Vancouver	0.051	6,339	0.127	1,661	0.053	6,187	0.133	3,937
Black	0.004	-8,663	0.062	-7,950	0.005	-3,691	0.075	361
Chinese	0.004	-5,690	0.117	-9,889	0.005	1	0.129	100
South Asian	0.002	-7,033	0.105	-5,696	0.002	-5,528	0.094	-1,256
Filipino	0.000	-12,801	0.029	-6,190	0.000	-7,019	0.054	1,767
Other visible minority	0.004	-5,817	0.125	-7,913	0.004	-1,037	0.112	-1,253
Cohort 0–5 years		0	0.121	-16,865		0	0.128	-10,558
Cohort 6–10 years		0	0.155	-9,952		0	0.154	-6,370
Cohort 11–15 years		0	0.085	-5,570		0	0.091	-3,563
Managers	0.115	25,447	0.128	22,042	0.063	22,635	0.062	18,791
Professionals	0.125	18,120	0.160	21,189	0.175	20,391	0.154	19,847
Semi-prof. and technicians	0.060	9,946	0.060	7,360	0.059	11,594	0.046	10,659
Supervisors	0.067	8,986	0.052	9,992	0.027	11,526	0.024	10,215
Admini. and senior clerical	0.016	13,015	0.016	11,301	0.109	11,449	0.087	10,963
Skilled crafts and service	0.046	13,804	0.058	3,085	0.042	6,817	0.042	4,633
Skilled sales and trades	0.141	8,279	0.123	6,365	0.007	4,778	0.011	807
Clerical Personnel	0.058	1,624	0.055	847	0.179	8,649	0.158	6,321
Intern sales and service	0.072	3,456	0.060	-494	0.172	673	0.162	-644
Mean earnings	45,849		45,913		29,116		29,115	
<i>N</i>	159,548		39,204		140,779		33,691	

2001

Variable	Men				Women			
	Native-born		Immigrants		Native-born		Immigrants	
	Eq. 1		Eq. 2		Eq. 1		Eq. 2	
	X	β	X	B	X	B	X	B
Constant, <i>K</i>		13,828		29,853		8,869		17,705
Bachelor's degree	0.120	21,063	0.175	16,052	0.152	14,820	0.17976	10,976
Prof., grad. degree	0.039	38,620	0.100	31,369	0.032	27,094	0.06403	21,756
Age–20	18,398	2,995	23.358	2,077	17.656	1,817	22.03981	1,228
(Age–20)	518.827	-54	715.194	-39	477.251	-34	638.98152	-24
French	0.121	-8,592	0.024	-7,280	0.130	-4,116	0.02836	-3,383
French and English	0.226	-1,629	0.140	1,071	0.235	1,240	0.12841	2,697
Non-off. language		0	0.026	-8,970		0	0.03343	-5,746
Toronto	0.102	11,035	0.391	3,857	0.107	9,502	0.39788	5,891
Montreal	0.111	2,966	0.112	-5,918	0.116	3,038	0.09897	-1,289
Vancouver	0.051	4,369	0.129	144	0.051	5,973	0.13834	3,264
Black	0.007	-8,890	0.064	-12,014	0.007	-2,893	0.07786	-1,755
Chinese	0.006	-7,013	0.127	-10,716	0.006	-4	0.1396	-1,419
South Asian	0.005	-8,257	0.135	-8,603	0.005	-3,717	0.11715	-3,103
Filipino	0.001	-6,844	0.036	-11,867	0.001	-3,969	0.05837	-2,236
Other visible minority	0.006	-4,483	0.147	-10,167	0.006	-2,155	0.13883	-3,296
Cohort 0–5 years			0.112	-23,175			0.1072	-14,948
Cohort 6–10 years			0.161	-12,339			0.17537	-9,295
Cohort 11–15 years			0.155	-9,023			0.15808	-5,561

	Eq. 3		Eq. 4		Eq. 3		Eq. 4	
	X	β	X	β	X	β	X	β
Constant, <i>K</i>		10,022		23,593		5,099	30245.6	12,119
Bachelor's degree	0.120	13,125	0.175	8,555	0.152	7,903	0.180	5,450
Prof., grad. degree	0.039	28,688	0.100	20,524	0.032	17,791	0.064	13,503
Age-20	18.398	2,632	23.358	1,863	17.656	1,454	22.040	1,078
(Age-20)	518.827	-48	715.194	-35	477.251	-27	638.982	-21
French	0.121	-6,808	0.024	-5,746	0.130	-3,194	0.028	-2,724
French and English	0.226	-2,310	0.140	-362	0.235	521	0.128	1,022
Non-off. language			0.026	-6,043		0	0.033	-2,643
Toronto	0.102	9,573	0.391	3,632	0.107	8,265	0.398	5,414
Montreal	0.111	2,563	0.112	-5,533	0.116	2,690	0.099	-242
Vancouver	0.051	3,432	0.129	-162	0.051	5,244	0.138	2,984
Black	0.007	-7,712	0.064	-9,524	0.007	-2,644	0.078	-720
Chinese	0.006	-7,253	0.127	-10,868	0.006	-498	0.140	-1,267
South Asian	0.005	-8,075	0.135	-6,378	0.005	-3,716	0.117	-1,441
Filipino	0.001	-7,126	0.036	-7,600	0.001	-3,199	0.058	389
Other visible minority	0.006	-4,016	0.147	-8,768	0.006	-1,991	0.139	-2,372
Cohort 0-5 years			0.112	-19,161		0	0.107	-12,654
Cohort 6-10 years			0.161	-10,951		0	0.175	-7,544
Cohort 11-15 years			0.155	-7,671		0	0.158	-4,099
Managers	0.118	27,228	0.136	23,748	0.076	22,488	0.079	19,678
Professionals	0.124	18,310	0.178	22,168	0.172	18,887	0.168	18,574
Semi-prof. and technicians	0.069	8,445	0.070	7,933	0.086	7,929	0.074	6,782
Supervisors	0.059	8,090	0.041	10,038	0.028	8,522	0.024	9,154
Admini. and senior clerical	0.015	10,373	0.014	8,589	0.098	10,360	0.084	4,220
Skilled sales and service	0.042	12,179	0.050	4,012	0.038	6,786	0.039	4,220
Skilled crafts and trades	0.146	8,425	0.126	7,786	0.009	5,385	0.013	3,661
Clerical Personnel	0.049	369	0.048	823	0.147	7,505	0.136	5,441
Inter-sales and service	0.069	3,288	0.057	351	0.162	1,090	0.143	397
Mean earnings	44,790		46,209		29,196		30245.6	
<i>N</i>	159,548		45,909		140,779		40,588	
2006	Men				Women			
	Native-born		Immigrants		Native-born		Immigrants	
Variable	Eq. 1		Eq. 2		Eq. 1		Eq. 2	
	X	β	X	B	X	B	X	B
Constant, <i>K</i>		7,188		35,187		4,509		17,947
Bachelor's degree	0.140	32,985	0.218	20,695	0.183	17,947	0.22995	13,672
Prof., grad. degree	0.043	67,158	0.110	44,404	0.041	38,508	0.07781	27,504
Age-20	20.675	4,019	23.604	2,329	20.204	2,442	22.78721	1,551
(Age-20)	572.482	-74	690.347	-42	547.957	-46	647.57452	-30
French	0.130	-13,393	0.026	-4,884	0.142	-5,755	0.03159	8
French and English	0.222	-3,838	0.134	5,501	0.224	1,676	0.12922	5,820
Non-off. language		0	0.027	-11,323		0	0.03568	-8,093
Toronto	0.099	17,845	0.447	959	0.103	11,724	0.45561	4,529
Montreal	0.113	2,342	0.127	-15,082	0.118	2,798	0.12077	-6,524
Vancouver	0.049	6,074	0.144	-3,820	0.050	3,875	0.15556	950

Black	0.007	-16,033	0.069	-16,188	0.008	-6,057	0.08198	-1,388
Chinese	0.008	-6,498	0.146	-16,069	0.008	513	0.1552	-2,836
South Asian	0.006	-12,181	0.171	-11,699	0.006	-3,058	0.15027	-6,059
Filipino	0.002	-13,211	0.046	-16,056	0.002	-83	0.0704	-2,182
Other visible minority	0.006	-9,678	0.144	-15,136	0.006	-1,184	0.1365	-4,666
Cohort 0–5 years			0.118	-30,152			0.11722	-20,458
Cohort 6–10 years			0.155	-20,587			0.15296	-13,228
Cohort 11–15 years			0.150	-12,744			0.16049	-8,462
	Eq. 3		Eq. 4		Eq. 3		Eq. 4	
	X	β	X	β	X	β	X	β
Constant, K		1,008		24,057		-1,611		9,360
Bachelor's degree	0.140	20,981	0.218	8,754	0.183	9,026	0.230	5,755
Prof., grad. degree	0.043	51,472	0.110	27,144	0.041	26,364	0.078	15,576
Age–20	20.675	3,444	23.604	2,060	20.204	2,002	22.787	1,369
(Age–20)	572.482	-62	690.347	-36	547.957	-37	647.575	-25
French	0.130	-11,007	0.026	-3,457	0.142	-4,828	0.032	769
French and English	0.222	-4,986	0.134	2,753	0.224	685	0.129	3,564
Non-off. language		0	0.027	-7,042		0	0.036	-3,431
Toronto	0.099	15,299	0.447	884	0.103	9,985	0.456	3,742
Montreal	0.113	1,405	0.127	-13,102	0.118	2,110	0.121	-5,487
Vancouver	0.049	4,139	0.144	-3,894	0.050	2,721	0.156	447
Black	0.007	-13,386	0.069	-11,953	0.008	-4,988	0.082	-216
Chinese	0.008	-6,076	0.146	-15,847	0.008	351	0.155	-2,004
South Asian	0.006	-11,840	0.171	-8,451	0.006	-2,972	0.150	-3,163
Filipino	0.002	-13,038	0.046	-8,753	0.002	49	0.070	1,250
Other visible minority	0.006	-9,353	0.144	-12,968	0.006	-868	0.137	-2,863
Cohort 0–5 years		0	0.118	-24,994		0	0.117	-16,147
Cohort 6–10 years		0	0.155	-17,775		0	0.153	-10,540
Cohort 11–15 years		0	0.150	-11,008		0	0.160	-6,505
Managers	0.116	46,231	0.123	42,559	0.076	32,348	0.068	28,944
Professionals	0.134	28,010	0.181	35,336	0.193	32,348	0.068	28,944
Semi-prof. and technicians	0.073	11,743	0.073	10,872	0.095	10,556	0.075	7,846
Supervisors	0.052	13,388	0.032	14,879	0.024	12,251	0.020	12,601
Admini. and senior clerical	0.017	15,770	0.015	18,924	0.095	13,962	0.074	13,677
Skilled sales and service	0.039	20,251	0.047	7,247	0.037	10,738	0.033	5,940
Skilled crafts and trades	0.161	12,818	0.120	9,068	0.008	9,408	0.008	3,831
Clerical Personnel	0.052	2,090	0.055	6,600	0.153	10,390	0.143	9,113
Intern sales and service	0.067	6,425	0.059	5,117	0.147	3,688	0.140	2,098
Mean earnings	55,087		51,883		34,588		33,173	
N	15,948		39,204		140,779		33,691	

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