

Occupational Upgrading and Within-Occupation Wage Gaps: Immigrant Earnings Integration in Canada, 2006–2021*

Abstract

This paper studies immigrant earnings integration in Canada using Labour Force Survey data from 2006 to 2021 and an empirical framework that separately models actual wages, counterfactual wages predicted from age- and gender-specific native wage profiles within detailed occupations, and the within-occupation wage gap between actual and predicted wages. This separation allows us to distinguish wage growth driven by occupational upgrading from within-occupation wage convergence. We find that years since migration are associated with substantial wage growth, led by occupational upgrading at arrival and increasingly by within-occupation convergence at longer durations. While within-occupation wage gaps do narrow modestly over time, convergence along this margin remains slow and incomplete. This pattern holds by gender, though precision varies by region of origin. The results indicate persistent gaps reflect both limited access to high-paying occupations and differential pay within jobs, with relative importance shifting over time. This highlights occupational placement and within-occupation pay as central, evolving margins along which immigrant earnings integration unfolds in Canada.

JEL classification

J15, J24, J31

Keywords

immigration, economic integration, occupational placement, wage gaps, human capital utilization

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* Statements and Declarations

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1 Introduction

Economic integration is central to the success of immigration-based growth strategies. In Canada, immigration plays a critical role in sustaining labor force growth, supporting public finances, and offsetting population aging. Reflecting these objectives, Canada’s points-based selection system increasingly prioritizes education, work experience, and language proficiency. Yet despite this strong human-capital orientation, sizable and persistent wage gaps between immigrants and the native-born remain a defining feature of the Canadian labor market.

A large literature documents that these gaps cannot be explained by observable characteristics alone. Even as immigrants arrive with higher levels of formal education than both earlier cohorts and native-born workers, wage gaps at entry remain substantial, and convergence over time is slow and incomplete. These patterns could be due to imperfect transferability of foreign-acquired human capital and to frictions in how immigrants are allocated across jobs and rewarded within them. Understanding the mechanisms through which immigrant wages evolve is therefore essential for diagnosing whether observed gaps reflect misallocation across occupations, differential pay within occupations, or both.

This distinction is especially relevant in the current labor-market context. Technological change, the diffusion of artificial intelligence, and the expansion of remote and hybrid work are reshaping how tasks are performed, how workers are matched to jobs, and how productivity is rewarded. These broader labor-market transformations may alter how occupational matching, credential recognition, and productivity are rewarded over time, potentially affecting immigrant earnings integration.

This paper contributes to the literature by explicitly separating where immigrants work from how they are paid once there. We develop an empirical framework that separates immigrant-native wage differentials into (i) a between-occupation component, reflecting occupational placement into higher- or lower-paying jobs, and (ii) a within-occupation component, reflecting wage differences relative to native workers performing similar jobs. This separation allows us to identify the dominant channels through which earnings integration unfolds over time.

In the first step, we construct detailed native-based wage benchmarks using the Canadian Labour Force Survey (LFS) at the 5-digit National Occupational Classification (NOC_5) level. For each occupation, we estimate age- and gender-specific wage profiles among natives and use these estimates to generate counterfactual wages for all workers – native and immigrant – as if they were paid according to the native wage structure in their occupation. These benchmarks capture the wage levels associated with workers’ occupational placement under native wage schedules and provide a measure of occupational placement independent of within-occupation wage differences relative to native wage schedules.

In the second step, we estimate three separate ordinary least squares (OLS) regressions for actual wages, predicted native-based wages, and the within-occupation wage gap between actual and predicted wages. Estimating these equations separately allows direct comparison of the determinants of observed wages, occupational placement, and within-occupation earnings differences. The framework also allows us to evaluate whether immigrant earnings growth occurs primarily through movement into

higher-paying occupations or through wage convergence within occupations. Because the benchmark wage component is estimated rather than observed, the second-stage coefficient estimates inherit uncertainty from the first-stage benchmark construction. We account for this uncertainty using a nonparametric two-step stratified bootstrap with 500 replications, implemented in Stata via `strata(NOC_5)`. In each replication, individual observations are resampled with replacement independently within each five-digit occupation, so that the number of observations in every occupation is preserved in each replication; the occupation-specific native wage equations are then re-estimated on the resampled data, benchmark wages are reconstructed, and all three second-stage regressions are re-estimated. The Labour Force Survey final person weight, attached to each resampled observation, is applied in both stages of estimation. The resulting bootstrap standard errors therefore incorporate uncertainty from both the construction of the native wage benchmark and the second-stage regressions.

Using nationally representative LFS microdata from 2006 to 2021, the analysis yields four central findings. First, immigrants earn substantially less than natives even within the same detailed occupations. The within-occupation wage gap (Actual–Predicted) is negative and statistically significant across all regions of origin, indicating persistent wage differences relative to native wage benchmarks.

Second, earnings integration occurs but remains incomplete. Years since migration are associated with higher actual wages for immigrants, with this growth reflecting both occupational upgrading into higher-paying jobs and within-occupation wage convergence. While within-occupation wage gaps do narrow modestly with years in Canada, the relative importance of the two channels shifts over time: occupational upgrading is the larger channel soon after arrival, while within-occupation convergence becomes the larger channel at longer durations since migration.

Third, gender differences compound immigrant wage gaps. Women exhibit flatter wage profiles and slower occupational upgrading trajectories than men, contributing to weaker overall convergence. Although education mitigates both occupational differences and within-occupation wage gaps – particularly for women – substantial gaps relative to native benchmarks persist across genders and regions of origin.

Fourth, substantial heterogeneity remains across immigrant source regions even after controlling for observable characteristics. Immigrants from Africa and Asia/Oceania exhibit the largest persistent within-occupation wage gaps relative to native benchmarks, while immigrants from North America and Europe generally experience smaller within-occupation wage gaps relative to native benchmarks. These findings suggest that occupational mobility alone does not fully eliminate immigrant-native earnings differences once workers enter similar jobs.

Together, these findings reframe immigrant earnings integration as a process that operates through both gradual occupational reallocation and slowly narrowing within-occupation wage gaps, with the relative importance of these two channels shifting over the migration life-cycle. While within-occupation wage gaps remain an important feature of immigrant labor-market outcomes, dynamic wage growth is associated with both movement toward higher-paying occupations and gradual wage convergence within occupations.

The paper makes three contributions. Empirically, it provides new evidence on

immigrant-native wage differentials using fine occupational detail and a long time span. Methodologically, it introduces a two-component accounting framework based on native-based occupational wage benchmarks and separate OLS estimation of actual wages, predicted wages, and within-occupation wage gaps. Substantively, it clarifies the relative importance of occupational mobility versus within-occupation wage adjustment in shaping immigrant earnings integration, with implications for policies aimed at improving occupational matching, facilitating the recognition and transferability of immigrants’ observable skills, and reducing persistent wage gaps relative to native benchmarks. These policy implications should be interpreted cautiously, however, because occupational placement itself is endogenous and may reflect broader institutional, informational, and employer-side frictions that are not directly identified within the present empirical framework.

The remainder of the paper proceeds as follows. Section 2 reviews the literature on immigrant earnings integration, occupational mismatch, and human capital transferability. Section 3 describes the data and construction of native-based occupational benchmarks. Section 4 presents the empirical framework and OLS results, including subgroup analyses by gender and region of origin. Section 5 discusses policy implications and directions for future research, with an emphasis on facilitating occupational mobility while addressing persistent within-occupation wage gaps.

2 Background

The economic integration of immigrants has been studied extensively in the United States and Canada. Early U.S. work, notably [Chiswick \(1978\)](#), uses cross-sectional data and shows fast apparent convergence in earnings with years since migration. Later studies ([Borjas \(1985, 1995\)](#); [LaLonde and Topel \(1992\)](#)) argue that repeated cross-sections conflate life-cycle growth with cohort differences, shifting emphasis toward cohort-based designs that disentangle arrival-time effects from within-migration dynamics. Our design, based on repeated cross-sections without landing-cohort fixed effects, is subject to the same conflation of duration and cohort effects; we return to this limitation in Section 4.

The Canadian literature follows a similar trajectory but under distinct institutional and demographic conditions. Numerous studies document sizable entry wage gaps and slower post-arrival wage growth for more recent immigrant cohorts ([Picot and Sweetman \(2005\)](#); [Aydemir and Skuterud \(2005\)](#); [Frenette and Morissette \(2005\)](#); [Green and Worswick \(2010\)](#); [Schaafsma and Sweetman \(2001\)](#)). Early cohorts experienced faster integration, whereas more recent arrivals face larger initial penalties and a greater risk of persistent low earnings, commonly linked to shifts in source-country composition, weaker transferability of foreign human capital, and evolving selection criteria.

A related concern is whether observed earnings convergence reflects true wage growth or compositional changes. Using longitudinal tax data, [Picot and Piraino \(2013\)](#) show that, unlike in the United States, selective attrition introduces little bias in estimated earnings gaps in Canada, as similar exit patterns are observed among natives. At the same time, migration is not always permanent: [Aydemir and Robinson](#)

(2008) document substantial return and onward migration, particularly among skilled immigrants, which can still affect cohort composition and the interpretation of earnings trajectories in repeated cross-sections. A complementary explanation emphasizes broader labor-market conditions at the time of entry. [Green and Worswick \(2010\)](#) show that part of the decline in immigrant entry earnings reflects cohort-wide declines affecting all new labor market entrants, not just immigrants. By comparing immigrants to Canadian-born workers entering the labor market at the same time, they demonstrate that deteriorating outcomes are partly driven by general macroeconomic and cohort effects. However, immigrants still experience larger declines, which they attribute primarily to a sharp fall in the returns to foreign work experience and its reduced transferability — an effect closely linked to changing source-country composition.

More subtly, [Li and Sweetman \(2014\)](#) link the economic return to foreign education to the "quality" of source-country education (as measured by source-country administered standardized tests), observing that immigrants from source countries with higher test scores have higher returns to education in Canada. Recent evidence points to modest gains post-2010: [Crossman et al. \(2021\)](#) show adjusted gaps narrowed somewhat after 2015 alongside better employment outcomes, and [Hou \(2024\)](#) report further narrowing for recent cohorts, plausibly tied to two-step migration and Express Entry ([Hou et al. \(2020\)](#); [Hou and Picot \(2024\)](#)).

A central mechanism in the international literature is the limited transferability of human capital across borders, especially that associated with (sometimes imputed) work experience ([Chiswick and Miller \(2009\)](#)). Canadian studies point to the importance of human capital, especially pre-migration experience and English language skills. An alternative but complementary mechanism emphasizes differences in job search behavior. [Bowlus et al. \(2016\)](#) show that newly arrived immigrants face significantly lower job-offer arrival rates than natives, particularly while employed, which limits wage growth through job mobility. Their estimates suggest that these search frictions can account for a large share of the immigrant–native earnings gap and that convergence occurs slowly as immigrants acquire knowledge of the local labor market over time. [Warman et al. \(2015\)](#) highlight interactions among English language fluency, educational credentials and occupational matching to illustrate how language skills and occupational matching mediate the returns to pre-Canadian education and work experience. Of particular relevance to this paper, the commonly observed low rate of return to education for new immigrants appears to be a combination of zero for those with poor English skills who do not match occupations, and a large return for those who are the opposite on both counts. [Truong and Sweetman \(2018\)](#) focus on the information technology industry and use measures of numeracy, technology skills and English/French literacy, finding that these are predictors of observed immigrant earnings gaps. Beyond average gaps, research distinguishes placement across occupations from pay differences within them ([Liu et al. \(2004\)](#); [Aydede and Dar \(2016\)](#); [Javdani and McGee \(2018\)](#)). Theory similarly motivates separating occupational allocation from within-occupation wage setting ([Erosa et al. \(2024\)](#)).

Broader comparative reviews emphasize three recurring mechanisms — occupational sorting, credential transferability, and heterogeneous returns — and the value of

conditioning on fine occupational classifications when decomposing immigrant-native wage gaps (Edo et al. (2020)). Our design remains comparable to foundational and contemporary U.S./Canadian studies (Chiswick (1978); Borjas (1985, 1995); Picot and Sweetman (2005); Frenette and Morissette (2005)). Our study links Canadian evidence on wage integration, limited transferability, and occupational mismatch with these productivity mechanisms. Empirically, our two-component accounting framework bridges the two: by separating wage differences associated with (i) occupational placement from (ii) within-occupation pay, our framework distinguishes wage differences associated with occupational placement from those observed within occupations, providing evidence on the channels through which immigrant earnings integration evolves.

3 Data Description

This study uses nationally representative microdata from Statistics Canada’s Canadian Labour Force Survey (LFS) to analyze the labor market integration of immigrants between 2006 and 2021. The analysis pools the March and September survey waves to reduce seasonal variation in employment and earnings. We restrict the sample to employed individuals aged 25–54.¹ The data contain detailed demographic, educational, and occupational information coded at the 5-digit National Occupational Classification (NOC_5) level, allowing consistent comparisons of wage outcomes across more than 500 occupational groups.² Hourly wages from respondents’ main jobs are adjusted to constant 2021 dollars using the CPI, and observations with missing wage data are excluded. Immigrants are identified as those who landed in Canada as permanent residents at age 25 or older,³ and landing cohorts are constructed to track integration patterns over time.

3.1 Income and Wage Trends by Cohort, Gender, and Age-at-Arrival

Table 1 shows persistent wage gaps between immigrants and natives across cohorts,⁴ genders, and age-at-arrival groups. At entry, immigrants earn roughly 20–25% less than comparable natives, and although their wages rise with time in Canada, convergence remains incomplete even after a decade. Gender differences are pronounced: immigrant women consistently earn less than both immigrant men and native women. This pattern is consistent with earlier evidence showing that immigrant

¹This age window was chosen for two reasons. First, the model does not incorporate post-arrival education, and we therefore assume that by age 25 most migrants have completed their formal schooling. Second, the analysis focuses on first-generation immigrants, rather than the second generation.

²Examples of 5-digit NOC occupational groups in our sample include: software engineers and designers; registered nurses; mechanical engineers; accountants and financial auditors; retail sales supervisors; transport truck drivers; cooks; customer service representatives; early childhood educators and assistants; and construction trades helpers and laborers. For transparency, we report the full list of NOC_5 codes and titles used in our analysis in Appendix Tables A.5 and A.6. For reference, we also show the broader 1-digit major groups (10 categories) alongside the detailed 5-digit groups (500+ categories).

³Immigrants between the ages of 25 and 54 who landed in Canada when they were younger than 25 years old were dropped from the sample.

⁴Median earnings patterns, reported in Appendix Table A.1, mirror the mean comparisons presented in Table 1.

women experience much weaker post-arrival wage growth, with adjustment rates that are often statistically insignificant, implying that initial wage gaps tend to persist over the life cycle. One explanation emphasizes a family investment strategy, whereby immigrant women’s labor supply and earnings trajectories are shaped by the need to support household-level human capital investment, particularly that of spouses, resulting in flatter individual earnings profiles over time. In addition, gaps are especially pronounced among highly educated immigrant women, reflecting difficulties in the recognition and transferability of foreign credentials (Beach and Worswick, 1993). These descriptive patterns motivate the econometric framework in Section 4, which divides total wage gaps into between- and within-occupation components.

3.2 Demographic and Structural Shifts

Tables 2–4 offer glimpses into demographic and structural shifts in the immigrant population in Canada. Across the 2006–2021 period, immigrants became both more geographically dispersed and more highly educated, with origins increasingly concentrated in Asia and Africa. The immigrant share of Canada’s working-age population rose from 12.1% to 18.5%, while settlement patterns diversified beyond Ontario toward Quebec, Alberta, and the Prairie and Atlantic provinces—partly due to the expansion of Provincial Nominee Programs (PNPs). Educational attainment increased sharply: the share of immigrants with a bachelor’s degree or higher climbed from 38.2% to 60.0%, compared with a rise from 23.2% to 32.7% among natives. Finally, the regional composition of immigrants shifted further toward Asia and Africa over the 2006–2021 period. The share originating from Asia/Oceania increased from 52.2% to 59.7%, while the African share rose from 7.8% to 12.8%. At the same time, the share from Europe declined from 24.1% to 15.0%, reflecting ongoing changes in Canada’s immigration selection system and source-country composition. These transformations provide the structural backdrop for interpreting the observed wage patterns and occupational integration trends discussed above.

3.3 Descriptive Occupational and Wage Patterns

Note that Figures 1–3 and Appendix Figures A.1–A.4 use a broader age range of 25–64, rather than the 25–54 regression sample described in Section 3, so that age and years-since-migration profiles can be shown over their full span. The regression sample is restricted to ages 25–54 for the reasons given in footnote 1. Because the two age windows serve different purposes, the descriptive figures in this section are not directly comparable to the regression estimates reported in Section 4. Here we begin by examining descriptive patterns of wages and occupational placement by age and immigrant status (Figures 1–2).

Figure 1 shows that immigrants earn substantially lower wages than natives across the age distribution. Although immigrant wages increase with age, sizeable wage gaps persist throughout the life cycle.

Figure 2 documents the age distribution by immigrant status. Immigrants are concentrated between ages 30 and 45, which helps explain the relatively smooth age-earnings profile shown for immigrants in Figure 1.

Table 1: Mean Positive Weekly Earnings of Natives and Immigrants by Gender by Entry Age Group at Entry and 10 Years After Entry (2021 Dollars)

Year	Immigrant Cohort	Native	Immigrant	Native Male	Immigrant Male	Native Female	Immigrant Female
Entry Age: 25–34							
<i>At Entry</i>							
2006	2001–2005	995	792	1102	880	878	707
2011	2006–2011	1040	822	1146	924	925	717
2016	2012–2016	1082	924	1198	1009	961	822
2021	2017–2021	1121	1096	1208	1218	1032	945
<i>In 10 Years After Entry</i>							
2016	2001–2005	1334	1133	1499	1449	1156	925
2021	2006–2011	1381	1163	1531	1372	1219	986
Entry Age: 35–44							
<i>At Entry</i>							
2006	2001–2005	1161	921	1353	1052	961	730
2011	2006–2011	1245	901	1411	1007	1075	760
2016	2012–2016	1334	897	1499	1036	1156	718
2021	2017–2021	1381	1112	1531	1307	1219	837
<i>In 10 Years After Entry</i>							
2016	2001–2005	1330	1134	1536	1301	1127	943
2021	2006–2011	1411	1095	1587	1329	1237	878

Note: We use Canadian LFS Master Files from 2006 to 2021. We restrict our sample to individuals aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, in the data. To mitigate the influence of outliers, we trim the top 1% of observations among those with positive total earnings. Immigrant cohort entry into the Canadian labor market is defined by the closest following census year. Landing cohorts are defined by year of landing, with boundaries anchored to census years (2001, 2006, 2011, 2016, 2021). Most cohorts span five years; the 2006–2011 cohort spans six years (landing years 2006 through 2011 inclusive) because cohort boundaries follow census-year anchors rather than a fixed five-year width. 'At entry' refers to each cohort's earliest available survey observation post-landing (within 0–5 years since migration); '10 years after entry' refers to the same cohort's outcomes roughly a decade later, subject to the same range. We use sample selection weights to estimate the relevant statistics.

Table 2: Immigrant Provincial Distribution (%)

	2006	2011	2016	2021
Share in Working-Age Population				
Canada	12.12	13.17	15.85	18.51
Distribution Across Provinces				
Alberta	8.95	12.48	12.84	12.09
British Columbia	15.74	15.52	14.55	15.98
Manitoba	2.57	3.54	3.94	3.76
New Brunswick	0.31	0.43	0.37	0.52
Newfoundland and Labrador	0.09	0.16	0.12	0.14
Nova Scotia	0.52	0.63	0.59	0.96
Ontario	57.36	50.99	49.31	44.85
Prince Edward Island	0.05	0.08	0.10	0.19
Saskatchewan	0.76	1.49	2.31	2.43
Quebec	13.66	14.68	15.85	19.08

Note: The first row reports the immigrant share of the working-age population (25–54). The two panels use different denominators: The top panel reports immigrants as a share of the total working-age population, whereas the bottom panel reports each province’s share of the immigrant working-age population. We use the Canadian Labour Force Survey (2006–2021) and restrict to workers with positive hourly earnings residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. Individuals with missing immigrant status are excluded. All estimates are weighted using sample weights. Missing statistics could not be released due to Statistics Canada RDC disclosure rules.

In Figure 3, natives are consistently more represented in high-paying occupations across the age distribution. Immigrants are also observed in high-paying occupations at all ages, but their representation remains below that of natives throughout the age profile. The \$32.88 cutoff, mentioned in the figure’s footnote, is a descriptive device rather than a structural threshold: because it is the unweighted mean of occupation-level mean wages across NOC_5 categories rather than an employment- or quantile-weighted cutoff, its exact value would shift somewhat under alternative definitions (e.g., the median or top tertile of occupation-level earnings); however, the qualitative pattern — natives more represented than immigrants in higher-paying occupations at every age — is unlikely to depend on this choice, since natives out-earn immigrants within nearly every occupational category shown in Figure 7. This descriptive pattern is consistent with mechanisms emphasized in the literature, such as incomplete credential recognition, language barriers, and employer screening, although these channels are not directly identified by the present estimates.

Figures 4–6 relate occupational composition to mean hourly wages across 3-digit NOC groups (vertical axis: mean hourly earnings; horizontal axis: group shares).

Figure 4 shows a negative association between immigrant concentration and wages: occupations with more immigrants pay less on average, consistent with clustering in lower-wage jobs and contributing to aggregate differentials.

Table 3: Educational Attainment of Natives and Immigrants (%)

Year	Below HS	HS	Below BAC	BAC	Above BAC
Natives					
2006	12.73	20.42	43.64	17.15	6.06
2011	10.09	19.43	45.97	17.74	6.77
2016	8.35	18.63	44.97	20.17	7.87
2021	6.14	16.75	44.43	23.69	8.99
Immigrants					
2006	10.67	16.01	31.15	25.23	16.95
2011	7.18	15.02	29.73	28.01	20.06
2016	6.1	13.65	27.63	31.88	20.74
2021	4.43	10.68	24.88	34.95	25.07

Note: We use the Canadian Labour Force Surveys from 2006 to 2021. We restrict our sample to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, who are surveyed in March or September of each year. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. Missing statistics could not be released due to regulations by Statistics Canada RDC.

Table 4: Immigrant Region of Origin (%)

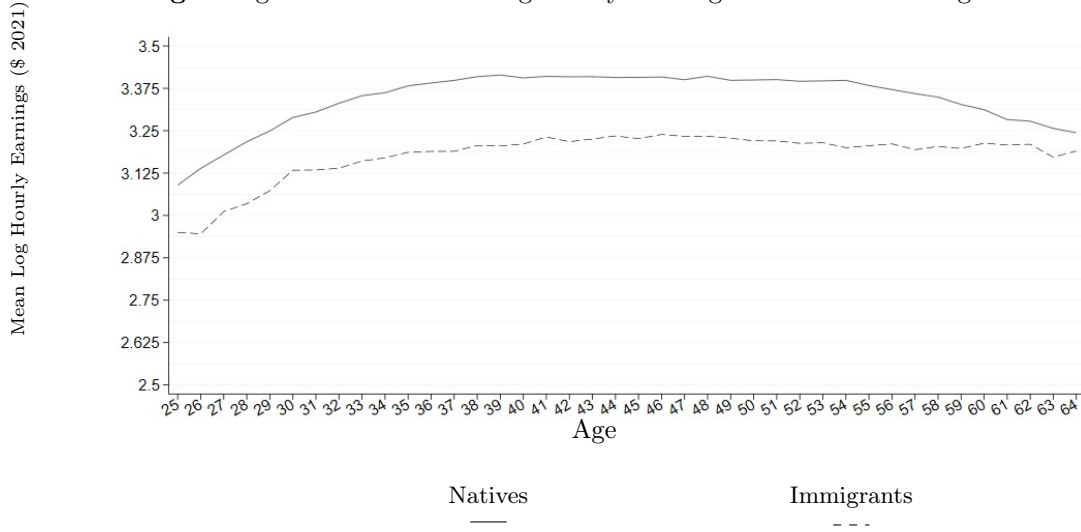
Year	Africa	North America	Latin America	Asia/Oceania/Oth	Europe
2006	7.79	2.29	13.6	52.23	24.08
2011	9.68	2.71	12.84	53.18	21.59
2016	10.1	2.00	12.18	58.90	16.83
2021	12.78	1.43	11.14	59.66	15.01

Note: We use the Canadian Labour Force Surveys from 2006 to 2021. We restrict our sample to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, who are surveyed in March or September of each year. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. Missing statistics could not be released due to regulations by Statistics Canada RDC.

Replacing the horizontal axis with the female share (Figure 5) yields a similarly downward relationship: more female employment corresponds to lower mean wages, indicating gendered occupational segmentation and wage gaps, with wide cross-occupation dispersion.

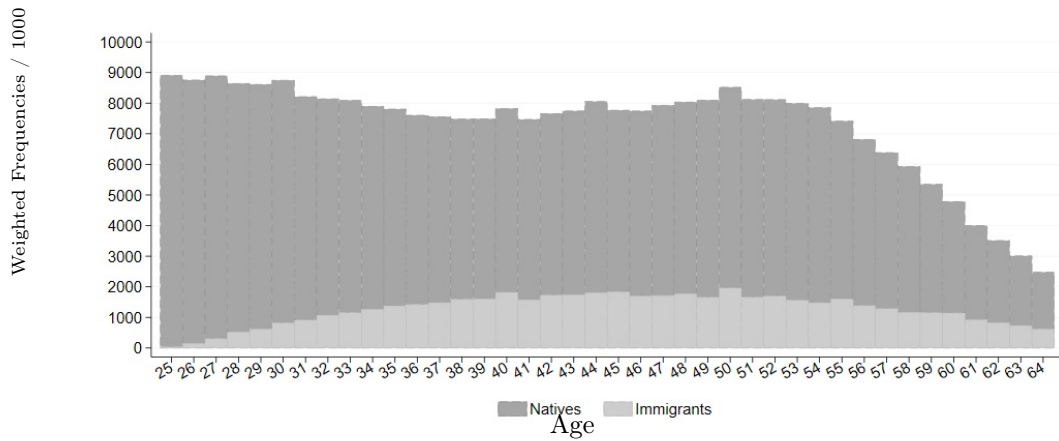
Figure 6 shows higher wages where the university-educated share is larger, and lower wages where secondary or sub-bachelor education dominates. These strong composition-pay correlations motivate the multivariate analysis.

Fig. 1: Age Profiles of Mean Log Hourly Earnings: Natives and Immigrants



Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

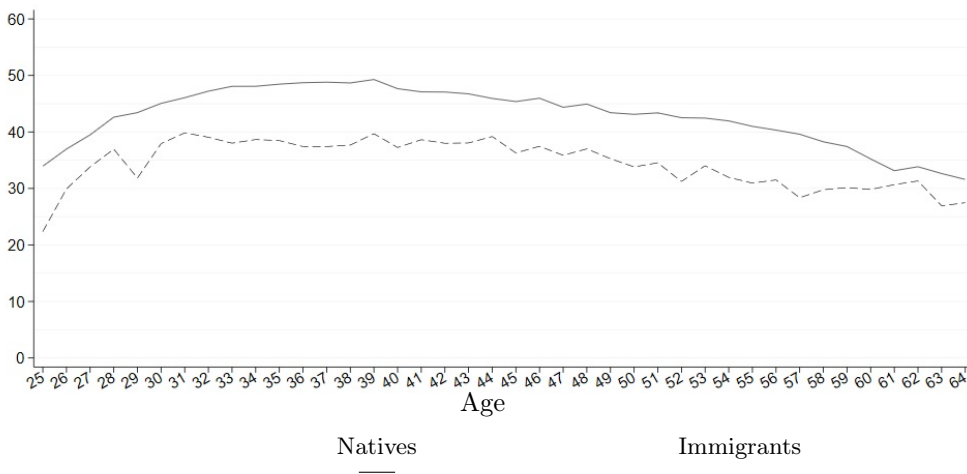
Fig. 2: Weighted Frequencies by Age: Natives and Immigrants



Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

Share (%) of Workers in High-Paying Occupations

Fig. 3: Age Profile of High-Paying Occupation Shares: Natives and Immigrants



Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. High-paying occupations are defined as NOC_5 occupations with mean hourly earnings, pooled across all workers and the full 2006–2021 sample period, above \$32.88 (2021 dollars) — the unweighted average of occupation-level mean hourly earnings across all NOC_5 occupations.

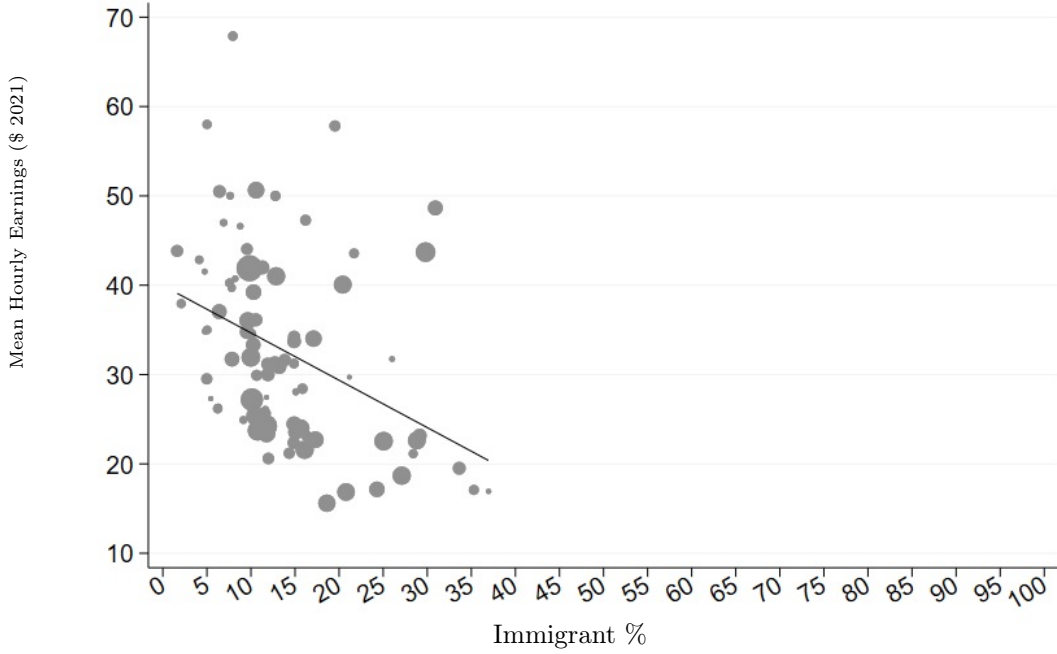
Figure 7 summarizes mean hourly wages by 1-digit NOC 2021 groups across 2006–2011, 2012–2016, and 2017–2021, separately for natives and immigrants. A stable wage ladder persists (managerial/professional and health at the top; sales/service and manufacturing/utilities near the bottom), with broadly similar rankings for both groups. Average wages increase across periods, consistent with real wage growth, but immigrants earn less than natives within the same groups in each period. The gap is somewhat smaller in some high-paying categories by 2017–2021, yet persists, underscoring the need to model both between-occupation gradients and within-occupation differentials.

Appendix Figure A.1 to Figure A.4 present supplementary age and years-since-migration (YSM) profiles of mean log hourly earnings and occupational outcomes, disaggregated by gender and immigrant status. These figures mirror the main patterns documented in the paper. Across specifications, immigrants exhibit lower wage levels and slower profile growth than natives, with partial but incomplete convergence over the life cycle and with years since migration. Gender differences persist throughout, with women displaying flatter wage trajectories and slower convergence.

4 Empirical Models and Estimation Strategy

Our empirical strategy proceeds in two stages. First, we construct occupation-specific native wage benchmarks using detailed 5-digit occupational classifications.

Fig. 4: Mean Hourly Earnings and Immigrant Shares by Occupation Groups



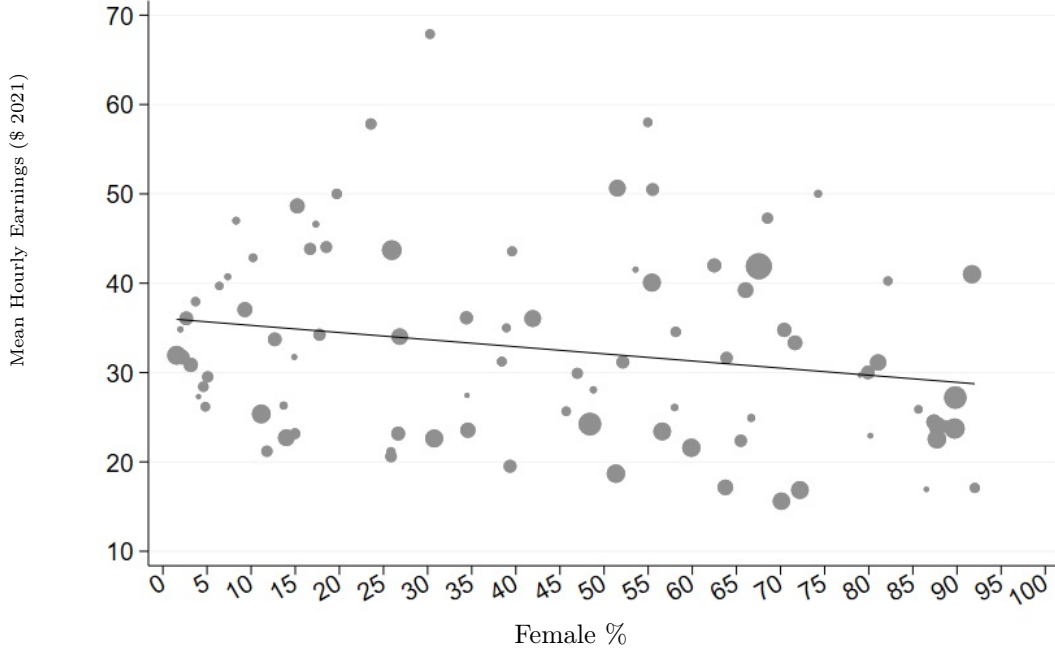
Note: The solid line represents the fitted line between Mean hourly earnings and the share of immigrants in each 3-digit NOC 2021 occupation group. Marker sizes correspond to the relative weighted frequencies of observations within each occupation. We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

Second, we estimate three separate ordinary least squares (OLS) regressions for (i) actual log wages, (ii) predicted native-based log wages, and (iii) the within-occupation log wage gap between actual and predicted log wages. This framework allows us to distinguish earnings growth associated with movement into higher-paying occupations from earnings growth occurring within occupations.

This framework estimates each outcome equation separately while maintaining a common set of explanatory variables across models. This approach allows direct comparison of coefficient magnitudes across the three dimensions of earnings integration.

Because the benchmark wage component is estimated in a first-stage procedure, second-stage coefficient estimates inherit uncertainty from benchmark construction. Standard errors are therefore obtained using a nonparametric two-step bootstrap with 500 replications. In each bootstrap replication, the occupation-specific native wage equations are re-estimated, benchmark wages are reconstructed, and all second-stage regressions are re-estimated. This procedure incorporates uncertainty from both stages of estimation.

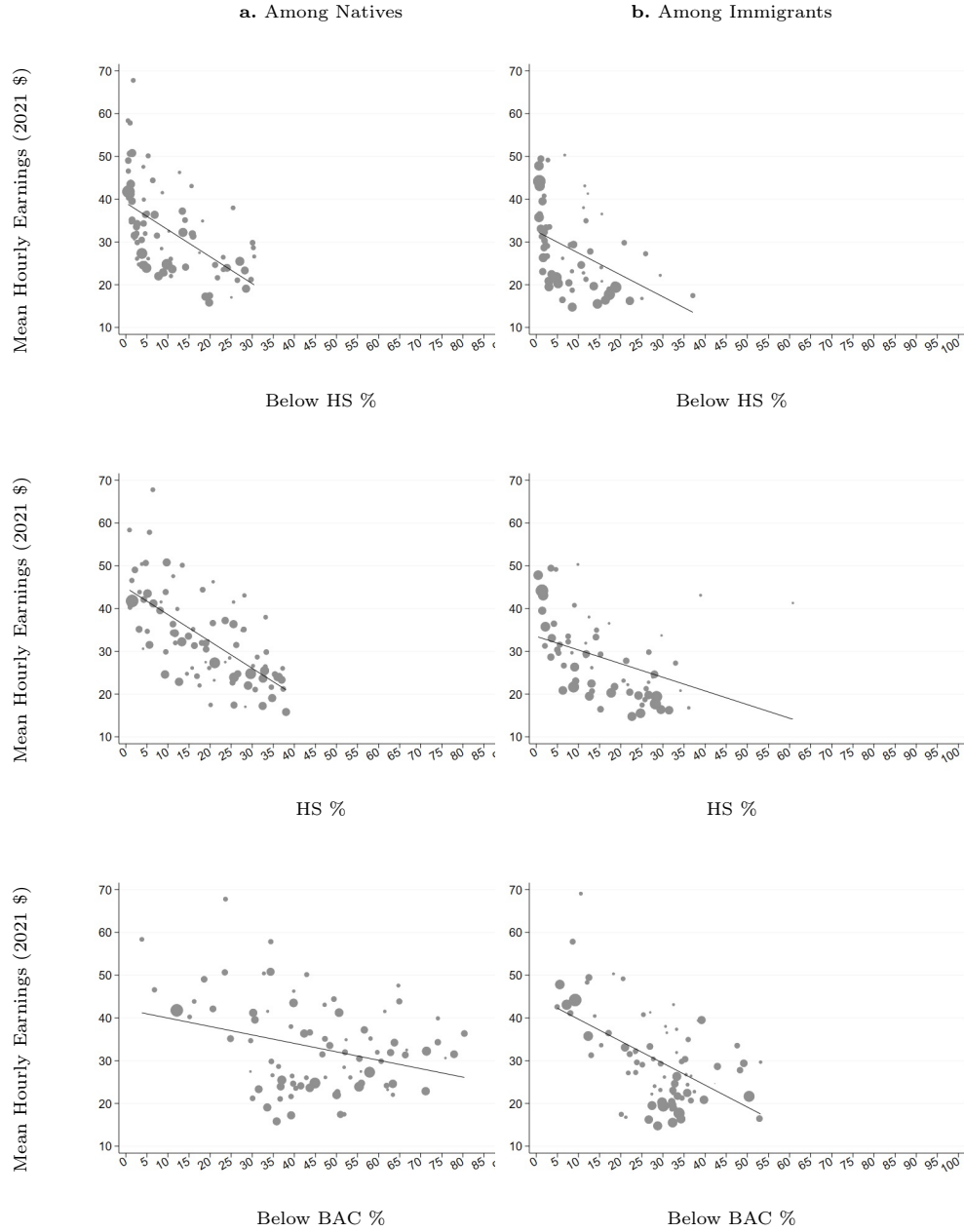
Fig. 5: Mean Hourly Earnings and Female Shares by Occupation Groups



Note: The solid line represents the fitted line between Mean hourly earnings and the share of females in each 3-digit NOC 2021 occupation group. Marker sizes correspond to the relative weighted frequencies of observations within each occupation. We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

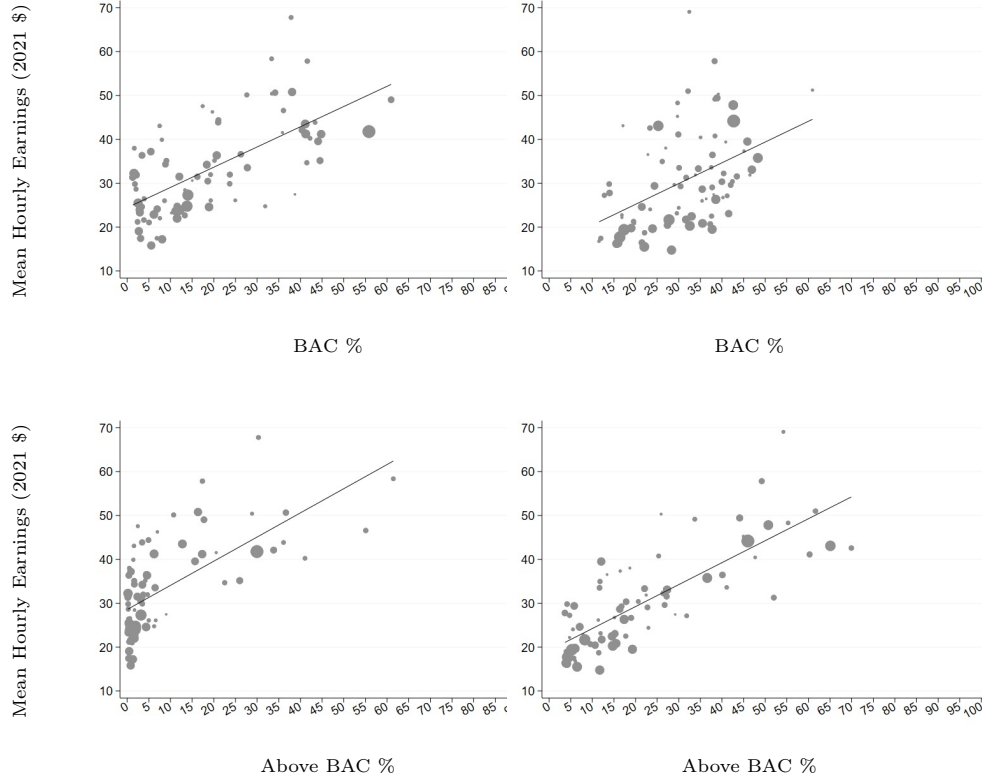
We implement this as a stratified bootstrap using `strata(NOC_5)` in Stata: within each five-digit occupation, individual observations are resampled with replacement independently of all other occupations, so that every bootstrap replicate preserves the observed number of observations in each occupation. This differs from a cluster bootstrap, which would instead resample whole occupations as blocks and could, by chance, drop a given occupation from a replicate entirely; stratified resampling guarantees that every occupation-specific native wage equation can be re-estimated in every replication. The reported standard errors are therefore bootstrap standard errors that account for both first-stage benchmark estimation uncertainty and second-stage regression uncertainty.

Fig. 6: Mean Hourly Earnings by Occupational Educational Composition: Natives and Immigrants



Note: The solid line represents the fitted line between mean hourly earnings and shares of the relevant education group in each 3-digit NOC 2021 occupation group. Marker sizes correspond to the relative weighted frequencies of observations within each occupation. We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. Individuals with missing immigrant status are excluded. All estimates are weighted using the provided sample weights.

Fig. 6 (continued): Mean Hourly Earnings by Occupational Educational Composition: Natives and Immigrants (Cont'd)



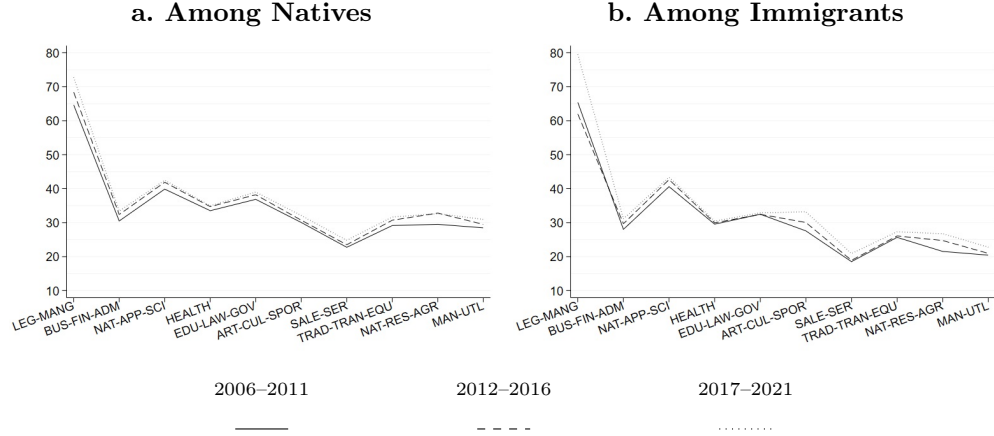
Note: The solid line represents the fitted line between mean hourly earnings and shares of the relevant education group in each 3-digit NOC 2021 occupation group. Marker sizes correspond to the relative weighted frequencies of observations within each occupation. We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. Individuals with missing immigrant status are excluded. All estimates are weighted using the provided sample weights.

4.1 Step 1: Constructing Predicted Wage Benchmarks

We begin by dividing the sample into approximately 500 occupational groups defined at the 5-digit National Occupational Classification (NOC_5) level.⁵ For each occupation $o \in \{1, \dots, O\}$, we restrict the sample to native-born workers and estimate

⁵Throughout the analysis, occupations are classified using the NOC 2021 Version 1.0 five-digit classification provided in the Labour Force Survey (LFS). Consequently, no additional harmonization across NOC vintages was required. Occupation-specific native wage equations were estimated only for occupations with at least 60 native-born observations. Occupations with fewer than 60 native observations (or no native observations) were combined with closely related occupations within the NOC hierarchy until this minimum sample size was achieved. In total, this affected a small number of occupations, resulting in 12 merged occupation groups while preserving the detailed occupational classification used throughout the analysis.

Fig. 7: Mean Hourly Earnings Across Occupation Groups and Time Periods: Natives and Immigrants



Note: Occupation groups correspond to the 1-digit Broad Occupation Categories of the NOC 2021 classification. Occupational categories are abbreviated as follows: LEG-MANG – Legislative and senior management occupations; BUS-FIN-ADM – Business, finance, and administration occupations; NAT-APP-SCI – Natural and applied sciences and related occupations; HEALTH – Health occupations; EDU-LAW-GOV – Occupations in education, law, and social, community, and government services; ART-CUL-SPOR – Occupations in art, culture, recreation, and sport; SALE-SER – Sales and service occupations; TRAD-TRAN-EQU – Trades, transport, and equipment operators and related occupations; NAT-RES-AGR – Natural resources, agriculture, and related production occupations; MAN-UTL – Occupations in manufacturing and utilities. We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

the following wage equation:

$$\ln(w_{io}) = \alpha_o + \beta_{1o} \text{age}_i + \beta_{2o} \text{age}_i^2 + \beta_{3o} \text{female}_i + \text{Province}'_i \gamma_o + \text{SurveyYear}'_i \delta_o + \varepsilon_{io} \quad (1)$$

where $\ln(w_{io})$ denotes the natural logarithm of the hourly wage of individual i in occupation o . The explanatory variables include age, age squared, a female indicator, Canadian province of residence indicators and a set of survey year indicators.⁶

⁶The benchmark wage equation includes age, age squared, a female indicator, province-of-residence indicators, and survey-year indicators, which are treated as relatively exogenous worker and survey-design characteristics. Province and survey-year indicators enter additively, so the estimated occupation-specific returns to age and gender ($\beta_{1o}, \beta_{2o}, \beta_{3o}$) are pooled across provinces and survey years within each occupation; the province and year terms instead absorb common regional price-level and period-specific wage shifts, rather than allowing fully province- and year-specific wage *structures*. Fully interacting occupation, province, and survey year would substantially reduce the number of native observations available within many occupation-province-year cells, particularly given the minimum-sample-size threshold described in footnote 5, and was therefore not pursued. The purpose of the prediction equation is not to fully explain wage determination within occupations, but rather to construct a native-based occupational wage benchmark that is not mechanically driven by potentially endogenous factors such as education, occupation-specific sorting, or immigrant-related labor-market characteristics.

Education is excluded from the benchmark construction itself because educational attainment partly mediates occupational sorting; however, it is included in the second-stage regressions to examine how observed educational differences relate to actual wages, occupational placement, and within-occupation wage differences.

The estimated coefficients from these occupation-specific native wage equations are then used to generate predicted log wages for all workers—both immigrants and natives—as if they were compensated according to the native wage structure within their occupation. We denote these fitted values as $\widehat{\ln(w)_i^{nat}}$. These predicted log wages capture the between-occupation component of earnings by reflecting the wage level associated with workers’ occupational placement under native wage schedules.

The accounting identity underlying the analysis is:

$$\ln(w_i) = \widehat{\ln(w)_i^{nat}} + [\ln(w_i) - \widehat{\ln(w)_i^{nat}}] \quad (2)$$

The first component captures the wage level associated with occupational placement under native wage schedules, while the second component captures the within-occupation wage difference relative to those benchmarks. For this reason, the approach is best viewed as a two-component accounting framework rather than a formal Oaxaca–Blinder decomposition.

Intuitively, the predicted wage benchmark captures the wage level associated with a worker’s observed occupational placement under native wage schedules, abstracting from immigrant-specific wage deviations within occupations. Using detailed 5-digit occupations is important because immigrant–native wage differences may arise both from working in different occupations and from differential pay within narrowly defined jobs. The benchmark construction therefore isolates the earnings component associated with workers’ observed occupational placement under native wage schedules before examining remaining within-occupation wage differences.

Importantly, occupational placement is not assumed to be exogenous in this framework. Both immigrants and natives sort into occupations based on observed and unobserved characteristics such as ability, language proficiency, credential recognition, preferences, social networks, and employer screening. As a result, the predicted wage component should not be interpreted causally as the isolated effect of occupational allocation.

Rather, the two-component accounting framework is intended to separate earnings differences associated with occupational placement from earnings differences observed within occupations. By conditioning on detailed occupational categories and comparing immigrants to native wage schedules within the same occupations, the framework evaluates whether immigrant earnings integration is more strongly associated with movement into higher-paying occupations or with wage convergence conditional on occupational placement. The difference between actual and predicted wages captures the within-occupation component of earnings integration.

Importantly, the within-occupation wage gap should not be interpreted as a direct measure of discrimination, underpayment, or inefficient utilization of human capital. Although the framework conditions on detailed occupations and observable worker

characteristics, the remaining wage differences may also reflect unobserved productivity, firm-specific wage-setting practices, job assignments, tenure, task composition, bargaining outcomes, match quality, or other worker- and employer-level characteristics that are not observed in the data. Accordingly, the estimates should be interpreted as descriptive differences relative to native wage benchmarks rather than causal estimates of labor-market discrimination or pay inequity.

Unlike a conventional Oaxaca–Blinder decomposition, the present accounting framework is designed to distinguish earnings changes associated with occupational placement from those occurring within occupations over time using detailed occupation-specific native wage schedules. The objective is therefore not to attribute a static average wage gap to explained and unexplained components, but rather to examine the channels through which immigrant earnings integration evolves dynamically across occupations and within occupations.

Importantly, because the predicted wage variable is generated from a first-stage estimation procedure, the benchmark predictions are recomputed within each bootstrap replication. This ensures that the estimated standard errors appropriately incorporate uncertainty from both the benchmark construction stage and the second-stage regression models.

4.2 Step 2: OLS Models of Actual, Predicted, and Within-Occupation Wages

Using the predicted native-based wages constructed in the first step, we estimate three separate OLS regressions. The first equation models log of actual observed wages:

$$\ln(w_i) = X_i\beta_1 + \varepsilon_i \quad (3)$$

The second equation models log of predicted native-based wages:

$$\widehat{\ln(w_i^{nat})} = X_i\beta_2 + v_i \quad (4)$$

The third equation models the within-occupation log wage gap:

$$\ln(w_i) - \widehat{\ln(w_i^{nat})} = X_i\beta_3 + e_i \quad (5)$$

where the third dependent variable represents the difference between log of actual wages and log of predicted native-based wages within occupations. The vector X_i includes:

- years since migration and its square ($\text{ysm}_i, \text{ysm}_i^2$),
- age and age squared,
- survey year dummies (surv_year_i),
- education dummies (educ_g_i),
- province of residence dummies,
- female dummy,
- region of origin dummies (equal to 0 for natives, 1 for North America, 2 for Latin America, 3 for Europe, 4 for Africa, and 5 for Asia/Oceania/others).

The regressions are estimated for the pooled sample and separately by immigrant status, gender, and region of origin.

The coefficient magnitudes across the three equations allow us to distinguish whether earnings integration occurs primarily through occupational upgrading into higher-paying occupations or through improved earnings within occupations. Larger effects in the log of predicted wage equation indicate stronger occupational mobility effects, whereas larger effects in the wage-gap equation indicate stronger within-occupation convergence.

To account for heteroskedasticity and the multi-stage estimation procedure, standard errors are obtained using bootstrap replications in which the first-stage occupational benchmark regressions are re-estimated during each iteration. The bootstrap is stratified by five-digit occupation (NOC_5): within each occupation, individual observations are resampled with replacement independently of all other occupations, so that the number of observations in every occupation is preserved in each replication. The LFS final person weight, attached to each resampled observation, is applied in both stages of estimation.

Because the data are repeated cross-sections rather than a longitudinal panel, and the second-stage models do not include landing-cohort fixed effects, the years-since-migration associations reported below combine within-cohort duration effects with across-cohort compositional differences (e.g., shifting source-country mix, selective return migration) and cannot be interpreted as tracking the same individuals' wages over time. We use terms such as 'integration' and 'convergence' as descriptive shorthand for these cross-sectional YSM gradients, consistent with common usage in this literature, while flagging that a fully cohort-corrected design is beyond the scope of the present paper.

4.3 OLS Results: Full Sample, Natives, and Immigrants

Table 5 reports OLS estimates for the pooled sample and separately for natives and immigrants, modeling actual log hourly wages, log of predicted native-based wages, and the within-occupation gap.

Before turning to individual coefficients, it is important to emphasize that the years-since-migration profiles are quadratic. Consequently, the relative contribution of occupational upgrading and within-occupation wage convergence cannot be assessed by comparing the linear YSM coefficients alone. The relevant quantities are the duration-specific marginal effects,

$$\frac{\delta y}{\delta YSM} = \beta_{YSM} + 2\beta_{YSM2} \cdot YSM.$$

For immigrants, the marginal effect of an additional year in Canada on predicted log wages is approximately 1.4 log points at arrival, 0.9 log points after ten years, and 0.5 log points after twenty years. The corresponding marginal effects on the

within-occupation log wage gap are approximately 1.1, 0.9, and 0.6 log points.⁷ Occupational upgrading is therefore the larger channel immediately after arrival; the two channels converge and are statistically indistinguishable around ten years; and within-occupation wage convergence becomes the larger channel at longer durations, with the two profiles crossing at approximately 13 years since migration.

Because $\ln w_i \equiv \widehat{\ln w_i^{nat}} + (\ln w_i - \widehat{\ln w_i^{nat}})$ is an accounting identity, and equations (3)–(5) are estimated by OLS on the same sample, covariates, weights, and estimation procedure, OLS linearity implies that the coefficient vectors satisfy $\hat{\beta}_1 = \hat{\beta}_2 + \hat{\beta}_3$ exactly, coefficient by coefficient. The duration-specific marginal effects therefore satisfy the same decomposition at every duration: the predicted-wage and within-occupation-gap marginal effects sum exactly to the actual-wage marginal effect, a property we confirm numerically in every one of the 500 bootstrap replications. Equations (4) and (5) are accordingly not independent pieces of evidence on occupational upgrading versus within-occupation convergence, but an exact decomposition of the actual duration profile into its two components.

Rather than inferring dominance from the relative size of the rounded point estimates above, we formally test the difference between the two components, $D(YSM) = ME_{\text{predicted}}(YSM) - ME_{\text{gap}}(YSM)$, using its bootstrap standard error at each benchmark duration. The difference is significantly positive at arrival ($D = 0.29$ log points, $z = 3.52$, $p < 0.001$), statistically indistinguishable from zero at ten years ($D = 0.06$, $z = 1.54$, $p = 0.124$), and significantly negative at twenty years ($D = -0.16$, $z = -4.07$, $p < 0.001$). The claim that occupational upgrading is the dominant channel is therefore well supported immediately after arrival, cannot be statistically distinguished from within-occupation convergence around ten years, and is reversed — within-occupation convergence becomes the significantly larger channel — by twenty years.

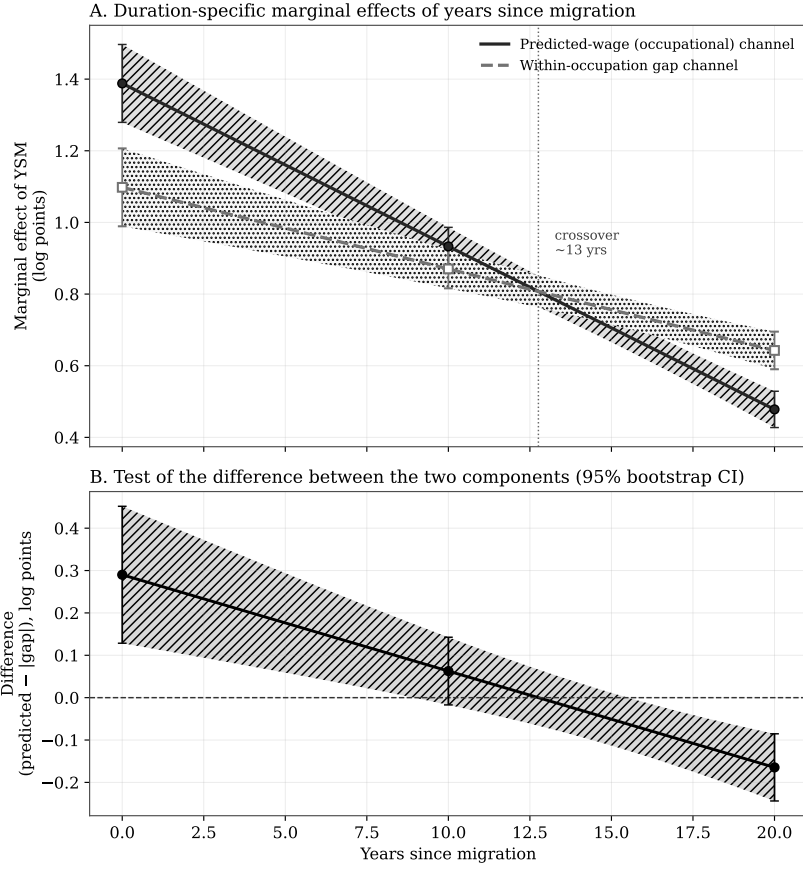
Figure 8 plots both duration-specific marginal-effect profiles over years since migration together with their 95% bootstrap confidence intervals (Panel A), and the difference between them with its own bootstrap confidence interval (Panel B). The lower panel shows directly that the confidence interval for the difference excludes zero at arrival and at twenty years but includes zero around ten years, consistent with the test statistics reported above.

In the pooled sample, age enters positively with a negative quadratic term, consistent with concave earnings growth within occupations among natives.

For native-born workers, the Actual – Predicted log wage difference captures deviations from average native wage profiles within detailed occupations rather than systematic disadvantage relative to a benchmark group. Because predicted wages for natives are constructed using native wage schedules, this gap could reflect within-occupation wage dispersion arising from factors such as firm heterogeneity, bargaining outcomes, performance-based pay, or idiosyncratic match quality. Unlike for immigrants, where persistent negative gaps indicate lower wages relative to native benchmarks, variation in the native Actual – Predicted gap primarily reflects normal

⁷Duration-specific marginal effects and their bootstrap confidence intervals are computed from 500 bootstrap replications, stratified by 5-digit occupation (NOC_5), of the two-step estimator described in Section 4.2.

Fig. 8: Duration-Specific Marginal Effects of Years Since Migration: Predicted-Wage and Within-Occupation-Gap Channels



Note: Panel A plots the duration-specific marginal effects $\beta_{YSM} + 2\beta_{YSM2} \cdot YSM$ from the predicted-wage equation (4) and the within-occupation-gap equation (5), for immigrants, with shaded 95% bootstrap confidence intervals (500 replications, stratified by 5-digit occupation). Markers show the three benchmark durations (arrival, ten years, twenty years) with their reported bootstrap confidence intervals. Panel B plots the difference between the two profiles, $D(YSM) = ME_{\text{predicted}}(YSM) - ME_{\text{gap}}(YSM)$, with its own bootstrap 95% confidence interval; the dashed line marks zero difference.

wage heterogeneity among natives within occupations.

Educational gradients are large, positive, and monotonic. Relative to less than high school, a bachelor's degree raises actual wages by roughly 37 log points and predicted wages by about 32 log points, while postgraduate education corresponds to premia of approximately 58 log points (actual) and 48 log points (predicted). The smaller education coefficients in the predicted equation indicate that part of the education premium operates through occupational placement, with the remainder reflecting within-occupation returns.

Within the immigrant sample, the region-of-origin coefficients measure differences relative to immigrants from North America, the omitted reference category. Relative to North American immigrants, immigrants from Latin America, Africa, and Asia/Oceania exhibit significantly larger within-occupation wage gaps, whereas the coefficient for immigrants from Europe is small and statistically insignificant. These results indicate substantial heterogeneity in within-occupation wage gaps across immigrant source regions.

As in Section 4.1, these within-occupation gaps should not be interpreted as direct evidence of discrimination or underpayment; they may also reflect unobserved productivity, firm, task, tenure, or job-level differences not captured by the available covariates.

4.4 Separate Estimates by Gender

Table 6 reports OLS estimates separately for men and women. For both genders, age enters positively and significantly in the actual and predicted wage equations, with negative quadratic terms indicating concave life-cycle profiles. The age gradient is slightly steeper for men than for women.

Years since migration is positively associated with earnings integration for both men and women, but because the model includes a quadratic YSM term, the relative contributions of occupational upgrading and within-occupation wage convergence vary with duration in Canada. For immigrant men, the marginal effect of an additional year in Canada on predicted log wages is approximately 0.9 log points at arrival, 0.6 log points after ten years, and 0.3 log points after twenty years, while the corresponding effects on the within-occupation log wage gap are approximately 0.4, 0.4, and 0.5 log points. For immigrant women, the corresponding predicted-wage marginal effects are approximately 0.7, 0.6, and 0.4 log points, compared with 0.4, 0.5, and 0.6 log points for the within-occupation gap.⁸

As in Section 4.3, we formally test the difference between the two channels at each duration, $D(YSM) = ME_{\text{predicted}}(YSM) - ME_{\text{gap}}(YSM)$, rather than relying on the relative size of the rounded point estimates. For men, the predicted-wage channel is significantly larger than the within-occupation-gap channel both at arrival ($D = 0.48$ log points, $z = 4.86$, $p < 0.001$) and after ten years ($D = 0.12$, $z = 2.72$, $p = 0.006$), and the difference reverses sign and becomes significantly negative by twenty years ($D = -0.25$, $z = -5.36$, $p < 0.001$), with the two profiles crossing at approximately 13 years since migration. For women, the pattern mirrors the pooled immigrant sample reported in Section 4.3: the predicted-wage channel is significantly larger at arrival ($D = 0.31$, $z = 3.05$, $p = 0.002$), the two channels are statistically indistinguishable around ten years ($D = 0.07$, $z = 1.52$, $p = 0.129$), and within-occupation convergence becomes the significantly larger channel by twenty years ($D = -0.17$, $z = -3.91$,

⁸ As in Section 4.3, duration-specific marginal effects and their bootstrap standard errors are computed from 500 bootstrap replications, stratified by 5-digit occupation (NOC_5), of the two-step estimator described in Section 4.2, estimated separately by gender. The predicted-wage and within-occupation-gap marginal effects sum exactly to the actual-wage marginal effect at every duration, for both men and women, consistent with the accounting identity $\hat{\beta}_1 = \hat{\beta}_2 + \hat{\beta}_3$ discussed in Section 4.3.

Table 5: OLS Regressions (LFS 2006–2021): Whole Sample, Natives, and Immigrants

Variable	Actual	Predicted	Actual – Predicted
Panel A: Whole Sample			
Age	0.059** (4×10 ⁻⁴)	0.060** (4×10 ⁻⁴)	-0.002** (1×10 ⁻⁴)
Age ²	-0.001** (5×10 ⁻⁶)	-0.001** (5×10 ⁻⁶)	2×10 ⁻⁵ ** (2×10 ⁻⁶)
YSM	0.012** (0.001)	0.008** (5×10 ⁻⁴)	0.004** (5×10 ⁻⁴)
YSM ²	-1×10 ⁻⁴ ** (2×10 ⁻⁵)	-1×10 ⁻⁴ ** (1×10 ⁻⁵)	4×10 ⁻⁵ ** (1×10 ⁻⁵)
Education			
High School	0.098** (0.002)	0.063** (0.001)	0.036** (0.001)
Below Bachelor	0.271** (0.002)	0.203** (0.001)	0.067** (0.001)
Bachelor	0.550** (0.002)	0.431** (0.002)	0.119** (0.001)
Above Bachelor	0.710** (0.002)	0.553** (0.002)	0.158** (0.002)
Female	-0.198** (0.001)	-0.192** (0.001)	-0.006** (5×10 ⁻⁴)
Region of Origin			
North America	-0.210** (0.011)	-0.093** (0.007)	-0.117** (0.009)
Latin America	-0.419** (0.006)	-0.239** (0.004)	-0.180** (0.005)
Europe	-0.306** (0.006)	-0.165** (0.004)	-0.141** (0.004)
Africa	-0.428** (0.006)	-0.216** (0.004)	-0.212** (0.005)
Asia/Oceania/Other	-0.505** (0.004)	-0.279** (0.003)	-0.226** (0.003)
Other controls	YES	YES	YES
Observations	1,230,147	1,230,147	1,230,147
Panel B: Natives			
Age	0.060** (4×10 ⁻⁴)	0.061** (4×10 ⁻⁴)	-0.001** (5×10 ⁻⁵)
Age ²	-0.001** (5×10 ⁻⁶)	-0.001** (5×10 ⁻⁶)	2×10 ⁻⁵ ** (1×10 ⁻⁶)
Education			
High School	0.108** (0.002)	0.069** (0.001)	0.039** (0.001)
Below Bachelor	0.282**	0.211**	0.071**

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Table 5 continued from previous page

Variable	Actual	Predicted	Actual – Predicted
	(0.002)	(0.001)	(0.001)
Bachelor	0.580**	0.448**	0.131**
	(0.002)	(0.002)	(0.001)
Above Bachelor	0.730**	0.558**	0.172**
	(0.003)	(0.002)	(0.002)
Female	-0.199**	-0.189**	-0.010**
	(0.001)	(0.001)	(1×10^{-4})
Other controls	YES	YES	YES
Observations	1,110,849	1,110,849	1,110,849
Panel C: Immigrants			
Age	0.021**	0.044**	-0.023**
	(0.002)	(0.001)	(0.002)
Age ²	-3×10^{-4} **	-5×10^{-4} **	2×10^{-4} **
	(2×10^{-5})	(2×10^{-5})	(2×10^{-5})
YSM	0.025**	0.014**	0.011**
	(0.001)	(0.001)	(0.001)
YSM ²	-3×10^{-4} **	-2×10^{-4} **	-1×10^{-4} **
	(2×10^{-5})	(2×10^{-5})	(2×10^{-5})
Education			
High School	0.034**	0.015**	0.019**
	(0.006)	(0.004)	(0.006)
Below Bachelor	0.201**	0.151**	0.050**
	(0.006)	(0.004)	(0.005)
Bachelor	0.393**	0.332**	0.061**
	(0.006)	(0.004)	(0.005)
Above Bachelor	0.589**	0.487**	0.102**
	(0.006)	(0.005)	(0.006)
Female	-0.208**	-0.217**	0.009**
	(0.003)	(0.002)	(0.003)
Region of Origin			
Latin America	-0.221**	-0.155**	-0.066**
	(0.011)	(0.007)	(0.010)
Europe	-0.100**	-0.077**	-0.023**
	(0.011)	(0.007)	(0.010)
Africa	-0.213**	-0.123**	-0.090**
	(0.012)	(0.008)	(0.010)
Asia/Oceania/Other	-0.304**	-0.189**	-0.115**
	(0.011)	(0.007)	(0.009)
Other controls	YES	YES	YES
Observations	119,298	119,298	119,298

Note: ** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are reported in parentheses. Other controls include province and LFS survey-year indicators. The complete regression results are reported in Table A.2 in the Appendix.

Table 6: OLS Regressions (LFS 2006–2021): Males and Females

Variable	Actual	Predicted	Actual – Predicted
Panel A: Males			
Age	0.065** (0.001)	0.063** (0.001)	0.002** (3×10 ⁻⁴)
Age ²	-0.001** (1×10 ⁻⁵)	-0.001** (1×10 ⁻⁵)	-1×10 ⁻⁵ ** (4×10 ⁻⁶)
YSM	0.013** (0.001)	0.009** (0.001)	0.004** (0.001)
YSM ²	-1×10 ⁻⁴ ** (3×10 ⁻⁵)	-2×10 ⁻⁴ ** (2×10 ⁻⁵)	3×10 ⁻⁵ (2×10 ⁻⁵)
Education			
High School	0.074** (0.002)	0.041** (0.002)	0.033** (0.002)
Below Bachelor	0.241** (0.002)	0.171** (0.002)	0.070** (0.002)
Bachelor	0.478** (0.003)	0.372** (0.002)	0.106** (0.002)
Above Bachelor	0.635** (0.003)	0.492** (0.003)	0.144** (0.003)
Region of Origin			
North America	-0.194** (0.016)	-0.086** (0.010)	-0.108** (0.015)
Latin America	-0.411** (0.008)	-0.225** (0.006)	-0.187** (0.007)
Europe	-0.254** (0.008)	-0.134** (0.005)	-0.121** (0.006)
Africa	-0.439** (0.008)	-0.214** (0.006)	-0.225** (0.007)
Asia/Oceania/Other	-0.494** (0.006)	-0.256** (0.004)	-0.239** (0.005)
Other controls	YES	YES	YES
Observations	606,982	606,982	606,982
Panel B: Females			
Age	0.052** (0.001)	0.057** (0.001)	-0.004** (3×10 ⁻⁴)
Age ²	-0.001** (1×10 ⁻⁵)	-0.001** (1×10 ⁻⁵)	1×10 ⁻⁴ ** (3×10 ⁻⁶)
YSM	0.011** (0.001)	0.007** (0.001)	0.004** (0.001)
YSM ²	-3×10 ⁻⁵ (3×10 ⁻⁵)	-1×10 ⁻⁴ ** (2×10 ⁻⁵)	4×10 ⁻⁵ ** (2×10 ⁻⁵)
Education			
High School	0.148** (0.003)	0.107** (0.002)	0.040** (0.002)
Below Bachelor	0.327** (0.003)	0.260** (0.002)	0.067** (0.002)

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Table 6 continued from previous page

Variable	Actual	Predicted	Actual – Predicted
Bachelor	0.640** (0.003)	0.510** (0.002)	0.130** (0.002)
Above Bachelor	0.806** (0.003)	0.633** (0.003)	0.173** (0.003)
Region of Origin			
North America	-0.226** (0.014)	-0.098** (0.009)	-0.128** (0.012)
Latin America	-0.421** (0.008)	-0.249** (0.006)	-0.172** (0.006)
Europe	-0.358** (0.008)	-0.196** (0.006)	-0.162** (0.006)
Africa	-0.395** (0.009)	-0.207** (0.007)	-0.188** (0.007)
Asia/Oceania/Other	-0.507** (0.006)	-0.301** (0.005)	-0.205** (0.005)
Other controls	YES	YES	YES
Observations	623,165	623,165	623,165

Note: ** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are reported in parentheses. Other controls include province and LFS survey-year indicators. The complete regression results are reported in Table A.3 in the Appendix.

$p < 0.001$), with a crossover at approximately 13 years. These results indicate that occupational upgrading is the more important channel during the early years following arrival — and remains significantly so for men through at least the first decade — while within-occupation wage convergence becomes the statistically dominant channel for both genders at longer durations.

Educational returns are positive and highly significant for both genders and are systematically larger for women. In the gap equation, education coefficients are also positive, indicating that higher education is associated with smaller within-occupation wage gaps, with somewhat stronger effects for women. Nonetheless, sizable wage gaps persist across genders and regions of origin. As in Section 4.3, these gender-specific gaps do not distinguish discrimination or underpayment from unobserved productivity, firm, task, tenure, or job-level differences between men and women.

Overall, the gender-specific results suggest that differences in earnings integration between men and women arise primarily from differences in the timing and magnitude of occupational upgrading, while within-occupation wage convergence follows a more similar trajectory across genders.

For brevity, Table 6 suppresses the coefficients on the full set of control variables. The complete estimation results are reported in Appendix Table A.3.

4.5 Separate Estimates by Region of Origin

Table 7 reports OLS estimates separately for immigrants by region of origin, allowing a direct comparison of wage dynamics, occupational upgrading, and within-occupation wage gaps across source regions. For each region, the OLS equations model actual log hourly wages, predicted native-based wages, and the within-occupation gap

(Actual – Predicted).

Across all regions of origin except North America, years since migration is positively associated with actual wages. For North American immigrants, neither the linear nor the quadratic YSM term is statistically distinguishable from zero (Table 7, Panel A), so no meaningful duration-specific marginal effect can be computed for this group; this is also the smallest region-of-origin subsample (3,640 observations). Because each of the remaining specifications includes both linear and quadratic YSM terms, the relative contributions of occupational upgrading and within-occupation wage convergence vary over immigrants’ time in Canada.⁹

For immigrants from Latin America, the marginal effects associated with predicted wages are approximately 1.0, 0.7, and 0.4 log points at arrival, ten years, and twenty years after arrival, compared with approximately 1.2, 0.8, and 0.4 log points for the within-occupation wage gap. The difference between the two channels, $D(YSM) = ME_{\text{predicted}}(YSM) - ME_{\text{gap}}(YSM)$, is not statistically distinguishable from zero at any of the three benchmark durations ($D = -0.25, -0.13, -0.01$ log points at arrival, ten years, and twenty years; $p \geq 0.24$ throughout).

For immigrants from Europe, the corresponding predicted-wage marginal effects are approximately 0.8, 0.6, and 0.3 log points, while the within-occupation-gap effects are approximately 0.8, 0.7, and 0.6 log points. The two channels are statistically indistinguishable at arrival ($D = -0.01$, $p = 0.95$) and at ten years ($D = -0.12$, $p = 0.21$), and within-occupation convergence becomes the significantly larger channel only by twenty years ($D = -0.23$ log points, $z = -2.80$, $p = 0.005$).

For immigrants from Africa, the predicted-wage marginal effects are approximately 1.8, 1.1, and 0.4 log points, compared with approximately 1.8, 1.2, and 0.6 log points for the within-occupation gap. As with Latin America, the difference between the two channels is not statistically significant at any benchmark duration ($D = -0.01, -0.10, -0.19$ log points; $p \geq 0.22$ throughout), despite the gap channel’s nominally larger point estimate at longer durations.

Finally, immigrants from Asia/Oceania exhibit predicted-wage marginal effects of approximately 1.6, 1.1, and 0.6 log points, while the corresponding within-occupation effects are approximately 1.1, 0.9, and 0.7 log points. For this group the difference between the two channels is statistically significant throughout: the predicted-wage channel is significantly larger at arrival ($D = 0.55$ log points, $z = 4.63$, $p < 0.001$) and at ten years ($D = 0.19$, $z = 3.16$, $p = 0.002$), and the difference reverses sign and becomes significantly negative by twenty years ($D = -0.18$, $z = -3.14$, $p = 0.002$), with the two profiles crossing at approximately 15 years since migration.

These patterns indicate that the relative importance of occupational upgrading and within-occupation wage convergence depends not only on immigrants’ region of origin but also on years since migration, rather than remaining constant throughout the integration process. Formally testing the difference between the two channels, however, shows that this reversal is precisely estimated only for Asia/Oceania — and,

⁹Duration-specific marginal effects and their bootstrap standard errors are computed from 500 bootstrap replications, stratified by 5-digit occupation (NOC_5), of the two-step estimator described in Section 4.2, estimated separately for each region of origin. As in Sections 4.3 and 4.4, the predicted-wage and within-occupation-gap marginal effects sum exactly to the actual-wage marginal effect at every duration and in every region.

Table 7: OLS Regressions (LFS 2006–2021): Immigrants by Region of Origin

Variable	Actual	Predicted	Actual – Predicted
Panel A: North America			
Age	0.053** (0.011)	0.070** (0.007)	-0.016* (0.009)
Age ²	-0.001** (1×10 ⁻⁴)	-0.001** (1×10 ⁻⁴)	2×10 ⁻⁴ * (1×10 ⁻⁴)
YSM	4×10 ⁻⁴ (0.004)	4×10 ⁻⁴ (0.003)	-2×10 ⁻⁵ (0.004)
YSM ²	1×10 ⁻⁴ (1×10 ⁻⁴)	2×10 ⁻⁵ (1×10 ⁻⁴)	1×10 ⁻⁴ (1×10 ⁻⁴)
Education			
High School	0.020 (0.067)	1×10 ⁻⁴ (0.044)	0.020 (0.058)
Below Bachelor	0.159** (0.063)	0.151** (0.041)	0.007 (0.052)
Bachelor	0.393** (0.066)	0.321** (0.043)	0.073 (0.055)
Above Bachelor	0.692** (0.065)	0.507** (0.040)	0.184** (0.054)
Female	-0.188** (0.020)	-0.176** (0.013)	-0.011 (0.018)
Other controls	YES	YES	YES
Observations	3,640	3,640	3,640
Panel B: Latin America			
Age	0.018** (0.005)	0.043** (0.003)	-0.025** (0.004)
Age ²	-2×10 ⁻⁴ ** (5×10 ⁻⁵)	-5×10 ⁻⁴ ** (4×10 ⁻⁵)	2×10 ⁻⁴ ** (4×10 ⁻⁵)
YSM	0.022** (0.002)	0.010** (0.001)	0.012** (0.002)
YSM ²	-3×10 ⁻⁴ ** (1×10 ⁻⁴)	-1×10 ⁻⁴ ** (4×10 ⁻⁵)	-2×10 ⁻⁴ ** (5×10 ⁻⁵)
Education			
High School	0.045** (0.013)	0.013 (0.009)	0.032** (0.012)
Below Bachelor	0.201** (0.012)	0.151** (0.009)	0.050** (0.011)
Bachelor	0.405** (0.015)	0.344** (0.010)	0.061** (0.013)
Above Bachelor	0.623** (0.019)	0.503** (0.012)	0.120** (0.015)
Female	-0.190** (0.009)	-0.202** (0.006)	0.012* (0.007)
Other controls	YES	YES	YES
Observations	12,737	12,737	12,737

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Table 7 continued from previous page

Variable	Actual	Predicted	Actual – Predicted
Panel C: Europe			
Age	0.042** (0.004)	0.058** (0.003)	-0.016** (0.003)
Age ²	-5×10 ⁻⁴ ** (5×10 ⁻⁵)	-0.001** (3×10 ⁻⁵)	1×10 ⁻⁴ ** (4×10 ⁻⁵)
YSM	0.016** (0.002)	0.008** (0.001)	0.008** (0.001)
YSM ²	-2×10 ⁻⁴ ** (5×10 ⁻⁵)	-1×10 ⁻⁴ ** (3×10 ⁻⁵)	-1×10 ⁻⁴ (3×10 ⁻⁵)
Education			
High School	-0.013 (0.017)	0.008 (0.011)	-0.021 (0.014)
Below Bachelor	0.133** (0.015)	0.140** (0.010)	-0.008 (0.012)
Bachelor	0.321** (0.016)	0.333** (0.011)	-0.013 (0.012)
Above Bachelor	0.505** (0.017)	0.470** (0.011)	0.035** (0.013)
Female	-0.270** (0.007)	-0.231** (0.005)	-0.040** (0.006)
Other controls	YES	YES	YES
Observations	24,078	24,078	24,078
Panel D: Africa			
Age	0.012* (0.006)	0.039** (0.004)	-0.028** (0.005)
Age ²	-1×10 ⁻⁴ ** (1×10 ⁻⁴)	-4×10 ⁻⁴ ** (5×10 ⁻⁵)	3×10 ⁻⁴ ** (5×10 ⁻⁵)
YSM	0.037** (0.002)	0.018** (0.002)	0.018** (0.002)
YSM ²	-0.001** (1×10 ⁻⁴)	-3×10 ⁻⁴ ** (1×10 ⁻⁴)	-3×10 ⁻⁴ ** (1×10 ⁻⁴)
Education			
High School	0.066** (0.021)	0.029* (0.016)	0.038** (0.017)
Below Bachelor	0.218** (0.018)	0.177** (0.014)	0.041** (0.014)
Bachelor	0.416** (0.019)	0.358** (0.014)	0.059** (0.015)
Above Bachelor	0.627** (0.020)	0.508** (0.015)	0.120** (0.016)
Female	-0.137** (0.010)	-0.166** (0.007)	0.029** (0.008)
Other controls	YES	YES	YES
Observations	12,380	12,380	12,380

Continued on next page

Table 7 continued from previous page

Variable	Actual	Predicted	Actual – Predicted
Panel E: Asia/Oceania/Other			
Age	0.015** (0.003)	0.039** (0.002)	−0.024** (0.002)
Age ²	−2×10 ^{−4} ** (3×10 ^{−5})	−5×10 ^{−4} ** (2×10 ^{−5})	2×10 ^{−4} ** (2×10 ^{−5})
YSM	0.027** (0.001)	0.016** (0.001)	0.011** (0.001)
YSM ²	−3×10 ^{−4} ** (3×10 ^{−5})	−3×10 ^{−4} ** (2×10 ^{−5})	−1×10 ^{−4} ** (2×10 ^{−5})
Education			
High School	0.035** (0.008)	0.012** (0.006)	0.022** (0.007)
Below Bachelor	0.213** (0.008)	0.147** (0.005)	0.066** (0.007)
Bachelor	0.399** (0.007)	0.321** (0.006)	0.077** (0.007)
Above Bachelor	0.587** (0.008)	0.480** (0.006)	0.108** (0.007)
Female	−0.202** (0.005)	−0.225** (0.003)	0.023** (0.004)
Other controls	YES	YES	YES
Observations	66,454	66,454	66,454

Note: ** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are reported in parentheses. Other controls include province and LFS survey-year indicators. The complete regression results are reported in Table A.4 in the Appendix.

at the longest duration, for Europe. For Latin America and Africa, the point estimates shift toward the gap channel by twenty years in the same direction, but the bootstrap standard errors are too large, relative to the sample sizes for these regions, to distinguish the two channels statistically at any of the three benchmark durations.

Education is strongly rewarded across all regions of origin, though the magnitude of returns differs. Higher education is associated with substantial gains in actual wages across all regions, although the magnitude of these returns varies across immigrant source regions. However, coefficients in the Actual-Predicted equation show that education is associated with smaller within-occupation wage gaps.

Age effects are present but less systematic than years-since-migration effects across regions once detailed occupational benchmarks are controlled for. Linear age coefficients are generally smaller in magnitude than YSM coefficients and vary across regions, while quadratic age terms are typically small and only weakly indicative of concavity. This pattern suggests that, conditional on occupational placement, post-arrival experience in Canada captured by years since migration plays a more consistent role than life-cycle age effects in shaping immigrant wage trajectories.

Overall, the duration-specific marginal effects reveal substantial heterogeneity in the channels through which earnings integration occurs across immigrant source regions, though only for Asia/Oceania is the relative importance of the two channels

precisely estimated across the full duration profile: occupational upgrading dominates significantly in the first decade and is significantly overtaken by within-occupation convergence by twenty years. For Europe, within-occupation convergence becomes the significantly larger channel only at longer durations, while for Latin America and Africa the two channels cannot be statistically distinguished at any of the three benchmark durations, despite gap-channel point estimates that are nominally as large as or larger than the occupational-upgrading estimates by twenty years. Persistent within-occupation wage gaps nevertheless remain evident across several regions even after accounting for occupational placement. These differences should not be interpreted as direct evidence of discrimination or underpayment. They may also reflect unobserved productivity, firm, task, tenure, or job-level differences across regions of origin, rather than solely differences in occupational placement or within-occupation wage convergence.

For brevity, Table 7 suppresses coefficients on the full set of control variables. The complete estimation results are reported in Appendix Table A.4.

5 Discussion and Conclusion

This paper provides new evidence on the mechanisms underlying immigrant earnings integration in Canada by modeling actual wages, occupational wage benchmarks, and within-occupation gaps. Relative to prior work distinguishing occupational placement from within-occupation pay, the present analysis contributes a substantially finer occupational resolution, a longer and more recent Canadian time span, and bootstrap inference that propagates first-stage benchmark-construction uncertainty into the second-stage estimates — a methodological step that proves empirically consequential, since the formal difference test in Section 4.3 shows that the dominant channel of integration shifts across the migration life-cycle rather than remaining fixed. While wages rise with years since migration, the three equations show that earnings integration reflects both occupational upgrading into higher-paying jobs and convergence in pay within occupations, although the relative importance of these channels varies across groups.

From a policy perspective, these findings point to the importance of reducing barriers to occupational mobility rather than focusing exclusively on within-job wage equalization. Policies that improve credential recognition, reduce informational frictions in hiring, facilitate employer learning, expand pathways into regulated and high-paying professions, and support wage progression within occupations may all contribute to stronger immigrant earnings integration.

Persistent within-occupation wage gaps indicate that immigrants continue to earn less than comparable natives even conditional on similar occupations. However, the duration-specific marginal effects show that dynamic integration occurs through both changes in occupational placement and gradual wage catch-up within jobs, with the relative importance of these channels varying across groups.

Importantly, the subgroup estimates reveal substantial heterogeneity in within-occupation wage gaps. These gaps are largest for immigrant men and for immigrants from Africa and Asia/Oceania, while they are smaller for immigrants from North

America and Europe. This pattern suggests that policies aimed at reducing persistent within-occupation wage gaps—such as improved employer learning, support for credential recognition, and targeted support for disadvantaged groups—may be particularly consequential for these populations.

5.1 Descriptive Magnitudes of Within-Occupation Wage Differences

To make the implications of our results more explicit, we translate the individual-level Actual–Predicted hourly wage gaps into an aggregate measure. For this descriptive exercise, we construct native-based benchmark hourly wages using a separate set of occupation-specific regressions estimated directly in hourly wage levels. For each immigrant, we compute the difference between their actual observed hourly wage and the corresponding benchmark hourly wage predicted under native wage schedules for workers with similar age, gender, and occupation. Averaging this difference across individuals provides a summary measure of the average discrepancy between immigrants’ observed hourly wages and the benchmark hourly wages implied by the native wage structure.

The descriptive calculations reported in this section are separate from the econometric analysis presented in Section 4. Whereas the regression analysis uses occupation-specific models estimated in log hourly wages, the descriptive benchmark wages reported here are obtained from separate occupation-specific regressions estimated directly in hourly wage levels for ease of interpretation in dollar terms. Consequently, these calculations do not involve retransformation of predicted log wages and are therefore not subject to retransformation bias.

Across all immigrants in the sample, the weighted mean difference between the native-based predicted hourly wage and the observed hourly wage is calculated as $\hat{w} - w_w$, where the averages use the Labour Force Survey sampling weights. We then express this mean difference relative to immigrants’ weighted mean observed hourly wage, $\overline{w_w}$. Specifically, the reported statistic is:

$$100 \times \frac{\hat{w} - w_w}{\overline{w_w}}$$

which is approximately 6.5 percent. Thus, the estimated average difference between predicted and observed hourly wages is equivalent to approximately 6.5 percent of immigrants’ mean observed hourly wage.¹⁰ Interpreted conservatively, this statistic provides a descriptive measure of the aggregate within-occupation wage difference relative to native-based wage benchmarks. It should not be interpreted as evidence of discrimination because differences between observed and benchmark wages may also reflect unobserved worker, firm, or job characteristics—including tenure, task assignments, firm-specific wage-setting practices, bargaining outcomes, match quality, or productivity differences—that are not observed in the data. This result complements

¹⁰This descriptive statistic is presented as a point estimate; for formal statistical inference on within-occupation wage differences by subgroup, see the bootstrapped Actual–Predicted coefficients reported in Tables 5–7.

the regression-based evidence by providing an intuitive descriptive measure of the average within-occupation wage gap relative to native benchmark wages.

Disaggregating by gender reveals meaningful, though not dramatic, differences. Male immigrants experience an average hourly wage gap of 7.5 percent, compared with 5.4 percent for female immigrants. Although immigrant women generally face lower wage levels and slower occupational upgrading trajectories overall, the persistence of sizable wage gaps for both groups indicates that differences between observed wages and native-based predicted wages are not confined to one gender. Rather, the results suggest that within-occupation wage disparities remain a broad feature of immigrant labor-market integration in Canada.

More pronounced heterogeneity emerges when results are broken down by region of origin. Immigrants from North America and Europe exhibit substantially smaller hourly wage gaps – 0.1 percent and 2.0 percent, respectively – indicating relatively small differences between their observed wages and native-based predicted wages once occupation is held fixed. In contrast, immigrants from Latin America, Africa, and Asia/Oceania experience markedly larger wage gaps, averaging 7.1 percent, 8.5 percent, and 7.9 percent, respectively. These differences mirror the region-specific regression results in Section 4.5, where immigrants from Latin America, Africa, and Asia/Oceania face larger and more persistent within-occupation wage gaps.

From a policy perspective, this heterogeneity implies that within-occupation wage gaps are most severe for immigrants from Africa and Asia/Oceania, while being considerably smaller for immigrants from North America and Europe, highlighting the need for targeted interventions aimed at groups facing the largest within-occupation gaps.

Taken together, these estimates provide a summary measure of the magnitude of immigrant wage gaps within occupations. Even after conditioning on observed occupation, sizable differences remain between immigrants' observed wages and the wages predicted by native-based wage schedules, particularly for immigrants from Africa and Asia/Oceania. Because the predicted wages are constructed using native wage schedules within the same detailed occupation, these results indicate that wage differences persist even after occupational placement is held fixed. Aggregated across workers, these within-occupation gaps represent an important component of overall immigrant-native wage differentials that is distinct from differences arising through occupational sorting. Importantly, these estimates should not be interpreted as direct measures of productivity differences. Rather, they document disparities between observed immigrant wages and native-based wage benchmarks within occupations. The underlying sources of these disparities may include a range of factors, such as differences in credential recognition, information frictions, job mobility, career progression, or other labor-market processes that are beyond the scope of the present analysis.

5.2 Policy Implications

These findings have important implications for policy. Persistent wage gaps should not be interpreted as direct evidence of discrimination, underpayment, or wage-setting inefficiencies within occupations. They may also reflect unobserved productivity, tenure, firm-specific wage-setting practices, task assignments, or other worker and

employer characteristics that are not observed in our data. Instead, the results point to both barriers to occupational mobility – including credential recognition, licensing requirements, and employer screening – and factors affecting wage progression within occupations as important constraints on immigrant earnings integration.

Gender differences in wage convergence further highlight the role of occupational access. While immigrant women face persistent within-occupation wage gaps, their slower overall wage growth is driven primarily by slower occupational upgrading, rather than substantially weaker within-occupation wage growth. Policies aimed at facilitating transitions into higher-paying occupations – such as targeted bridging programs, occupation-specific training, and support for career progression – are therefore likely to be more effective than policies focused narrowly on reducing within-occupation wage gaps.

5.3 Future Research

Several avenues for future research emerge from this analysis. First, linking survey data to longitudinal administrative records would allow the estimation of individual fixed effects and the study of dynamic learning and job mobility. Second, incorporating measures of task content and technological change could clarify how occupational upgrading interacts with automation and digitalization. Third, examining firm-level hiring and wage-setting practices may help explain the sources of persistent within-occupation wage gaps. Finally, extending the analysis to second-generation outcomes would help connect short-run integration to longer-run inter-generational mobility.

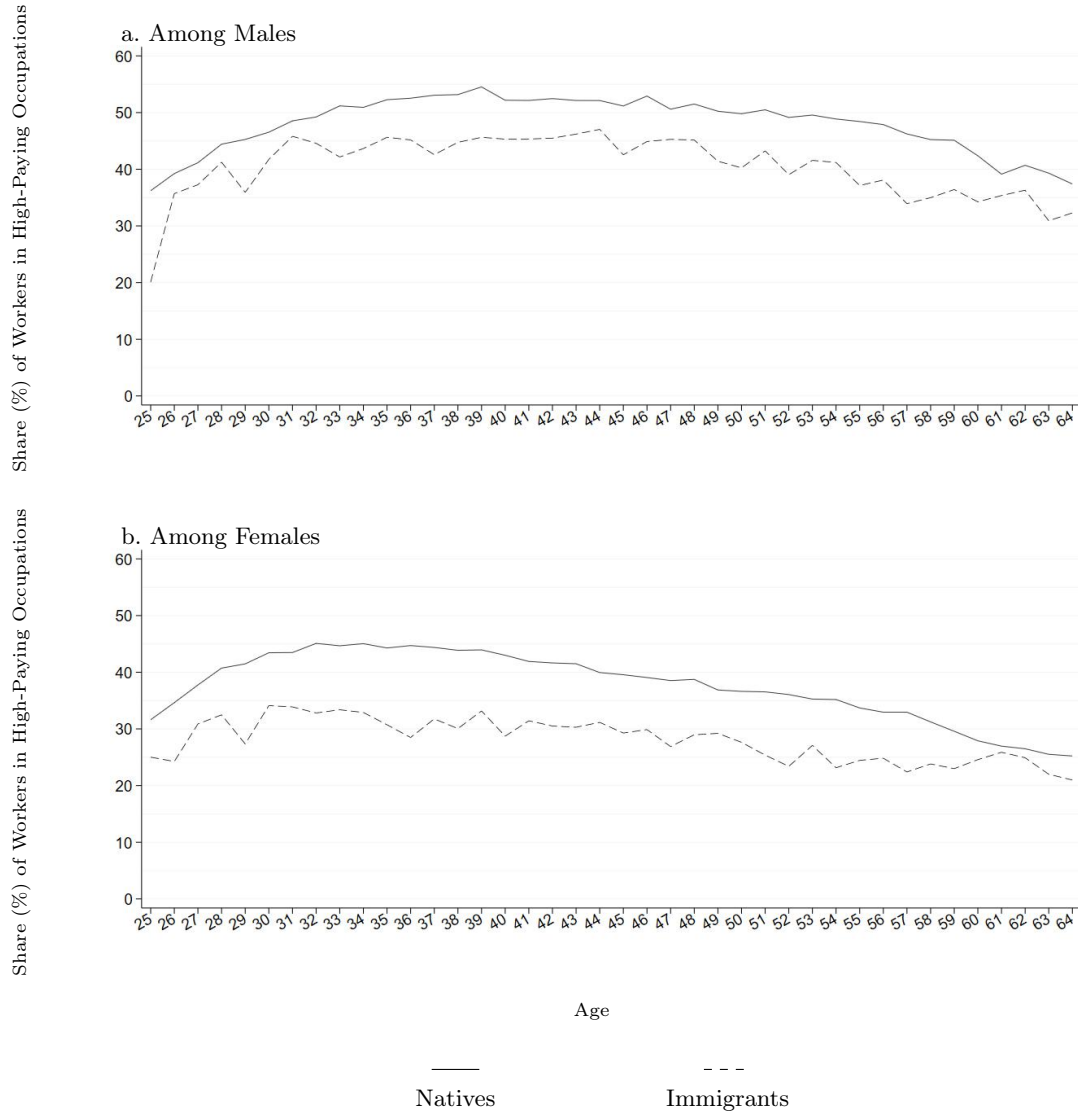
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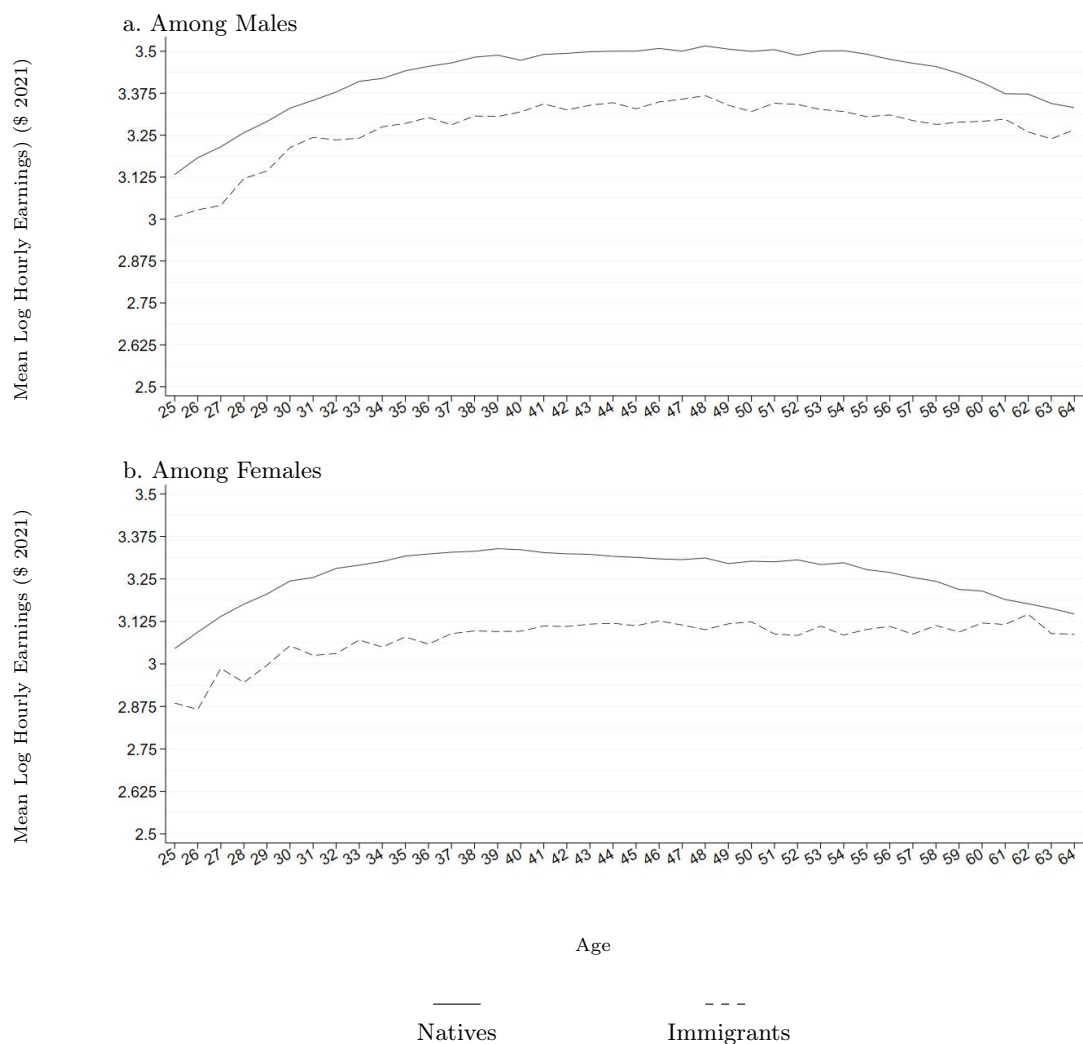
Appendix

Fig. A.1: Age Profiles of High-Paying Occupation Shares by Gender: Natives and Immigrants



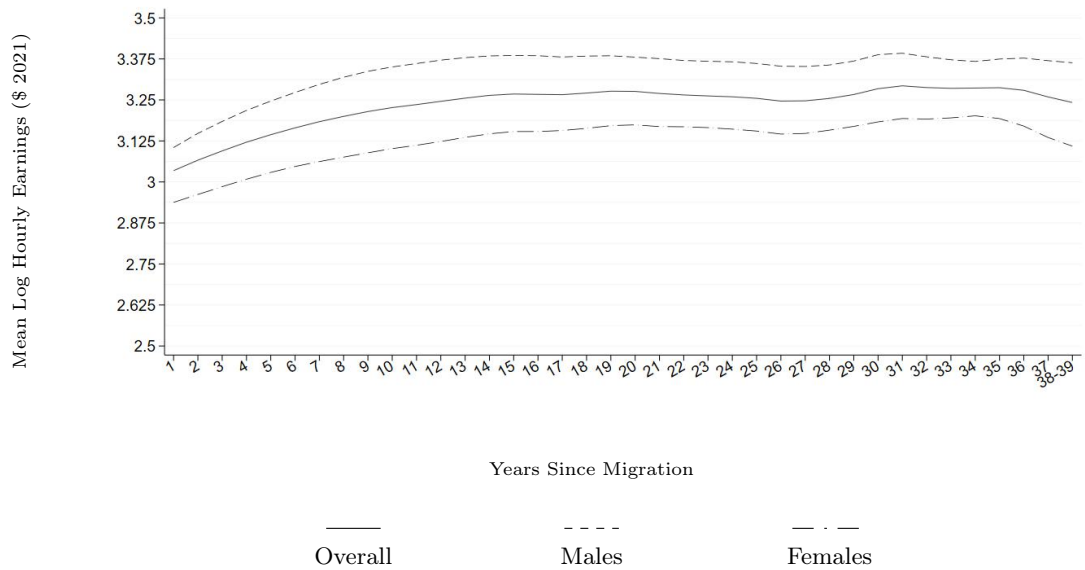
Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. High-paying occupations are defined as NOC_5 occupations with mean hourly earnings, pooled across all workers and the full 2006–2021 sample period, above \$32.88 (2021 dollars) — the unweighted average of occupation-level mean hourly earnings across all NOC_5 occupations.

Fig. A.2: Age Profiles of Mean Log Hourly Earnings by Gender: Natives and Immigrants



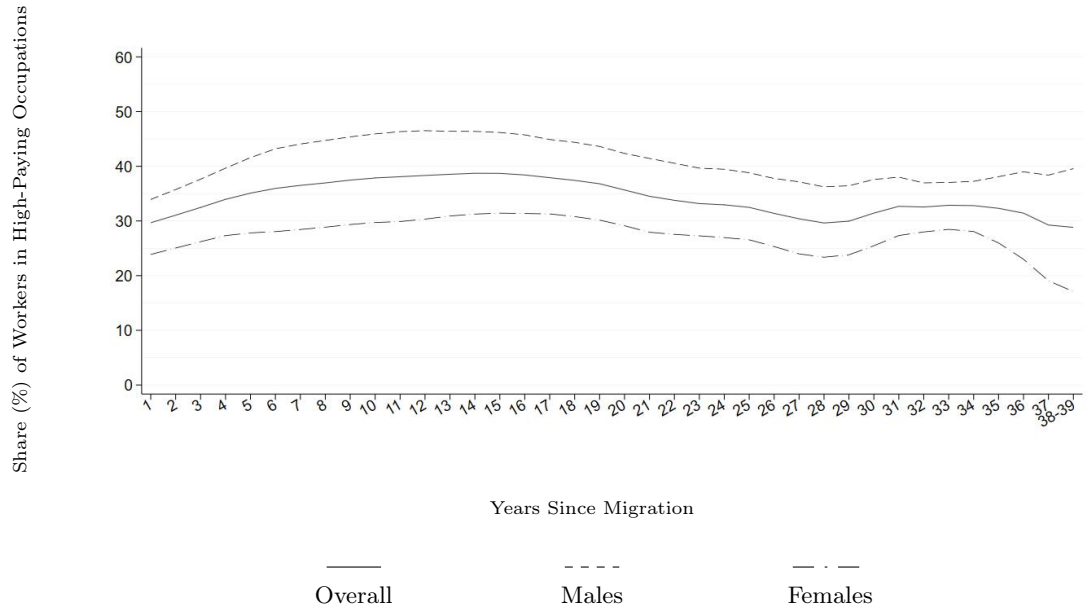
Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

Fig. A.3: YSM Profiles of Mean Log Hourly Earnings by Gender and Overall Among Immigrants



Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. YSMs 38–39 are grouped together. The lines are smoothed to account for fluctuations.

Fig. A.4: YSM Profiles of High-Paying Occupation Shares by Gender and Overall Among Immigrants



Note: We use the Canadian LFS Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 64 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights. YSMs 38–39 are grouped together. The lines are smoothed to account for fluctuations. High-paying occupations are defined as NOC_5 occupations with mean hourly earnings, pooled across all workers and the full 2006–2021 sample period, above \$32.88 (2021 dollars) — the unweighted average of occupation-level mean hourly earnings across all NOC_5 occupations.

Table A.1: Median Positive Weekly Wages of Natives and Immigrants by Gender by Entry Age Group at Entry and 10 Years After Entry (2021 Dollars)

Year	Immigrant Cohort	Native	Immigrant	Native Male	Immigrant Male	Native Female	Immigrant Female
Entry Age: 25–34							
<i>At Entry</i>							
2006	2001–2005	926	652	1023	754	831	574
2011	2006–2011	957	705	1058	819	868	583
2016	2012–2016	989	770	1099	858	887	707
2021	2017–2021	1035	952	1132	1148	971	843
<i>In 10 Years After Entry</i>							
2016	2001–2005	1220	931	1386	1322	1045	752
2021	2006–2011	1277	975	1429	1168	1124	861
Entry Age: 35–44							
<i>At Entry</i>							
2006	2001–2005	1043	749	1248	887	857	572
2011	2006–2011	1130	738	1292	846	953	609
2016	2012–2016	1220	739	1386	853	1045	621
2021	2017–2021	1277	863	1429	1056	1124	712
<i>In 10 Years After Entry</i>							
2016	2001–2005	1166	968	1383	1109	1002	812
2021	2006–2011	1281	950	1464	1142	1085	811

Note: We use the Canadian Labour Force Survey (LFS) Master Files from 2006 to 2021. The sample is restricted to workers with positive hourly earnings aged 25 to 54 residing in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Saskatchewan, and Quebec, surveyed in March or September. Among immigrants, we include only those who arrived in Canada at age 25 or older. We drop individuals for which immigrant status is not available by the definition. All estimates are weighted using the provided sample weights.

Table A.2: Full Results of the OLS Regressions (LFS 2006–2021): Whole Sample, Natives, and Immigrants

Dependent Variable	Whole Sample			Natives			Immigrants		
	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted
Age	0.059** (4×10 ⁻⁴)	0.060** (4×10 ⁻⁴)	-0.002** (1×10 ⁻⁴)	0.060** (4×10 ⁻⁴)	0.061** (4×10 ⁻⁴)	-0.001** (5×10 ⁻⁵)	0.021** (0.002)	0.044** (0.001)	-0.023** (0.002)
Age ²	-0.001** (5×10 ⁻⁶)	-0.001** (5×10 ⁻⁶)	2×10 ⁻⁵ ** (2×10 ⁻⁶)	-0.001** (5×10 ⁻⁶)	-0.001** (5×10 ⁻⁶)	2×10 ⁻⁵ ** (1×10 ⁻⁶)	-3×10 ⁻⁴ ** (2×10 ⁻⁵)	-5×10 ⁻⁴ ** (2×10 ⁻⁵)	2×10 ⁻⁴ ** (2×10 ⁻⁵)
YSM	0.012** (0.001)	0.008** (5×10 ⁻⁴)	0.004** (5×10 ⁻⁴)	-	-	-	0.025** (0.001)	0.014** (0.001)	0.011** (0.001)
YSM ²	-1×10 ⁻⁴ ** (2×10 ⁻⁵)	-1×10 ⁻⁴ ** (1×10 ⁻⁵)	4×10 ⁻⁵ ** (1×10 ⁻⁵)	-	-	-	-3×10 ⁻⁴ ** (2×10 ⁻⁵)	-2×10 ⁻⁴ ** (2×10 ⁻⁵)	-1×10 ⁻⁴ ** (2×10 ⁻⁵)
Survey Years									
2007	0.018** (0.003)	0.018** (0.003)	2×10 ⁻⁴ (0.001)	0.018** (0.003)	0.018** (0.003)	-0.001** (3×10 ⁻⁴)	0.023** (0.009)	0.015** (0.007)	0.008 (0.008)
2008	0.029** (0.003)	0.030** (0.003)	-0.001 (0.001)	0.029** (0.003)	0.030** (0.003)	-0.001** (3×10 ⁻⁴)	0.030** (0.010)	0.027** (0.008)	0.003 (0.008)
2009	0.061** (0.003)	0.064** (0.003)	-0.003** (0.001)	0.062** (0.003)	0.065** (0.003)	-0.003** (3×10 ⁻⁴)	0.052** (0.010)	0.057** (0.008)	-0.005 (0.009)
2010	0.062** (0.003)	0.066** (0.003)	-0.004** (0.001)	0.065** (0.003)	0.068** (0.003)	-0.004** (3×10 ⁻⁴)	0.051** (0.010)	0.057** (0.007)	-0.006 (0.008)
2011	0.047** (0.003)	0.051** (0.003)	-0.004** (0.001)	0.049** (0.003)	0.052** (0.003)	-0.004** (3×10 ⁻⁴)	0.043** (0.010)	0.047** (0.007)	-0.004 (0.008)
2012	0.055** (0.003)	0.060** (0.003)	-0.005** (0.001)	0.057** (0.003)	0.062** (0.003)	-0.005** (3×10 ⁻⁴)	0.044** (0.009)	0.050** (0.008)	-0.006 (0.008)
2013	0.065** (0.003)	0.070** (0.003)	-0.005** (0.001)	0.068** (0.003)	0.073** (0.003)	-0.006** (3×10 ⁻⁴)	0.048** (0.010)	0.051** (0.007)	-0.002 (0.008)
2014	0.069** (0.003)	0.075** (0.003)	-0.006** (0.001)	0.072** (0.003)	0.078** (0.003)	-0.006** (3×10 ⁻⁴)	0.051** (0.010)	0.057** (0.008)	-0.006 (0.008)
2015	0.072** (0.003)	0.079** (0.003)	-0.007** (0.001)	0.073** (0.003)	0.080** (0.003)	-0.007** (3×10 ⁻⁴)	0.074** (0.010)	0.074** (0.007)	-3×10 ⁻⁴ (0.008)
2016	0.079** (0.003)	0.087** (0.003)	-0.008** (0.001)	0.079** (0.003)	0.087** (0.003)	-0.008** (3×10 ⁻⁴)	0.081** (0.010)	0.086** (0.007)	-0.005 (0.008)
2017	0.081** (0.003)	0.088** (0.003)	-0.007** (0.001)	0.081** (0.003)	0.089** (0.003)	-0.008** (3×10 ⁻⁴)	0.087** (0.009)	0.082** (0.007)	0.005 (0.008)
2018	0.085** (0.003)	0.091** (0.003)	-0.006** (0.001)	0.083** (0.003)	0.092** (0.003)	-0.009** (3×10 ⁻⁴)	0.099** (0.009)	0.090** (0.007)	0.009 (0.008)
2019	0.094** (0.003)	0.100** (0.003)	-0.005** (0.001)	0.091** (0.003)	0.101** (0.003)	-0.010** (3×10 ⁻⁴)	0.117** (0.009)	0.098** (0.007)	0.019** (0.007)
2020	0.126** (0.003)	0.133** (0.003)	-0.008** (0.001)	0.119** (0.003)	0.131** (0.003)	-0.012** (4×10 ⁻⁴)	0.158** (0.009)	0.144** (0.007)	0.014** (0.008)
2021	0.116** (0.003)	0.125** (0.003)	-0.009** (0.001)	0.110** (0.003)	0.123** (0.003)	-0.014** (4×10 ⁻⁴)	0.144** (0.009)	0.132** (0.007)	0.012 (0.008)

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Table A.2 continued from previous page

Dependent Variable	Whole Sample			Natives			Immigrants		
	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted
Education									
High School	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(4×10 ⁻⁴)	(0.008)	(0.007)	(0.008)
Below Bachelor	0.098** (0.002)	0.063** (0.001)	0.036** (0.001)	0.108** (0.002)	0.069** (0.001)	0.039** (0.001)	0.034** (0.006)	0.015** (0.004)	0.019** (0.006)
Bachelor	0.271** (0.002)	0.203** (0.001)	0.067** (0.001)	0.282** (0.002)	0.211** (0.002)	0.071** (0.001)	0.201** (0.006)	0.151** (0.004)	0.050** (0.005)
Above Bachelor	0.550** (0.002)	0.431** (0.002)	0.119** (0.001)	0.580** (0.002)	0.448** (0.002)	0.131** (0.001)	0.393** (0.006)	0.332** (0.004)	0.061** (0.005)
	0.710** (0.002)	0.553** (0.002)	0.158** (0.002)	0.730** (0.003)	0.558** (0.002)	0.172** (0.002)	0.589** (0.006)	0.487** (0.005)	0.102** (0.006)
Province									
Quebec	-0.079** (0.001)	-0.082** (0.001)	0.003** (5×10 ⁻⁴)	-0.072** (0.001)	-0.078** (0.001)	0.006** (2×10 ⁻⁴)	-0.133** (0.005)	-0.105** (0.004)	-0.027** (0.004)
Manitoba	-0.070** (0.002)	-0.078** (0.002)	0.008** (0.001)	-0.059** (0.002)	-0.067** (0.002)	0.007** (2×10 ⁻⁴)	-0.130** (0.004)	-0.137** (0.004)	0.008** (0.004)
Saskatchewan	0.009** (0.002)	-0.001 (0.002)	0.010** (5×10 ⁻⁴)	0.015** (0.002)	0.006** (0.002)	0.009** (2×10 ⁻⁴)	-0.026** (0.006)	-0.055** (0.005)	0.029** (0.005)
Alberta	0.127** (0.002)	0.120** (0.002)	0.008** (0.001)	0.135** (0.002)	0.129** (0.002)	0.006** (2×10 ⁻⁴)	0.089** (0.005)	0.070** (0.004)	0.019** (0.004)
British Columbia	0.013** (0.002)	0.009** (0.002)	0.004** (0.001)	0.016** (0.002)	0.012** (0.002)	0.004** (2×10 ⁻⁴)	-1×10 ⁻⁴ (0.004)	-0.003 (0.004)	0.003 (0.004)
Newfoundland & Labrador	-0.132** (0.002)	-0.140** (0.002)	0.008** (4×10 ⁻⁴)	-0.131** (0.002)	-0.139** (0.002)	0.008** (3×10 ⁻⁴)	0.066** (0.021)	-0.041** (0.017)	0.107** (0.016)
P.E.I	-0.213** (0.002)	-0.219** (0.002)	0.007** (5×10 ⁻⁴)	-0.212** (0.002)	-0.218** (0.002)	0.006** (3×10 ⁻⁴)	-0.149** (0.013)	-0.186** (0.009)	0.036** (0.011)
Nova Scotia	-0.189** (0.002)	-0.194** (0.002)	0.005** (5×10 ⁻⁴)	-0.190** (0.002)	-0.194** (0.002)	0.004** (2×10 ⁻⁴)	-0.070** (0.010)	-0.114** (0.008)	0.044** (0.008)
New Brunswick	-0.199** (0.002)	-0.208** (0.002)	0.009** (4×10 ⁻⁴)	-0.197** (0.002)	-0.206** (0.002)	0.009** (2×10 ⁻⁴)	-0.143** (0.011)	-0.175** (0.009)	0.032** (0.010)
Female	-0.198** (0.001)	-0.192** (0.001)	-0.006** (5×10 ⁻⁴)	-0.199** (0.001)	-0.189** (0.001)	-0.010** (1×10 ⁻⁴)	-0.208** (0.003)	-0.217** (0.002)	0.009** (0.003)
Region of Origin									
North America	-0.210** (0.011)	-0.093** (0.007)	-0.117** (0.009)	-	-	-	-	-	-0.066** (0.010)
Latin America	-0.419** (0.006)	-0.239** (0.004)	-0.180** (0.005)	-	-	-	-0.221** (0.011)	-0.155** (0.007)	-0.023** (0.010)
Europe	-0.306** (0.006)	-0.165** (0.004)	-0.141** (0.004)	-	-	-	-0.100** (0.011)	-0.077** (0.007)	-0.023** (0.010)
Africa	-0.428** (0.006)	-0.216** (0.004)	-0.212** (0.005)	-	-	-	-0.213** (0.012)	-0.123** (0.008)	-0.090** (0.010)

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Table A.2 continued from previous page

Dependent Variable	Whole Sample			Natives			Immigrants		
	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted
Asia/Oceania/Other	-0.505** (0.004)	-0.279** (0.003)	-0.226** (0.003)	-	-	-	-0.304** (0.011)	-0.189** (0.007)	-0.115** (0.009)
Constant	1.775** (0.009)	1.818** (0.009)	-0.042** (0.003)	1.726** (0.009)	1.790** (0.009)	-0.064** (0.001)	2.616** (0.043)	2.241** (0.031)	0.374** (0.035)
Observations	1,230,147	1,230,147	1,230,147	1,110,849	1,110,849	1,110,849	119,298	119,298	119,298

Note: ** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are robust to heteroskedasticity.

Table A.3: Full Results of the OLS Regressions (LFS 2006–2021): Males and Females

Dependent Variable	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted
	Males			Females		
Age	0.065** (0.001)	0.063** (0.001)	0.002** (3×10 ⁻⁴)	0.052** (0.001)	0.057** (0.001)	-0.004** (3×10 ⁻⁴)
Age ²	-0.001** (1×10 ⁻⁵)	-0.001** (1×10 ⁻⁵)	-1×10 ^{-5**} (4×10 ⁻⁶)	-0.001** (1×10 ⁻⁵)	-0.001** (1×10 ⁻⁵)	5×10 ^{-5**} (3×10 ⁻⁶)
YSM	0.013** (0.001)	0.009** (0.001)	0.004** (0.001)	0.011** (0.001)	0.007** (0.001)	0.004** (0.001)
YSM ²	-1×10 ^{-4**} (3×10 ⁻⁵)	-2×10 ^{-4**} (2×10 ⁻⁵)	3×10 ⁻⁵ (2×10 ⁻⁵)	-3×10 ⁻⁵ (3×10 ⁻⁵)	-1×10 ^{-4**} (2×10 ⁻⁵)	4×10 ^{-5**} (2×10 ⁻⁵)
Survey Year Dummies						
2007	0.019** (0.004)	0.016** (0.004)	0.003 (0.002)	0.016** (0.004)	0.019** (0.004)	-0.003 (0.002)
2008	0.030** (0.004)	0.029** (0.004)	0.001 (0.002)	0.026** (0.004)	0.030** (0.003)	-0.005** (0.002)
2009	0.059** (0.004)	0.062** (0.003)	-0.003 (0.002)	0.062** (0.004)	0.066** (0.003)	-0.004** (0.002)
2010	0.056** (0.004)	0.062** (0.004)	-0.006** (0.002)	0.066** (0.004)	0.070** (0.003)	-0.004 (0.002)
2011	0.038** (0.004)	0.045** (0.003)	-0.006** (0.002)	0.055** (0.004)	0.058** (0.003)	-0.003 (0.002)
2012	0.049** (0.004)	0.055** (0.004)	-0.007** (0.002)	0.058** (0.004)	0.064** (0.004)	-0.005** (0.002)
2013	0.060** (0.004)	0.070** (0.004)	-0.009** (0.002)	0.067** (0.004)	0.070** (0.004)	-0.003 (0.002)
2014	0.064** (0.004)	0.071** (0.004)	-0.008** (0.002)	0.071** (0.004)	0.077** (0.004)	-0.007** (0.002)
2015	0.067** (0.004)	0.076** (0.003)	-0.009** (0.002)	0.075** (0.004)	0.081** (0.004)	-0.006** (0.002)
2016	0.074** (0.004)	0.087** (0.004)	-0.013** (0.002)	0.081** (0.004)	0.086** (0.004)	-0.005** (0.002)
2017	0.077** (0.004)	0.088** (0.004)	-0.011** (0.002)	0.082** (0.004)	0.087** (0.004)	-0.005** (0.002)
2018	0.080** (0.004)	0.090** (0.004)	-0.010** (0.002)	0.086** (0.004)	0.091** (0.004)	-0.005** (0.002)
2019	0.089** (0.004)	0.099** (0.004)	-0.011** (0.002)	0.097** (0.004)	0.100** (0.004)	-0.003 (0.002)
2020	0.117** (0.004)	0.132** (0.004)	-0.014** (0.002)	0.130** (0.004)	0.135** (0.004)	-0.005* (0.003)
2021	0.106** (0.004)	0.121** (0.004)	-0.015** (0.002)	0.122** (0.004)	0.129** (0.004)	-0.007** (0.002)
Education						
High School	0.074** (0.002)	0.041** (0.002)	0.033** (0.002)	0.148** (0.003)	0.107** (0.002)	0.040** (0.002)
Below Bachelor	0.241** (0.002)	0.171** (0.002)	0.070** (0.002)	0.327** (0.003)	0.260** (0.002)	0.067** (0.002)
Bachelor	0.478** (0.003)	0.372** (0.002)	0.106** (0.002)	0.640** (0.003)	0.510** (0.002)	0.130** (0.002)
Above Bachelor	0.635** (0.003)	0.492** (0.003)	0.144** (0.003)	0.806** (0.003)	0.633** (0.003)	0.173** (0.003)
Province						
Quebec	-0.090** (0.002)	-0.092** (0.002)	0.002 (0.001)	-0.068** (0.002)	-0.015** (0.001)	-0.053** (0.001)
Manitoba	-0.076** (0.002)	-0.081** (0.002)	0.005** (0.001)	-0.065** (0.002)	0.001 (0.002)	-0.066** (0.002)
Saskatchewan	0.035** (0.002)	0.021** (0.002)	0.014** (0.001)	-0.018** (0.002)	-0.006** (0.002)	-0.012** (0.002)
Alberta	0.164** (0.002)	0.154** (0.002)	0.011** (0.001)	0.087** (0.002)	0.015** (0.002)	0.072** (0.002)
British Columbia	0.031** (0.002)	0.026** (0.002)	0.004** (0.001)	-0.006** (0.002)	-0.010** (0.002)	0.004** (0.002)
Newfoundland & Labrador	-0.101** (0.003)	-0.110** (0.003)	0.009** (0.001)	-0.162** (0.003)	-0.059** (0.002)	-0.103** (0.002)
P.E.I.	-0.254** (0.003)	-0.256** (0.003)	0.002** (0.002)	-0.178** (0.003)	-0.046** (0.002)	-0.132** (0.002)

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Table A.3 continued from previous page

Dependent Variable	Actual	Predicted	Actual-Predicted	Actual	Predicted	Actual-Predicted
	Males			Females		
Nova Scotia	-0.188** (0.003)	-0.192** (0.003)	0.005** (0.001)	-0.192** (0.002)	-0.049** (0.002)	-0.143** (0.002)
New Brunswick	-0.205** (0.003)	-0.214** (0.003)	0.008** (0.001)	-0.194** (0.002)	-0.040** (0.002)	-0.154** (0.002)
Region of Origin						
North America	-0.194** (0.016)	-0.086** (0.010)	-0.108** (0.015)	-0.226** (0.014)	-0.098** (0.009)	-0.128** (0.012)
Latin America	-0.411** (0.008)	-0.225** (0.006)	-0.187** (0.007)	-0.421** (0.008)	-0.249** (0.006)	-0.172** (0.006)
Europe	-0.254** (0.008)	-0.134** (0.005)	-0.121** (0.006)	-0.358** (0.008)	-0.196** (0.006)	-0.162** (0.006)
Africa	-0.439** (0.008)	-0.214** (0.006)	-0.225** (0.007)	-0.395** (0.009)	-0.207** (0.007)	-0.188** (0.007)
Asia/Oceania/Other	-0.494** (0.006)	-0.256** (0.004)	-0.239** (0.005)	-0.507** (0.006)	-0.301** (0.005)	-0.205** (0.005)
Constant	1.665** (0.013)	1.787** (0.012)	-0.122** (0.007)	1.656** (0.012)	1.623** (0.012)	0.033** (0.006)
Observations	606,982	606,982	606,982	623,165	623,165	623,165

Note:** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are robust to heteroskedasticity.

Table A.4: OLS Regressions (LFS 2006–2021): Immigrants by Region of Origin

Region	Actual			Predicted			Actual-Predicted		
	NthAm	LatAm	Eur	Afr	Asia	NthAm	LatAm	Eur	Asia
Age	0.053** (0.011)	0.018** (0.005)	0.042** (0.004)	0.012* (0.006)	0.015** (0.003)	0.070** (0.007)	0.043** (0.003)	0.058** (0.003)	0.039** (0.004)
Age ²	-1x10 ⁻³ ** (1x10 ⁻⁴)	-2x10 ⁻⁴ ** (5x10 ⁻⁵)	-5x10 ⁻⁴ ** (1x10 ⁻⁴)	-1x10 ⁻⁴ ** (2x10 ⁻⁵)	-2x10 ⁻⁴ ** (3x10 ⁻⁵)	-1x10 ⁻⁴ ** (2x10 ⁻⁵)	-5x10 ⁻⁵ ** (1x10 ⁻⁵)	-1x10 ⁻⁴ ** (2x10 ⁻⁵)	-5x10 ⁻⁵ ** (1x10 ⁻⁵)
YSM	4x10 ⁻⁴ (0.004)	0.022** (0.002)	0.016** (0.002)	0.037** (0.002)	0.027** (0.001)	4x10 ⁻⁴ (0.003)	0.010** (0.001)	0.008** (0.001)	0.018** (0.001)
YSM ²	1x10 ⁻⁴ (1x10 ⁻⁴)	-3x10 ⁻⁴ ** (6x10 ⁻⁵)	-2x10 ⁻⁴ ** (5x10 ⁻⁵)	1x10 ⁻³ ** (1x10 ⁻⁴)	-3x10 ⁻⁴ ** (3x10 ⁻⁵)	-2x10 ⁻⁴ ** (1x10 ⁻⁴)	-1x10 ⁻⁴ ** (4x10 ⁻⁵)	-3x10 ⁻⁴ ** (1x10 ⁻⁴)	-3x10 ⁻⁴ ** (1x10 ⁻⁴)
Survey Years									
2007	0.096* (0.053)	-0.045** (0.023)	0.032 (0.020)	0.019 (0.034)	0.033** (0.013)	0.084** (0.037)	-0.014 (0.017)	0.008 (0.013)	0.013 (0.023)
2008	0.087 (0.061)	-0.043 (0.027)	0.056** (0.020)	-0.009 (0.035)	0.038** (0.014)	0.044 (0.032)	-0.021 (0.019)	0.035** (0.014)	0.037** (0.010)
2009	0.188** (0.061)	0.008 (0.025)	0.065** (0.021)	0.060* (0.034)	0.048** (0.013)	0.146** (0.035)	0.023 (0.018)	0.059** (0.014)	0.078** (0.010)
2010	0.116** (0.059)	-0.021 (0.025)	0.066** (0.019)	0.059* (0.035)	0.055** (0.013)	0.117** (0.034)	0.025 (0.019)	0.059** (0.015)	0.072** (0.010)
2011	0.114** (0.057)	0.008 (0.025)	0.054** (0.020)	-0.013 (0.032)	0.053** (0.013)	0.101** (0.034)	0.039** (0.018)	0.043** (0.015)	0.031** (0.010)
2012	0.014 (0.051)	3x10 ⁻⁴ (0.027)	0.068** (0.020)	0.037 (0.034)	0.046** (0.013)	0.048 (0.034)	0.050** (0.018)	0.053** (0.015)	0.048** (0.010)
2013	0.081 (0.055)	-0.030 (0.025)	0.041** (0.020)	0.081** (0.031)	0.060** (0.013)	0.096** (0.035)	0.023 (0.018)	0.049** (0.015)	0.063** (0.010)
2014	0.084* (0.051)	-0.018 (0.025)	0.057** (0.021)	0.036 (0.032)	0.065** (0.013)	0.113** (0.035)	0.034** (0.016)	0.063** (0.014)	0.045** (0.010)
2015	0.064 (0.058)	0.018 (0.027)	0.091** (0.022)	0.080** (0.029)	0.075** (0.012)	0.074* (0.039)	0.066** (0.018)	0.080** (0.015)	0.074** (0.010)
2016	0.175** (0.053)	0.037 (0.024)	0.097** (0.020)	0.042 (0.031)	0.086** (0.013)	0.124** (0.034)	0.063** (0.018)	0.112** (0.014)	0.071 (0.023)
2017	0.096* (0.057)	0.037 (0.025)	0.112** (0.021)	0.021 (0.029)	0.097** (0.012)	0.177** (0.035)	0.068** (0.018)	0.085** (0.016)	0.061** (0.010)
2018	0.170** (0.060)	0.074** (0.024)	0.114** (0.020)	0.043 (0.029)	0.106** (0.012)	0.081** (0.036)	0.080** (0.018)	0.110** (0.014)	0.051** (0.010)
2019	0.131** (0.054)	0.050** (0.025)	0.153** (0.020)	0.050 (0.029)	0.129** (0.012)	0.112** (0.036)	0.072** (0.017)	0.125** (0.014)	0.074** (0.010)
2020	0.189** (0.068)	0.079** (0.026)	0.179** (0.021)	0.089** (0.031)	0.176** (0.012)	0.156** (0.039)	0.117** (0.018)	0.141** (0.015)	0.154** (0.010)
2021	0.169** (0.058)	0.094** (0.026)	0.155** (0.022)	0.101** (0.028)	0.154** (0.012)	0.120** (0.037)	0.131** (0.017)	0.144** (0.015)	0.101** (0.021)

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Table A.4 continued from previous page

Region	Actual			Predicted						Actual-Predicted					
	NthAm	LatAm	Eur	Afr	Asia	NthAm	LatAm	Eur	Afr	Asia	NthAm	LatAm	Eur	Afr	Asia
Education															
High School	0.020 (0.067)	0.045** (0.013)	-0.013 (0.017)	0.066** (0.021)	0.035** (0.008)	1×10 ⁻⁴ (0.044)	0.013 (0.009)	0.008 (0.011)	0.029* (0.016)	0.012** (0.006)	0.020 (0.058)	0.032** (0.012)	-0.021 (0.014)	0.038** (0.017)	0.022** (0.007)
Below Bachelor	0.159** (0.063)	0.201** (0.012)	0.133** (0.015)	0.218** (0.018)	0.213** (0.008)	0.151** (0.041)	0.151** (0.009)	0.140** (0.010)	0.177** (0.014)	0.147** (0.005)	0.007 (0.052)	0.050** (0.011)	-0.008 (0.012)	0.041** (0.014)	0.066** (0.007)
Bachelor	0.393** (0.066)	0.405** (0.015)	0.321** (0.016)	0.416** (0.019)	0.399** (0.007)	0.321** (0.043)	0.344** (0.010)	0.333** (0.011)	0.358** (0.014)	0.321** (0.006)	0.073 (0.055)	0.061** (0.012)	-0.013 (0.012)	0.059** (0.015)	0.077** (0.007)
Above Bachelor	0.692** (0.065)	0.623** (0.019)	0.505** (0.017)	0.627** (0.020)	0.587** (0.008)	0.507** (0.040)	0.503** (0.012)	0.470** (0.011)	0.508** (0.015)	0.480** (0.006)	0.184** (0.054)	0.120** (0.015)	0.035** (0.013)	0.120** (0.016)	0.108** (0.007)
Province															
Quebec	-0.236** (0.048)	-0.141** (0.010)	-0.092** (0.010)	-0.118** (0.013)	-0.149** (0.010)	-0.118** (0.030)	-0.104** (0.007)	-0.078** (0.007)	-0.109** (0.009)	-0.116** (0.007)	-0.119** (0.042)	-0.037** (0.009)	-0.014* (0.008)	-0.009 (0.010)	-0.033** (0.008)
Manitoba	-0.201** (0.034)	-0.085** (0.012)	-0.148** (0.010)	-0.144** (0.015)	-0.128** (0.005)	-0.144** (0.024)	-0.103** (0.010)	-0.122** (0.007)	-0.142** (0.012)	-0.145** (0.004)	-0.057** (0.030)	0.018* (0.011)	-0.025** (0.009)	-0.003 (0.011)	0.017** (0.005)
Saskatchewan	-0.068* (0.037)	0.027 (0.023)	-0.009 (0.014)	0.041* (0.020)	-0.043** (0.007)	-0.051** (0.025)	0.003 (0.017)	-0.025** (0.010)	-0.022 (0.014)	-0.072** (0.006)	-0.016 (0.029)	0.024 (0.018)	0.016 (0.012)	0.063** (0.016)	0.028** (0.006)
Alberta	0.054 (0.034)	0.104** (0.015)	0.097** (0.011)	0.064** (0.016)	0.091** (0.006)	0.073** (0.020)	0.088** (0.011)	0.112** (0.008)	0.048** (0.036**	0.061** (0.011)	-0.019 (0.030)	0.016 (0.012)	-0.015* (0.009)	0.016 (0.012)	0.031** (0.005)
British Columbia	-0.018 (0.026)	0.013 (0.018)	0.040** (0.010)	0.086** (0.022)	-0.017** (0.006)	-0.034* (0.018)	0.012 (0.013)	0.019 (0.008)	0.036** (0.015)	-0.012** (0.005)	0.016 (0.023)	0.001 (0.014)	0.021** (0.009)	0.050** (0.018)	-0.005 (0.005)
Newfoundland & Labrador	-0.125* (0.066)	0.102 (0.044)	0.017 (0.054)	0.115** (0.041)	0.101** (0.032)	-0.150** (0.053)	-0.062 (0.057)	-0.002 (0.031)	-0.065 (0.046)	-0.031 (0.026)	0.025 (0.062)	0.164** (0.054)	0.020 (0.036)	0.180** (0.041)	0.132** (0.024)
P.E.I.	-0.242** (0.048)	-0.161** (0.025)	-0.186** (0.025)	-0.041 (0.059)	-0.135** (0.017)	-0.229** (0.035)	-0.156** (0.031)	-0.191** (0.018)	-0.090** (0.043)	-0.195** (0.013)	-0.012 (0.041)	-0.005 (0.033)	0.005 (0.019)	0.049 (0.043)	0.059** (0.014)
Nova Scotia	-0.203** (0.035)	-0.119** (0.033)	-0.074** (0.020)	-0.097** (0.040)	-0.038** (0.014)	-0.188** (0.025)	-0.155** (0.027)	-0.094** (0.014)	-0.148** (0.029)	-0.104** (0.012)	-0.014 (0.029)	0.036 (0.029)	0.019 (0.016)	0.051 (0.034)	0.066** (0.012)
New Brunswick	-0.209** (0.035)	-0.136** (0.036)	-0.168** (0.025)	-0.108** (0.030)	-0.116** (0.017)	-0.207** (0.027)	-0.161** (0.029)	-0.191** (0.017)	-0.151** (0.025)	-0.167** (0.013)	-0.003 (0.032)	0.025 (0.031)	0.024 (0.019)	0.043* (0.025)	0.050** (0.015)
Female	-0.188** (0.020)	-0.190** (0.009)	-0.270** (0.007)	-0.137** (0.010)	-0.202** (0.005)	-0.176** (0.013)	-0.202** (0.006)	-0.231** (0.005)	-0.166** (0.007)	-0.225** (0.003)	-0.011 (0.018)	0.012* (0.007)	-0.040** (0.006)	0.029** (0.008)	0.023** (0.004)
Constant	1.839** (0.250)	2.484** (0.107)	2.127** (0.095)	2.428** (0.130)	2.442** (0.058)	1.597** (0.150)	2.123** (0.077)	1.833** (0.065)	2.116** (0.088)	2.167** (0.041)	0.242 (0.213)	0.361** (0.092)	0.295** (0.076)	0.313** (0.098)	0.275** (0.046)
Observations	3,640	12,737	24,078	12,380	66,454	3,640	12,737	24,078	12,380	66,454	3,640	12,737	24,078	12,380	66,454

Note:** Significant at the 5% level; * Significant at the 10% level. Bootstrap standard errors are robust to heteroskedasticity.

Table A.5: NOC 2021 (1-digit) codes and titles

Code	Broad Occupational Category
0	Legislative and senior management occupations.
1	Business, finance and administration occupations.
2	Natural and applied sciences and related occupations.
3	Health occupations.
4	Education, law, social, community and government services.
5	Art, culture, recreation and sport.
6	Sales and service occupations.
7	Trades, transport and equipment operators and related occupations.
8	Natural resources, agriculture and related production occupations.
9	Manufacturing and utilities.

Table A.6: NOC 2021 (5-digit) codes and titles

NOC 5 Code	Occupation title
00010	Legislators
00011	Senior government managers and officials
00012	Senior managers - financial, communications and other business services
00013	Senior managers - health, education, social and community services and membership organizations
00014	Senior managers - trade, broadcasting and other services
00015	Senior managers - construction, transportation, production and utilities
10010	Financial managers
10011	Human resources managers
10012	Purchasing managers
10019	Other administrative services managers
10020	Insurance, real estate and financial brokerage managers
10021	Banking, credit and other investment managers
10022	Advertising, marketing and public relations managers
10029	Other business services managers
10030	Telecommunication carriers managers
11100	Financial auditors and accountants
11101	Financial and investment analysts
11102	Financial advisors
11103	Securities agents, investment dealers and brokers
11109	Other financial officers
11200	Human resources professionals
11201	Professional occupations in business management consulting
11202	Professional occupations in advertising, marketing and public relations
12010	Supervisors, general office and administrative support workers
12011	Supervisors, finance and insurance office workers
12012	Supervisors, library, correspondence and related information workers
12013	Supervisors, supply chain, tracking and scheduling coordination occupations
12100	Executive assistants
12101	Human resources and recruitment officers
12102	Procurement and purchasing agents and officers
12103	Conference and event planners
12104	Employment insurance and revenue officers
12110	Court reporters, medical transcriptionist and related occupations
12111	Health information management occupations
12112	Records management technicians
12113	Statistical officers & related research support occupations
12200	Accounting technicians and bookkeepers
12201	Insurance adjusters and claims examiners
12202	Insurance underwriters
12203	Assessors, business valuers and appraisers
13100	Administrative officers
13101	Property administrators
13102	Payroll administrators
13110	Administrative assistants
13111	Legal administrative assistants
13112	Medical administrative assistants
13200	Customs, ship and other brokers
13201	Production and transportation logistics coordinators
14100	General office support workers
14101	Receptionists
14102	Personnel clerks
14103	Court clerks and related court services occupations
14110	Survey interviewers and statistical clerks
14111	Data entry clerks
14112	Desktop publishing operators and related occupations
14200	Accounting and related clerks
14201	Banking, insurance and other financial clerks
14202	Collection clerks
14300	Library assistants and clerks
14301	Correspondence, publication and regulatory clerks
14400	Shippers and receivers
14401	Storekeepers and parts-persons
14402	Production logistics workers
14403	Purchasing and inventory control workers
14404	Dispatchers

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NOC 5 Code	Occupation title
14405	Transportation route and crew schedulers
20010	Engineering managers
20011	Architecture and science managers
20012	Computer and information systems managers
21100	Physicists and astronomers
21101	Chemists
21102	Geo-scientists and oceanographers
21103	Meteorologists and climatologists
21109	Other professional occupations in physical sciences
21110	Biologists and related scientists
21111	Forestry professionals
21112	Agricultural representatives, consultants and specialists
21120	Public and environmental health and safety professionals
21200	Architects
21201	Landscape architects
21202	Urban and land use planners
21203	Land surveyors
21210	Mathematicians, statisticians and actuaries
21211	Data scientists
21220	Cyber security specialists
21221	Business systems specialists
21222	Information systems specialists
21223	Database analysts and data administrators
21230	Computer systems developers and programmers
21231	Software engineers and designers
21232	Software developers and programmers
21233	Web designers
21234	Web developers and programmers
21300	Civil engineers
21301	Mechanical engineers
21310	Electrical and electronics engineers
21311	Computer engineers (except software engineers and designers)
21320	Chemical engineers
21321	Industrial and manufacturing engineers
21322	Metallurgical and materials engineers
21330	Mining engineers
21331	Geological engineers
21332	Petroleum engineers
21390	Aerospace engineers
21399	Other professional engineers
22100	Chemical technologists and technicians
22101	Geological and mineral technologists and technicians
22110	Biological technologists and technicians
22111	Agricultural and fish products inspectors
22112	Forestry technologists and technicians
22113	Conservation and fishery officers
22114	Landscape and horticulture technicians and specialists
22210	Architectural technologists and technicians
22211	Industrial designers
22212	Drafting technologists and technicians
22213	Land survey technologists and technicians
22214	Technical occupations in geomatics and meteorology
22220	Computer network and web technicians
22221	User support technicians
22222	Information systems testing technicians
22230	Non-destructive testers and inspectors
22231	Engineering inspectors and regulatory officers
22232	Occupational health and safety specialists
22233	Construction inspectors
22300	Civil engineering technologists and technicians
22301	Mechanical engineering technologists and technicians
22302	Industrial engineering and manufacturing technologists and technicians
22303	Construction estimators
22310	Electrical and electronics engineering technologists and technicians
22311	Electronic service technicians (household and business equipment)
22312	Industrial instrument technicians and mechanics
22313	Aircraft instrument, electrical and avionics mechanics, technicians and inspectors
30010	Managers in health care
31100	Specialists in clinical and laboratory medicine

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NOC 5 Code	Occupation title
31101	Specialists in surgery
31102	General practitioners and family physicians
31103	Veterinarians
31110	Dentists
31111	Optometrists
31112	Audiologists and speech-language pathologists
31120	Pharmacists
31121	Dietitians and nutritionists
31200	Psychologists
31201	Chiropractors
31202	Physiotherapists
31203	Occupational therapists
31204	Kinesiologists and other professional occupations in therapy and assessment
31209	Other professional occupations in health diagnosing and treating
31300	Nursing coordinators and supervisors
31301	Registered nurses and registered psychiatric nurses
31302	Nurse practitioners
31303	Physician assistants, midwives and allied health professionals
32100	Opticians
32101	Licensed practical nurses
32102	Paramedical occupations
32103	Respiratory therapists, clinical perfusionists and cardiopulmonary technologists
32104	Animal health technologists and veterinary technicians
32109	Other technical occupations in therapy and assessment
32110	Denturists
32111	Dental hygienists and dental therapists
32112	Dental technologists and technicians
32120	Medical laboratory technologists
32121	Medical radiation technologists
32122	Medical sonographers
32123	Cardiology technologists and electrophysiological diagnostic technologists
32124	Pharmacy technicians
32129	Other medical technologists and technicians
32200	Traditional Chinese medicine practitioners and acupuncturists
32201	Massage therapists
32209	Other practitioners of natural healing
33100	Dental assistants and dental laboratory assistants
33101	Medical laboratory assistants and related technical occupations
33102	Nurse aides, orderlies and patient service associates
33103	Pharmacy technical assistants and pharmacy assistants
33109	Other assisting occupations in support of health services
40010	Government managers - health and social policy development and program administration
40011	Government managers - economic analysis, policy development and program administration
40012	Government managers - education policy development and program administration
40019	Other managers in public administration
40020	Administrators - post-secondary education and vocational training
40021	School principals and administrators of elementary and secondary education
40030	Managers in social, community and correctional services
40040	Commissioned police officers and related occupations in public protection services
40041	Fire chiefs and senior firefighting officers
40042	Commissioned officers of the Canadian Armed Forces
41100	Judges
41101	Lawyers and Quebec notaries
41200	University professors and lecturers
41201	Post-secondary teaching and research assistants
41210	College and other vocational instructors
41220	Secondary school teachers
41221	Elementary school and kindergarten teachers
41300	Social workers
41301	Therapists in counseling and related specialized therapies
41302	Religious leaders
41310	Police investigators and other investigative occupations
41311	Probation and parole officers
41320	Educational counselors
41321	Career development practitioners and career counselors (except education)
41400	Natural and applied science policy researchers, consultants and program officers
41401	Economists and economic policy researchers and analysts

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NOC 5 Code	Occupation title
41402	Business development officers and market researchers and analysts
41403	Social policy researchers, consultants and program officers
41404	Health policy researchers, consultants and program officers
41405	Education policy researchers, consultants and program officers
41406	Recreation, sports and fitness policy researchers, consultants and program officers
41407	Program officers unique to government
41409	Other professional occupations in social science
42100	Police officers (except commissioned)
42101	Firefighters
42102	Specialized members of the Canadian Armed Forces
42200	Paralegals and related occupations
42201	Social and community service workers
42202	Early childhood educators and assistants
42203	Instructors of persons with disabilities
42204	Religion workers
43100	Elementary and secondary school teacher assistants
43109	Other instructors
43200	Sheriffs and bailiffs
43201	Correctional service officers
43202	By-law enforcement and other regulatory officers
43203	Border services, customs, and immigration officers
43204	Operations members of the Canadian Armed Forces
44100	Home child care providers
44101	Home support workers, caregivers and related occupations
44200	Primary combat members of the Canadian Armed Forces
45100	Student monitors, crossing guards and related occupations
50010	Library, archive, museum and art gallery managers
50011	Managers - publishing, motion pictures, broadcasting and performing arts
50012	Recreation, sports and fitness program and service directors
51100	Librarians
51101	Conservators and curators
51102	Archivists
51110	Editors
51111	Authors and writers (except technical)
51112	Technical writers
51113	Journalists
51114	Translators, terminologists and interpreters
51120	Producers, directors, choreographers and related occupations
51121	Conductors, composers and arrangers
51122	Musicians and singers
52100	Library and public archive technicians
52110	Film and video camera operators
52111	Graphic arts technicians
52112	Broadcast technicians
52113	Audio and video recording technicians
52114	Announcers and other broadcasters
52119	Other technical and coordinating occupations in motion pictures, broadcasting and the performing arts
52120	Graphic designers and illustrators
52121	Interior designers and interior decorators
53100	Registrars, restorers, interpreters and other occupations related to museum and art galleries
53110	Photographers
53111	Motion pictures, broadcasting, photography and performing arts assistants and operators
53120	Dancers
53121	Actors, comedians and circus performers
53122	Painters, sculptors and other visual artists
53123	Theater, fashion, exhibit and other creative designers
53124	Artisans and craftsperson
53125	Pattern-makers - textile, leather and fur products
53200	Athletes
53201	Coaches
53202	Sports officials and referees
54100	Program leaders and instructors in recreation, sport and fitness
55109	Other performers
60010	Corporate sales managers
60020	Retail and wholesale trade managers
60030	Restaurant and food service managers

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NOC 5 Code	Occupation title
60031	Accommodation service managers
60040	Managers in customer and personal services
62010	Retail sales supervisors
62020	Food service supervisors
62021	Executive housekeepers
62022	Accommodation, travel, tourism and related services supervisors
62023	Customer and information services supervisors
62024	Cleaning supervisors
62029	Other services supervisors
62100	Technical sales specialists - wholesale trade
62101	Retail and wholesale buyers
62200	Chefs
62201	Funeral directors and embalmers
62202	Jewelers, jewelry and watch repairers and related occupations
63100	Insurance agents and brokers
63101	Real estate agents and salespersons
63102	Financial sales representatives
63200	Cooks
63201	Butchers - retail and wholesale
63202	Bakers
63210	Hairstylists and barbers
63211	Estheticians, electrologists and related occupations
63220	Shoe repairers and shoemakers
63221	Upholsterers
64100	Retail salespersons and visual merchandisers
64101	Sales and account representatives - wholesale trade (non-technical)
64200	Tailors, dressmakers, furriers and milliners
64201	Image, social and other personal consultants
64300	Maitres d'hôtel and hosts/hostesses
64301	Bartenders
64310	Travel counselors
64311	Pursers and flight attendants
64312	Airline ticket and service agents
64313	Ground and water transport ticket agents, cargo service representatives and related clerks
64314	Hotel front desk clerks
64320	Tour and travel guides
64321	Casino workers
64322	Outdoor sport and recreational guides
64400	Customer services representatives - financial institutions
64401	Postal services representatives
64409	Other customer and information services representatives
64410	Security guards and related security service occupations
65100	Cashiers
65101	Service station attendants
65102	Store shelf stockers, clerks and order fillers
65109	Other sales related occupations
65200	Food and beverage servers
65201	Food counter attendants, kitchen helpers and related support occupations
65202	Meat cutters and fishmongers - retail and wholesale
65210	Support occupations in accommodation, travel and facilities set-up services
65211	Operators and attendants in amusement, recreation and sport
65220	Pet groomers and animal care workers
65229	Other support occupations in personal services
65310	Light duty cleaners
65311	Specialized cleaners
65312	Janitors, caretakers and heavy-duty cleaners
65320	Dry cleaning, laundry and related occupations
65329	Other service support occupations
70010	Construction managers
70011	Home building and renovation managers
70012	Facility operation and maintenance managers
70020	Managers in transportation
70021	Postal and courier services managers
72010	Contractors and supervisors, machining, metal forming, shaping and erecting trades and related occupations
72011	Contractors and supervisors, electrical trades and telecommunications occupations
72012	Contractors and supervisors, pipefitting trades
72013	Contractors and supervisors, carpentry trades

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NOC 5 Code	Occupation title
72014	Contractors and supervisors, other construction trades, installers, repairers and servicers
72020	Contractors and supervisors, mechanic trades
72021	Contractors and supervisors, heavy equipment operator crews
72022	Supervisors, printing and related occupations
72023	Supervisors, railway transport operations
72024	Supervisors, motor transport and other ground transit operators
72025	Supervisors, mail and message distribution occupations
72100	Machinists and machining and tooling inspectors
72101	Tool and die makers
72102	Sheet metal workers
72103	Boilermakers
72104	Structural metal and plate-work fabricators and fitters
72105	Ironworkers
72106	Welders and related machine operators
72200	Electricians (except industrial and power system)
72201	Industrial electricians
72202	Power system electricians
72203	Electrical power line and cable workers
72204	Telecommunications line and cable installers and repairers
72205	Telecommunications equipment installation and cable television service technicians
72300	Plumbers
72301	Steamfitters, pipefitters and sprinkler system installers
72302	Gas fitters
72310	Carpenters
72311	Cabinetmakers
72320	Bricklayers
72321	Insulators
72400	Construction millwrights and industrial mechanics
72401	Heavy-duty equipment mechanics
72402	Heating, refrigeration and air conditioning mechanics
72403	Railway car men/women
72404	Aircraft mechanics and aircraft inspectors
72405	Machine fitters
72406	Elevator constructors and mechanics
72410	Automotive service technicians, truck and bus mechanics and mechanical repairers
72411	Auto body collision, refinishing and glass technicians and damage repair estimators
72420	Oil and solid fuel heating mechanics
72421	Appliance servicers and repairers
72422	Electrical mechanics
72423	Motorcycle, all-terrain vehicle and other related mechanics
72429	Other small engine and small equipment repairers
72500	Crane operators
72501	Water well drillers
72600	Air pilots, flight engineers and flying instructors
72601	Air traffic controllers and related occupations
72602	Deck officers, water transport
72603	Engineer officers, water transport
72604	Railway traffic controllers and marine traffic regulators
72999	Other technical trades and related occupations
73100	Concrete finishers
73101	Tilesetters
73102	Plasterers, drywall installers and finishers and lathers
73110	Roofers and shinglers
73111	Glaziers
73112	Painters and decorators (except interior decorators)
73113	Floor covering installers
73200	Residential and commercial installers and servicers
73201	General building maintenance workers and building superintendents
73202	Pest controllers and fumigators
73209	Other repairers and servicers
73300	Transport truck drivers
73301	Bus drivers, subway operators and other transit operators
73310	Railway and yard locomotive engineers
73311	Railway conductors and brakemen/women
73400	Heavy equipment operators
73401	Printing press operators
73402	Drillers and blasters - surface mining, quarrying and construction
74100	Mail and parcel sorters and related occupations

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NOC 5 Code	Occupation title
74101	Letter carriers
74102	Couriers and messengers
74200	Railway yard and track maintenance workers
74201	Water transport deck and engine room crew
74202	Air transport ramp attendants
74203	Automotive and heavy truck and equipment parts installers and servicers
74204	Utility maintenance workers
74205	Public works maintenance equipment operators and related workers
75100	Longshore workers
75101	Material handlers
75110	Construction trades helpers and laborers
75119	Other trades helpers and laborers
75200	Taxi and limousine drivers and chauffeurs
75201	Delivery service drivers and door-to-door distributors
75210	Boat and cable ferry operators and related occupations
75211	Railway and motor transport laborers
75212	Public works and maintenance laborers
80010	Managers in natural resources production and fishing
80020	Managers in agriculture
80021	Managers in horticulture
80022	Managers in aquaculture
82010	Supervisors, logging and forestry
82020	Supervisors, mining and quarrying
82021	Contractors and supervisors, oil and gas drilling and services
82030	Agricultural service contractors and farm supervisors
82031	Contractors and supervisors, landscaping, grounds maintenance and horticulture services
83100	Underground production and development miners
83101	Oil and gas well drillers, servicers, testers and related workers
83110	Logging machinery operators
83120	Fishing masters and officers
83121	Fishermen/women
84100	Underground mine service and support workers
84101	Oil and gas well drilling and related workers and services operators
84110	Chain saw and skidder operators
84111	Silviculture and forestry workers
84120	Specialized livestock workers and farm machinery operators
84121	Fishing vessel deckhands
85100	Livestock laborers
85101	Harvesting laborers
85102	Aquaculture and marine harvest laborers
85103	Nursery and greenhouse laborers
85104	Trappers and hunters
85110	Mine laborers
85111	Oil and gas drilling, servicing and related laborers
85120	Logging and forestry laborers
85121	Landscaping and grounds maintenance laborers
90010	Manufacturing managers
90011	Utilities managers
92010	Supervisors, mineral and metal processing
92011	Supervisors, petroleum, gas and chemical processing and utilities
92012	Supervisors, food and beverage processing
92013	Supervisors, plastic and rubber products manufacturing
92014	Supervisors, forest products processing
92015	Supervisors, textile, fabric, fur and leather products processing and manufacturing
92020	Supervisors, motor vehicle assembling
92021	Supervisors, electronics and electrical products manufacturing
92022	Supervisors, furniture and fixtures manufacturing
92023	Supervisors, other mechanical and metal products manufacturing
92024	Supervisors, other products manufacturing and assembly
92100	Power engineers and power systems operators
92101	Water and waste treatment plant operators
93100	Central control and process operators, mineral and metal processing
93101	Central control and process operators, petroleum, gas and chemical processing
93102	Pulping, papermaking and coating control operators
93200	Aircraft assemblers and aircraft assembly inspectors
94100	Machine operators, mineral and metal processing
94101	Foundry workers
94102	Glass forming and finishing machine operators and glass cutters

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NOC 5 Code	Occupation title
94103	Concrete, clay and stone forming operators
94104	Inspectors and testers, mineral and metal processing
94105	Metalworking and forging machine operators
94106	Machining tool operators
94107	Machine operators of other metal products
94110	Chemical plant machine operators
94111	Plastics processing machine operators
94112	Rubber processing machine operators and related workers
94120	Sawmill machine operators
94121	Pulp mill, papermaking and finishing machine operators
94122	Paper converting machine operators
94123	Lumber graders and other wood processing inspectors and graders
94124	Woodworking machine operators
94129	Other wood processing machine operators
94130	Textile fiber and yarn, hide and pelt processing machine operators and workers
94131	Weavers, knitters and other fabric making occupations
94132	Industrial sewing machine operators
94133	Inspectors and graders, textile, fabric, fur and leather products manufacturing
94140	Process control and machine operators, food and beverage processing
94141	Industrial butchers and meat cutters, poultry preparers and related workers
94142	Fish and seafood plant workers
94143	Testers and graders, food and beverage processing
94150	Plateless printing equipment operators
94151	Camera, platemaking and other prepress occupations
94152	Binding and finishing machine operators
94153	Photographic and film processors
94200	Motor vehicle assemblers, inspectors and testers
94201	Electronics assemblers, fabricators, inspectors and testers
94202	Assemblers and inspectors, electrical appliance, apparatus and equipment manufacturing
94203	Assemblers, fabricators and inspectors, industrial electrical motors and transformers
94204	Mechanical assemblers and inspectors
94205	Machine operators and inspectors, electrical apparatus manufacturing
94210	Furniture and fixture assemblers, finishers, refinishers and inspectors
94211	Assemblers and inspectors of other wood products
94212	Plastic products assemblers, finishers and inspectors
94213	Industrial painters, coaters and metal finishing process operators
94219	Other products assemblers, finishers and inspectors
95100	laborers in mineral and metal processing
95101	laborers in metal fabrication
95102	laborers in chemical products processing and utilities
95103	laborers in wood, pulp and paper processing
95104	laborers in rubber and plastic products manufacturing
95105	laborers in textile processing and cutting
95106	laborers in food and beverage processing
95107	laborers in fish and seafood processing
95109	Other laborers in processing, manufacturing and utilities