# The Decomposition of Wage Differentials between Immigrants and Natives in Canada

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## Abstract

*This paper brings new evidence to the existing literature on earnings differentials and decomposition of wage difference for immigrants and natives. The paper exploits the most recent September 2020 Labor Force Survey, which is the nationally representative sample of both foreign and Canadian employees. The Blinder-Oaxaca decomposition technique is applied to a sample of 37,708 (of which 6,516 are immigrants). Wage differentials between immigrants and natives are decomposed into the gap related to characteristics and the one due to different returns on endowments and unexplained difference. Controlling for provinces and specified occupations, the average hourly wage of immigrants is $1.617 less than native Canadians, the explained variables coefficient of $1.633 can explain almost all the wage differentials; while the unexplained variables widen the wage gap to -$3.23 and it cannot be explained by difference in observed characteristics and this large proportion is explained due to geographic discrimination assessed by native and immigration workers.*

## 1. Introduction

According to Canadian census data from 2011 to 2015, the cumulative growth rate of the Canadian population in these five years was only 5%, which is equivalent to less than 1% yearly in terms of population growth rate. Also, based on predictions made from Statistics Canada, Canada's natural population growth rate will be virtually zero by 2046 and 25% of Canadians will be over 65 years old by 2035. At that time, five million Canadians will be retired, which will result in a ratio of 2:1 between workers and retirees. This would undoubtedly generate a huge burden on the Canadian welfare system and medical system and would even bring great pressure on Canadian economic development.

The relatively old age of the Canadian population has recently become a serious economic problem. For the above reasons, Canada has made the absorption of immigrants a national policy. An influx of more skilled immigrants can relieve the problems arising from labour shortage and poor technical capacity. The recent "announcement"[1] from the Canadian Immigration Department will increase the total number of new immigrants to 1.23 million over the next three years.

[1] CBC News: Posted on Oct 30, 2020 4:00 AM: The Liberal government plans to bring in more than 1.2 million immigrants over the next three years, despite hurdles created by the global pandemic. The federal government sought to bring in 341,000 immigrants this year, 351,000 next year and another 361,000 in 2022.

Canada's immigration policy is often viewed as particularly accommodating, but it is still selective in practice. The points-based system is Canada's main method of accepting legal immigrants. It explicitly screens out eligibility criteria such as youth, education, employee ability and adaptability. Canada offers many ways for foreigners to immigrate to Canada. The granting of permanent resident status is also dominated by three main factors: family, employment and humanitarian needs. In the 10 years from 2003 to 2012, the majority of Canadian immigrants came to Canada for economic reasons, and such immigrants accounted for 59.4 percent of the total number of immigrants who obtained permanent residence during that period. Immigrants who came to Canada for family reasons accounted for 25.8 percent. Humanitarian migrants, mainly refugees, accounted for an average of 11.1 percent, while the remaining 3.7 percent were classified under the "other"[2] category. The numbers of humanitarian and "other" migrants are relatively consistent, with only slight fluctuations. However, the number of economic migrants appears to be on the rise, while the number of family migrants appears to be on the decline. Data[3] for 2013 show that economic migrants account for 69.3 percent of new permanent residents, while household migration has dropped to 18.2 percent and humanitarian migrants account for 9.2 percent (Bragg, 2013); this further illustrates that more and more immigrants are accepted by Canada. Due to the increase in the number of immigrants, it is certain to have an impact on the

[2] This category includes immigrants who were granted permanent resident status under a program that does not fall in either the economic immigrants, the immigrants sponsored by family or the refugee categories.)

[3] See details on Report on the Demographic Situation in Canada: Permanent and temporary immigration to Canada from 2012 to 2014. https://www150.statcan.gc.ca/n1/pub/91-209-x/2016001/article/14615-eng.htm.

local labor market. The focus of this paper is to investigate the income gap between immigrants and nonimmigrants in the labor market and study the wage gap and wage differential distribution between the two. Also, by using the latest and more comprehensive Labor Force Survey (LFS) data, we can study what factors lead to the wage differential and provide new evidence for our understanding of the income differences between immigrants and native workers. To identify the relative importance of variation in the relative wage outcomes of immigrants, I exploit human capital information and characteristics[4] available in the recent LFS.

The paper is organized as follows. In the next section, previous international and domestic research will be reviewed and summarized. In Section 3, we discuss the sample, data sources and the descriptive statistics of the key variables. Section 4 presents the methodology that deals explicitly with provincial and occupational choice. The issue of discriminatory practices, as they relate to both geographic and occupational distribution of immigrants and an augmented version of the typical Blinder–Oaxaca decomposition technique are also presented in this section. Section 5 presents and discusses the estimation results. The last section concludes the paper.

[4] Characteristics include marital status, geographic destination, and occupation categories.

## 2. Literature review

Understanding the influence of immigration on the local wage rate has theoretical and policy significance, so it attracts the attention of researchers. However, the current existing theoretical research has not arrived at a consensus, but rather there is diversity of conclusions. The relative advantages and disadvantages of immigrants in the labor market of the host country have been extensively analyzed in recent studies amongst international and domestic academic contributions. These studies have put special attention on immigrant wages relative to those of native-born workers, and their findings can be summarized as follows: first, immigrants typically face a significant wage gap relative to native workers and the gap tends to diminish the longer immigrants remain in the host country; second, the relative earnings difference between immigrants and natives are partly the result of human capital differentials; third, immigrants encounter wage discrimination by showing that wage differentials are a clearer indication of labor market discrimination than employee characteristics. I will illustrate these three points of view in the following paragraphs and the relative literature contributions.

Focusing on the first point, immigrants typically face a significant wage gap relative to native workers, which has been found in the literature starting with the seminal paper of Chiswick (1978). He found that immigrants in the USA earn about 3 percent less than comparable native-born Americans even after controlling for differences in socio-economic characteristics. International evidence tends to show that

immigrants typically face a wage disadvantage relative to the native-born people, but there are substantial heterogeneous factors in the disadvantages between different groups of immigrants and across host countries. Using a national sample and employing residual difference methodology, Gabriel and Schmitz (1987) have analyzed the earnings differential between natives and immigrants. They estimated a basic human capital and an "assimilation" model of income determination and found that all workers, regardless of occupation, industry and region, participate in a common aggregate national labor market. To the extent that returns to human capital attributes are influenced by their provinces and job-related characteristics, estimation of an "only human capital variables" model may not produce an accurate measure of discrimination.

For the alternative point of view that relative earnings difference between immigrants and natives are the result of human capital differentials only, Dell'Aringa et al. (2015) consider that returns to human capital are relatively lower for immigrants as there is no return to pre-immigration work experience compared with the host country's employees. This suggests there exists imperfect transferability of human capital which is contrary to what is observed for natives; immigrants' human capital does not contribute to getting access to high-level occupations.

Additionally, a study by Cai and Liu (2014) finds that male immigrants from non-English-speaking countries to Australia have shown little overall wage difference as this composition effect is offset by disadvantage in the wage structure; however, a lower

bar of wage payments is distributed amongst female immigrants from non-English-speaking countries. They also find that the increasingly skill-based immigration policy in Australia has increased the skill levels of immigrants relative to Australian-born citizens. Moreover, immigrants are not homogeneous; countries of origin and gender matter in determining the wage rate. Considering the evidence found by Aydemir and Skuterud (2008), they mainly concentrate on male immigrants in low-wage establishments within Canada's major cities and regions. Certainly, immigrant men were, on average, more educated and had more labor market experience than native-born men doing similar jobs in the same categories. However, the distinguished human capital obtained pre-immigration abroad implies neither a wage advantage nor a wage disadvantage. There is relatively little evidence of concentration in low-wage establishments among immigrant women. On the contrary, immigrant women have experienced relatively large wage disadvantages within occupations. Finally, they find strong evidence for both men and women of negative sorting across establishments within Canada's major cities and regions and large unexplained wage gaps within establishments.

Last but not least, researchers also explore that wage differentials between immigrants and natives only reveal that there exists a clearer indication of labor market discrimination rather than of employees' characteristics. Following the same techniques, [5] Demoussis et al. (2010) demonstrate that native workers enjoy

[5] Controlling for occupational selectivity, occupation-specific wage regressions for representative

significantly higher wages than immigrants and that this differential is to a large extent, around 48%, unexplained by differences in observed characteristics of the two worker-groups.

Furthermore, the decomposition's analysis reveals that roughly 90% of the unexplained part can be attributed to differences between occupations and 10% to differences within occupations. This finding implies in turn that the underlying cause of observed wage differentials is the asymmetrical occupational access of natives and immigrants and not the unequal treatment within a given occupation. Immigrants account for a disproportionately high proportion of low-income jobs,[6] and a disproportionately low proportion of high-paying jobs.[7] Kee (1995) agrees that wage differentials are a clearer indication of labor market discrimination. He found that in the Netherlands, the primary sources of migrant labor include the Netherlands Antilles, Suriname, Turkey and Morocco. Also, by comparing the wages received by migrant workers from these countries with the wages of native Dutch employees, wage discrimination appears to exist against Antillean and Turks. Respectively 11 percentage points (35%) and 6 percentage points (15%) of their log wage difference with natives is attributable to the discrimination against Antillean and Turks. However, there is no indication of discrimination against Surinamese and Moroccans. Moreover, within both

samples of employed native and immigrant workers were estimated and an augmented decomposition technique was utilized to analyze inter and intra occupation wage differentials.

[6] Production workers and unskilled labor.

[7] Legislators, managers, professionals, assistants, and "service workers".

the Caribbeans and the Mediterraneans, discrimination is present against the group with the highest mean level of education.

Immigration has also become an increasingly important phenomenon in Spain, and the paper of Antón et al. (2010) analyzes the native-immigrant wage gap across the whole distribution using the M-M[8] decomposition. Their main finding is the existence of an important glass ceiling for foreign workers from developing countries; that is, the wage gap significantly grows across the wage distribution. Other results obtained by Nicodemo and Ramos (2012) in Spain indicate that, on average, immigrant women earn less than native women in the Spanish labor market. This wage gap is bigger when immigrant women from developing countries are considered, but the authors' main finding is that an important part of this wage gap is related to differences in comparing native and immigrant women with similar observable characteristics.[9]

[8] The Machado-Mata decomposition: the seminal contributions made by Oaxaca (1973) and Blinder (1973) propose relatively simple econometric techniques to decompose the average gap into a component related to observable endowments and another one associated with differences in characteristics (interpreted usually as a measure of discrimination in labor market studies). The main shortcoming of this approach is related to the fact that the gap in a certain outcome between two groups is likely to not be constant across the whole distribution of such outcomes. For example, a null mean gap can be simply the average of large gaps of different signs at the tails, which obviously has very different policy implications than the absence of discrimination.

[9] Immigrant women are segregated in certain jobs with low wages different from those occupied by native women. If the need to control for common support is neglected, estimates of the wage gap will be biased.

## 3. Sample and Summary Statistics

### 3.1 Sampling

The LFS measures the current situation of the Canadian labor market; it is used to calculate national, provincial and regional employment and unemployment rates. Data collection is done through personal interviews, telephone interviews and questionnaires. The LFS collects monthly information on the labor market activities of the Canadian labor population. This file contains both personal characteristics for all individuals in the household and detailed labor force characteristics for household members 15 years of age and older. The personal characteristics include age, sex, marital status, educational attainment and family characteristics. Detailed labor force characteristics include employment information such as class of workers, usual and actual hours of work, employee hourly and weekly wages, industry and current occupation, most recent job status, public-private sector, union status, paid or unpaid overtime hours, job permanency, hours of work lost, job tenure and unemployment information such as duration of unemployment, methods of job search and type of job sought. These and more are available by province and for the three largest census metropolitan areas (Montreal, Toronto, Vancouver). We use the most recent LFS (September 2020) data, and the sample size is 85,682.

### 3.2 Summary Statistics

In order to carry out the estimates, this paper firstly conducts data cleansing. Only those aged between 20 and 64 years were retained, and self-employed and unemployed

individuals were excluded;[10] 3,708 observations were retained overall. We further compare two labor groups of immigrants (landed 10 or less years earlier or landed more than 10 years earlier) and non-immigrants, whom we consider as native Canadian citizens. Table 1 shows the immigrants and nonimmigrants in different provinces in the labor market. There, we can see that Manitoba, British Columbia, Ontario and Alberta have over 20% immigrants in their labor market; in comparison, Newfoundland and Labrador had the fewest immigrants with only 3.63%. However, Manitoba and Saskatchewan are provinces with a higher immigration quota,[11] making it easier to migrate. Because of historical reasons, Quebec's immigration policy is slightly different from that of other Canadian provinces. To immigrate to Quebec, an individual must first apply through the Quebec Immigration Program and obtain the CSQ (Quebec Selection Certificate) before applying to the Canadian government for permanent resident status. When applying for CSQ, she will need to demonstrate to the Quebec government that she meets the eligibility requirements of Quebec's immigration program. So far, the two most popular Quebec migrant programs for skilled workers abroad are the QSW program[12] and PEQ program.[13] We consider Alberta to be a

[10] Low human capital persons are more likely to be unemployed, and immigrants with high human capital are more likely to be self-employed.

[11] Manitoba Provincial Nominee Program (MPNP) has the highest provincial nominee ratio and Saskatchewan Immigrant Nominee Program (SINP) is believed to be the easiest of them all to get through according to https://blog.y-axis.com/which-is-easiest-pnp-to-get-canada-pr-2020/.

[12] Quebec Skilled Worker Program: officially known as RSWP, uses the same scoring system as the Canada EE Program. As long as the applicant meets the basic requirements, the application can be submitted. No interview is required, and applicants can obtain the Quebec Selection Certificate CSQ even without knowledge of French.

[13] Quebec Experience Program: This program is known in French as the Programme de l'expérience Québécoise, or PEQ. There are two streams under this immigration program, one for foreign students and one for foreign workers; both are required to demonstrate at least an advanced intermediate level of oral French through a standardized test.

province in which it is easy to apply as an immigrant, as graduates are allowed to work as long as they submit an application to the province; within two to four months, they can get a nomination letter. Alberta also gave considerable quota to graduates from other provinces. Although increasing the quota may make the Atlantic provinces less difficult, it is not necessarily easier than the Prairie provinces.

**Table 1. Immigration Ratio in Canadian Provinces (2020)**

| Province | Total number | Immigrants | Non-immigrants | Immigration Ratio (%) |
|---|---|---|---|---|
| Newfoundland and Labrador | 1,101 | 40 | 1061 | 3.63 |
| Prince Edward Island | 1,026 | 78 | 948 | 7.6 |
| Nova Scotia | 1,862 | 152 | 1710 | 8.16 |
| New Brunswick | 1,983 | 128 | 1855 | 6.45 |
| Quebec | 7,216 | 804 | 6412 | 11.14 |
| Ontario | 9,996 | 2108 | 7888 | 21.09 |
| Manitoba | 3,905 | 1084 | 2821 | 27.76 |
| Saskatchewan | 2,653 | 372 | 2281 | 14.02 |
| Alberta | 3,956 | 822 | 3134 | 20.78 |
| British Columbia | 4,010 | 928 | 3082 | 23.14 |

Source: Reproduced from LFS (September 2020).

Examining the proportion of immigrants in each job category and the impact of specific types of jobs on the average wage rate provides us with a more comprehensive understanding of the impact of job classification and wage levels on immigration percentage. The segmentation of the market is reflected in the segmentation of occupations, which can be caused by vocational skills differentiating and divided into ten categories: management; business, finance and administration; natural and applied sciences and related occupations; health; education, law and social, community and

government services; art, culture, recreation and sport; sales and services; trades, transport and equipment operators and related occupations; natural resources, agriculture and related production; and manufacturing and utilities. Also, these characteristics can also be caused by discriminatory employment provisions between males and females.

See Table 2 (below) for immigration population percentages. For immigrants, the highest percentages are manufacturing and utility (25.55%); natural and applied sciences (24.08%) and health (20.29%). The lowest percentage is 9.02%, which is natural resources, agriculture and related production. The reason behind this is that government allows mostly part-time or temporary workers that help out with increased work demands or seasonal work that arise in different industries. Industries that have a higher than average representation of seasonal workers include agriculture, construction, information, culture and recreational services, forestry, fishing, mining, oil and gas, business, building and other support services.

By grouping immigrants and non-immigrants through constructing six categories, we can see that different occupations play different roles in each category. After analyzing the data in Table 3, we obtain a few divisions based on the correlation from occupation at main job to 1. hourly wage; 2. usual hours worked per week; 3. highest educational years; 4. age; 5. male ratio; and 6. female ratio. In the categories from 1 to 6, we also analyze their status as either Immigrant or Non-Immigrant.

**Table 2. Immigration Ratio under 10 NOC categories**

| Occupation at main job - 2016 NOC (10 categories) | Total Number | Immigrants | Non-Immigrants | Immigration Ratio |
|---|---|---|---|---|
| Management | 2,413 | 377 | 2,036 | 15.62% |
| Business, finance and administration | 6,654 | 1056 | 5,598 | 15.87% |
| Natural and applied sciences and related occupations | 3,335 | 803 | 2,532 | 24.08% |
| Health | 3,277 | 665 | 2,612 | 20.29% |
| Education, law and social, community and government service | 5,123 | 749 | 4,374 | 14.62% |
| Art, culture, recreation and sports | 552 | 87 | 465 | 15.76% |
| Sales and services | 7,561 | 1,445 | 6,116 | 19.11% |
| Trades, transport and equipment operators and related occupations | 5,789 | 735 | 5,054 | 12.70% |
| Natural resources, agriculture and related production | 1,020 | 92 | 928 | 9.02% |
| Manufacturing and utilities | 1,984 | 507 | 1,477 | 25.55% |

Source: Reproduced from LFS (September 2020).

We observe that: 1. Management has the highest hourly wage ($45.91), while Sales and Services have the lowest hourly wage ($19.06), which meets the expectation of a pyramid structure of corporations. We also found that the hourly wage of the Non-Immigrants in the lower level of the pyramid structure of the corporations is a little higher than Immigrants. 2. There is no obvious difference between Usual Hours Worked per Week because of the by-law regulations that higher wages would be paid

for overtime working hours. 3. We can observe that natural resources, agriculture and production have slightly less educational years, as these occupations do not require advanced education degrees. 4. The table also reveals that Management normally requires more years of service and working experience in business and industry to achieve management level, while Art, Culture, Recreation and Sports have a shorter expectancy of service due to more restricted age and health conditions. 5. The male immigrant ratio is higher than the male non-immigrant ratio in Management[14], while the male non-immigrant ratio is higher in health, natural resources, agriculture and production. We also find higher female non-immigrants ratio in education, law and social, community and government, as well as business, finance and administration.

[14] See Table 3.

## Table 3. Occupation at main job

| Occupation at main job | Hourly wage | | Usual Work Hour per week | | Highest education year | | Age | | Male Ratio% | | Female Ratio% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Immi | Non | Immi | Non | Immi | Non | Immi | Non | Immi | Non | Immi | Non |
| **1. Management** | 45.91 | 45.38 | 39.17 | 39.72 | 15.66 | 15.2 | 43.69 | 43.77 | 61.27 | 55.70 | 38.73 | 44.30 |
| **2. Business, finance and administration** | 28.48 | 28.8 | 36.28 | 35.88 | 15.3 | 14.9 | 41.28 | 41.58 | 29.55 | 25.46 | 70.45 | 74.54 |
| **3. Natural and applied sciences** | 39.11 | 38.9 | 38.37 | 38.31 | 15.89 | 15.2 | 40.07 | 39.54 | 70.49 | 76.11 | 29.51 | 23.89 |
| **4. Health** | 29.52 | 32.69 | 35.05 | 34.18 | 15.46 | 15.3 | 41.27 | 38.77 | 78.49 | 86.06 | 21.51 | 13.94 |
| **5. Education, law and social, community and government service** | 32.24 | 35.39 | 33.77 | 34.66 | 15.84 | 15.6 | 42.47 | 40.05 | 33.64 | 28.76 | 66.36 | 71.24 |
| **6. Art, culture, recreation and sports** | 28.49 | 27.65 | 33.54 | 33.06 | 15.49 | 15.1 | 37.56 | 38.66 | 40.23 | 41.29 | 59.77 | 58.71 |
| **7. Sales and services** | 19.06 | 20.07 | 32.82 | 33.35 | 14.6 | 14.1 | 40.04 | 39.86 | 41.87 | 43.98 | 58.13 | 56.02 |
| **8. Trades, transport and equipment operators** | 26.79 | 29.06 | 39.67 | 41.45 | 14.38 | 14.1 | 42.59 | 40.09 | 91.16 | 93.41 | 8.84 | 6.59 |
| **9. Natural resources, agriculture and production** | 26.57 | 27.95 | 42.9 | 44.51 | 13.9 | 12.8 | 41.35 | 39.99 | 70.65 | 81.36 | 29.35 | 18.64 |
| **10. Manufacturing and utilities** | 22.28 | 27.24 | 39.74 | 40.05 | 15.19 | 14.8 | 43.72 | 42.01 | 67.65 | 78.94 | 32.35 | 21.06 |

Source: Reproduced from LFS (September 2020).

## 4. Data Description

For the empirical analysis, we used the most recent LFS from September 2020. In our analyses we included the observations on Canadian Immigrants and Non-Immigrants. Our sample includes 37,708 observations. Our basic wage variable is the natural logarithm of usual hourly wages, employees only. The explanatory variables are as below:

Immigration status:

1. Immi1 = 1 for Immigrant, landed 10 or less years earlier and immigrant, landed more than 10 years earlier

2. Immi2 = 1for non-Immigrants

Age:

3. age1 = 1 for 20 to 24 years

4. age2 = 1 for 25 to 29 years

5. age3 = 1 for 30 to 34 years

6. age4 = 1 for 35 to 39 years

7. age5 = 1 for 40 to 44 years

8. age6 = 1 for 45 to 49 years

9. age7 = 1 for 50 to 54 years

10. age8 = 1 for 55 to 59 years

11. age9 = 1 for 60 to 64 years

Gender:

12. Sex = 1 for male, 0 otherwise

Marital Status:

13. Married1 = 1 for those married or Common-law

14. Married2 = 1 for those Single, separate, divorce or widowed

Educational Attainment (Highest years attended)

15. edu1 = 1 for educated 0 to 8 years

16. edu2 = 1 for High school dropout (9-11years)

17. edu3 = 1 for High school graduate (12 years)

18. edu4 = 1 for Some postsecondary (Not completed postsecondary) (13-14 years)

19. edu5 = 1 for Postsecondary certificate or diploma (15 years)

20. edu6 = 1 for Bachelor's degree (16 years)

21. edu7 = 1 for Above bachelor's degree (17 years or more)

Occupation:

22. noc1 = 1 for Management

23. noc2 = 1 for Business, finance and administration

24. noc3 = 1 for Natural and applied sciences and related occupations

25. noc4 = 1 for Health

26. noc5 = 1 for Education, law and social, community and government Services

27. noc6 = 1 for Art, culture, recreation and sport

28. noc7 = 1 for Sales and services

29. noc8 = 1 for Trades, transport and equipment operators and related occupations

30. noc9 = 1 for Natural resources, agriculture and related production occupations

31. noc10 = 1 for Manufacturing and utilities

Province:

32. prov1 = 1 for Newfoundland and Labrador, 0 otherwise

33. prov2 = 1 for Prince Edward Island, 0 otherwise

34. prov3 = 1 for Nova Scotia, 0 otherwise

35. prov4 = 1 for New Brunswick, 0 otherwise

36. prov5 = 1 for Quebec, 0 otherwise

37. prov6 = 1 for Ontario, 0 otherwise

38. prov7 = 1 for Manitoba, 0 otherwise

39. prov8 = 1 for Saskatchewan, 0 otherwise

40. prov9 = 1 for Alberta, 0 otherwise

41. prov10 = 1 for British Columbia, 0 otherwise

Table 4 presents the descriptive Statistics.

**Table 4. Descriptive Statistics**

| ***Variable*** | Obs | Mean | Std Dev. | Min | Max |
|---|---|---|---|---|---|
| **Usual hourly wage** | 37,708 | 29.89 | 14.14 | 3.03 | 106.25 |
| **Immigrants** | 37,708 | 0.173 | 0.0378 | 0 | 1 |
| **Male** | 37,708 | 0.5 | 0.5 | 0 | 1 |
| **Married or common law** | 37,708 | 0.678 | 0.467 | 0 | 1 |
| ***Age*** | | | | | |
| **Age from 20 to 24 years** | 37,708 | 0.076 | 0.265 | 0 | 1 |
| **Age from 25 to 29 years** | 37,708 | 0.096 | 0.294 | 0 | 1 |
| **Age from 30 to 34 years** | 37,708 | 0.118 | 0.323 | 0 | 1 |
| **Age from 35 to 39years** | 37,708 | 0.126 | 0.332 | 0 | 1 |
| **Age from 40 to 44 years** | 37,708 | 0.126 | 0.331 | 0 | 1 |
| **Age from 45 to 49 years** | 37,708 | 0.121 | 0.326 | 0 | 1 |
| **Age from 50 to 54 years** | 37,708 | 0.125 | 0.331 | 0 | 1 |
| **Age from 55 to 59 years** | 37,708 | 0.126 | 0.331 | 0 | 1 |
| **Age from 60 to 64 years** | 37,708 | 0.087 | 0.281 | 0 | 1 |
| ***Education Attainment*** | | | | | |
| **0 to 8 years** | 37,708 | 0.113 | 0.106 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Highschool dropout** | 37,708 | 0.048 | 0.214 | 0 | 1 |
| **Highschool graduate** | 37,708 | 0.181 | 0.385 | 0 | 1 |
| **Some postsecondary** | 37,708 | 0.052 | 0.223 | 0 | 1 |
| **Postsecondary certificate or diploma** | 37,708 | 0.042 | 0.49 | 0 | 1 |
| **Bachelor's degree** | 37,708 | 0.214 | 0.41 | 0 | 1 |
| **Above bachelor's degree** | 37,708 | 0.092 | 0.288 | 0 | 1 |
| ***Province*** | | | | | |
| **Newfoundland and Labrador** | 37,708 | 0.029 | 0.168 | 0 | 1 |
| **Prince Edward Island** | 37,708 | 0.027 | 0.162 | 0 | 1 |
| **Nova Scotia** | 37,708 | 0.049 | 0.217 | 0 | 1 |
| **New Brunswick** | 37,708 | 0.053 | 0.223 | 0 | 1 |
| **Quebec** | 37,708 | 0.191 | 0.393 | 0 | 1 |
| **Ontario** | 37,708 | 0.265 | 0.441 | 0 | 1 |
| **Manitoba** | 37,708 | 0.104 | 0.305 | 0 | 1 |
| **Saskatchewan** | 37,708 | 0.07 | 0.256 | 0 | 1 |
| **Alberta** | 37,708 | 0.105 | 0.306 | 0 | 1 |
| **British Columbia** | 37,708 | 0.106 | 0.308 | 0 | 1 |
| ***Occupation*** | | | | | |
| **Management** | 37,708 | 0.064 | 0.245 | 0 | 1 |
| **Business, finance and administration** | 37,708 | 0.176 | 0.381 | 0 | 1 |
| **Natural and applied sciences and related occupations** | 37,708 | 0.088 | 0.284 | 0 | 1 |
| **Health** | 37,708 | 0.087 | 0.282 | 0 | 1 |
| **Education, law and social, community and government service** | 37,708 | 0.136 | 0.343 | 0 | 1 |
| **Art, culture, recreation and sports** | 37,708 | 0.015 | 0.12 | 0 | 1 |
| **Sales and services** | 37,708 | 0.201 | 0.4 | 0 | 1 |
| **Trades, transport and equipment operators and related occupations** | 37,708 | 0.154 | 0.36 | 0 | 1 |
| **Natural resources, agriculture and related production occupations** | 37,708 | 0.027 | 0.162 | 0 | 1 |
| **Manufacturing and utilities** | 37,708 | 0.053 | 0.223 | 0 | 1 |

## 5. Models, Empirical Results and Interpretation

### 5.1 Regression Results of the Basic Model

The objective of this paper is to analyze the effect of immigration status on wages. In order to find the wage differentials between immigrants and native workers, I use the following log-linear multivariate regression model with regressing on immigrants and non-immigrants respectively.

$$Wage_i = \beta_0 + SEX_i\,\beta_1 + \mathrm{AGE}_i\,\beta_2 + MARSTAT_i\,\beta_3 + EDUC_i\,\beta_4 + \varepsilon_i \qquad \textbf{(1)}$$

where, $Wage_i$ represents the usual hourly wage, employees only, of individual $i$. $SEX_i$ is a binary variable which is equal to one if sex is male and is equal to zero if sex is female. Age is grouped into five-year gaps and recombined into 9 groups from 20 years old to 64 years old. Marital status has one group for married and common law and another group for single, separated, divorced and widowed. $Educ_i$ represents the vector of three education dummy variables; they are divided by receiving education for 0-8 years, high school dropout, high school graduate, some postsecondary, post-secondary diploma or certificate, bachelor's degree and above bachelor's. I use 0-8 years as the reference group. The basic model estimates hourly wage by controlling for sex, marital status, age and educational attainment between immigrants and nonimmigrants samples, where usual hourly wage is the dependent variable we are trying to predict. In Table 5 (shown below), I regress twice in terms of immigrant and nonimmigrant status according to equation (1). By comparing specifications (1) and (2), I find that male

immigrants earn $5.012 higher hourly wage compared with female immigrants, while Canadian male citizens can make $4.68 higher than native female workers. In terms of marital status, both immigrants and non-immigrants post a significant difference in terms of their hourly earnings, which indicates that for both immigrants and nonimmigrants, marital status does not have much of an impact on earnings. Amongst the age groups, individuals who are 55-59 years old earn the highest hourly wage compared with other groups of immigrants. This suggests that seniority plays a determinant role in immigrant hourly earnings, while for nonimmigrants the age group comprising of 45 years to 49 years old earns the highest.

Controlling for educational attainment variables suggests that there is positive correlation with wages regardless of whether immigrants are considered or not. We can see that education plays a positive role in determining the wages earned; the higher the educational achievement, the higher the hourly wage earned by both immigrants and nonimmigrants. However, with the same education level, the host workers make a higher hourly wage. For example, the local citizen who graduates from high school will earn hourly $4.619 more than the reference group, while the immigrants who are high school graduates can only earn $2.793 more compared with the reference group. For immigrants, post-secondary certificate and bachelor's degree holders earn $5.959 and $11.1 higher respectively, which is much lower compared with local employees whose hourly wages are $8.635 and $16.232 higher. We can conclude that there exist unequal wages for immigrants and non-immigrants although they hold the same level of

educational attainment. Moreover, the coefficients of high school dropouts, high school graduates, post-secondary diploma unfinished, postsecondary certificate or diploma and above bachelor's degree are all positive and statistically significant at the 1% level.

By looking at the adjusted R-square in this model, it only accounts for 18.2% of the variance in specification (1) and for 24.2% in specification (2). In spite of this, the model is still meaningful since all the predictors are still statistically significant and we can still draw the above conclusions about changes of the value in predictors that are associated with the corresponded values.

**Table 5. Regression Results (Immigrants and Natives), Basic model**

| **Variables** | (1) Immigrants | (2) Non-immigrants |
|---|---|---|
| ***A. Sex*** | | |
| Male | 5.012 ***(0.326) | 4.680***(0.140) |
| ***B. Marital Status*** | | |
| Married or Common Law | 0.346*(0.411) | 2.317***(0.159) |
| ***C. Age*** **(20-24years as reference)** | | |
| 25-29years | 3.427***(0.962) | 3.953***(0.335) |
| 30-34years | 5.310***(0.944) | 6.881***(0.330) |
| 35-39years | 6.816***(0.932) | 9.084***(0.333) |
| 40-44years | 8.611***(0.928) | 10.057***(0.333) |
| 45-49years | 9.141***(0.927) | 10.930***(0.335) |
| 50-54years | 9.558***(0.922) | 10.601***(0.333) |
| 55-59years | 9.774***(0.940) | 9.615***(0.330) |
| 60-64years | 7.522***(1.000) | 7.794***(0.353) |
| ***D. Educational Attainment*** (0-8 years as reference) | | |
| Some Highschool | -0.648*(1.554) | 1.922**(0.750) |
| Highschool Graduate | 2.793***(1.322) | 4.619***(0.405) |
| Some postsecondary | 2.554*(1.448) | 6.300***(0.752) |
| Postsecondary certificate | 5.959***(1.285) | 8.635***(0.696) |
| Bachelor's degree | 11.099***(1.288) | 16.232***(0.707) |
| Above bachelor | 16.672***(1.319) | 21.361***(0.733) |
| ***Cons*** | 10.073***(1.483) | 8.459***(0.736) |
| ***Adj. R-square*** | 18.2% | 24.2% |
| ***Observations*** | 6,516 | 31,192 |

Note: standard errors in brackets. *p<0.05 **p<0.01 ***p<0.001

## 5.2 Regression Results of the Extended Model

$$Wage_i = \beta_0 + SEX_i\,\beta_1 + \mathrm{AGE}_i\,\beta_2 + MARSTAT_i\,\beta_3 + Educ_i\,\beta_4 + PROV_i\,\beta_5 + \varepsilon_i \quad \textbf{(2)}$$

Table 6 shows the results of the two regressions analysis of the extended model by controlling for province. Alike with the basic model, married and common law

Canadian citizens earn $2.389 more than single, separate, divorce or widowed Canadians. However, there does not exist obvious earning difference for immigration based on their marital status. In the basic model, we still use age 20 to 24 years as the reference group, as for immigrants, the age group from 50 to 59 earns the highest. For non-immigrants, 45 to 49 years earn the highest hourly wage compared to other groups, which explains how seniority and working experience can benefit employees in the labor market by reflecting on their wage rates. But compared with immigrants, non-immigrants still earn more regardless of the classification of age groups. Nonimmigrants always earn more than immigrants, so there might be wage discrimination between nonimmigrants and immigrants.

Similar with the basic model, more educational years can explain higher wage rates earned for both immigrants and nonimmigrants. Coefficients of education are positive and statistically significant at the 1% level for both specifications (1) and (2). With the same education level, native workers make a higher hourly wage than immigrants. $PROV_i$ represents the vector of province dummies, and we used Quebec as the reference group. From Table 1, Ontario and Quebec have the highest numbers of workers (9,996 and 7,216 respectively), which in total counts for 46% of the labor populations. Conversely, Newfoundland and Labrador and Prince Edward Island only have 1,101 and 1,026 individuals in this extended model. Hourly wages in Prince Edward Island, New Brunswick, Manitoba and Saskatchewan are less than Quebec for immigrants. For example, Prince Edward Island has the lowest hourly wage, which is

$3.802 less than Quebec, and New Brunswick and Saskatchewan's immigrant employees earn $1.756 and $0.734 less respectively in term of hourly wage. Manitoba has the second lowest wage rate at $3.237 less than Quebec; ironically, Manitoba has the highest immigrant rate, which is 27.76%. Ontario, Alberta, British Columbia, Newfoundland and Labrador and Nova Scotia have higher wage rates than Quebec, at $3.472, $3.171, $2.59, $2.58 and $1.147 respectively. A partial explanation[15] of this geographic wage differential is that each province has its own immigration policy. For example, Manitoba has an immigration policy[16] in which it is easier to be approved to become a permanent resident, no matter the earning rate.

In comparison to immigrants, when examining the hourly wage rate of Canadian citizens in terms of geographic locations, we find that the wage rate in the four Atlantic provinces is less than Quebec. For instance, citizens in Prince Edward Island, New Brunswick and Nova Scotia earn $4.489, $4.046 and $3.716 less than Quebec. Alberta has the highest wage rate, which is $5.833 higher than Quebec. Its highest wage is mainly due to its mining, quarrying and oil and gas extraction industries; it is also the only province in Canada that does not have a consumption tax. British Columbia has

[15] But interprovincial differences also exist for nonimmigrants.

[16] The number of immigrants' landings in Manitoba in 2019 reached 18,905, the highest for any year in the province's 150-year history, Economic Development and Training Minister Ralph Eichler announced: https://news.gov.mb.ca/news/?archive&item=46837#:~:text=MANITOBA%20ACCEPTS%20HIGHEST%20NUMBER%20OF%20IMMIGRANTS%20IN%20PROVINCE'S%20HISTORY,-The%20number%20of&text=The%20Manitoba%20Provincial%20Nominee%20Program%20is%20the%20primary%20pathway%20for,to%20Manitoba's%20labour%20force%20growth.

the second highest wage, which is $2.471 more; Ontario and Saskatchewan have $1.659 and $2.158 respectively, which is higher than Quebec in terms of hourly wage. Manitoba is slightly higher than Quebec ($0.277). All coefficients of provinces are significant statistically at the 1% level. By observing the adjusted R-square in this model, for immigrants it accounts for 21.1% of their variance and for non-immigrants it accounts for 27.6%. By adding province as the dummy variable, the model plays a better role in describing the fitted values.

**Table 6. Regression Results, Extended model, Province**

| **Variables** | (1)<br>Immigrants | (2)<br>Non-immigrants |
|---|---|---|
| ***A. Sex*** | | |
| Male | 5.035***(0.320) | 4.588***(0.137) |
| ***B. Marital Status*** | | |
| Married or Common Law | 0.425***(0.405) | 2.389***(0.156) |
| C. ***Age* (20-24 years as *references)*** | | |
| 25-29years | 2.952***(0.946) | 3.768***(0.328) |
| 30-34years | 4.735***(0.929) | 6.647***(0.323) |
| 35-39years | 6.184***(0.917) | 8.878***(0.325) |
| 40-44years | 7.819***(0.914) | 9.969***(0.326) |
| 45-49years | 8.476***(0.912) | 10.901***(0.328) |
| 50-54years | 8.628***(0.907) | 10.685***(0.326) |
| 55-59years | 8.858***(0.925) | 9.752***(0.322) |
| 60-64years | 6.433***(0.985) | 7.828***(0.345) |
| D. ***Educational Attainment***<br>(0-8 years as reference) | | |
| Some Highschool | -0.050***(1.528) | 1.078***(0.733) |
| Highschool Graduate | 3.198***(1.298) | 3.560***(0.691) |
| Some postsecondary | 3.561***(1.452) | 5.098***(0.737) |
| Postsecondary certificate | 6.598***(1.263) | 7.813***(0.681) |
| Bachelor's degree | 11.663***(1.265) | 15.283***(0.693) |
| Above bachelor | 16.943***(1.295) | 20.677***(0.718) |
| ***E. Province***<br>(Quebec as reference) | | |
| Newfoundland and Labrador | 2.580***(2.085) | -1.321***(0.397) |
| Prince Edward Island | -3.802***(1.528) | -4.489***(0.416) |
| Nova Scotia | 1.147***(1.139) | -3.716***(0.326) |
| New Brunswick | -1.756***(1.227) | -4.046***(0.316) |
| Ontario | 3.472***(0.536) | 1.659***(0.202) |
| Manitoba | -3.237***(0.603) | 0.277***(0.272) |
| Saskatchewan | -0.734***(0.808) | 2.158***(0.293) |
| Alberta | 3.171***(0.640) | 5.833***(0.262) |
| British Columbia | 2.590***(0.622) | 2.471***(0.263) |
| ***Cons*** | 8.922***(1.520) | 8.600***(0.725) |
| ***Adj. R-square*** | 21.1% | 27.6% |
| ***Observations*** | 6,516 | 31,192 |

Note: standard errors in brackets. *p<0.05 **p<0.01 ***p<0.001

$$Wage_i = \beta_0 + SEX_i\,\beta_1 + AGE_i\,\beta_2 + MARSTAT_i\,\beta_3 + Educ_i\,\beta_4 + PROV_i\,\beta_5 + NOC\_10_i\,\beta_6 + \varepsilon_i \quad \textbf{(3)}$$

By further extending this model, occupation is added by reconstructing 10 NOC codes, which are: 1. Management; 2. Business, finance and administration; 3. Natural and applied sciences and related occupations; 4. Health; 5. Education, law and social, community; 6. Art, culture, recreation and sports: 7. Sales and services; 8. Trades, transport and equipment operator; 9. Natural resources, agriculture and production; 10. Manufacturing and utilities. I use Group 5, which is Education, law and social, community and government service as the reference group and find that for both specifications, Management has the highest income, that is $11.933 higher than the reference group labour for specification (1) and $9.051 higher than the reference group for non-immigrants. Group 7, Sales and services have the lowest hourly wage for both, namely $10.443 and $10.097 below the reference group for immigrants and non-immigrants. Both management jobs and natural and applied science jobs have higher hourly wage compared with Group 5. Similar to local labor supply, management jobs and natural, applied science, and health jobs have higher hourly wage than our reference group. From Table 2, we can see that Group 10, Manufacturing and utilities have the highest immigrant population (25.5%), followed by natural and applied sciences and related occupations (24.08%). This suggests that wage is not the only attraction for immigrants. Although the manufacturing and utilities category has many low-skilled jobs, it still pays well compared to the wages in other countries because of the presence of a minimum wage requirement in Canada. Among all the occupations, Group 9

(natural resources, agriculture and related production) has the lowest immigration percentage.

All the variables of NOCs are statistically significant at the 1% level, and also the adjusted R-square in this model increases to 39.5% and 41.7%. Compared to the basic model with additional input variables (occupation differentiation), higher R-squared values represent smaller differences between the sample data and the fitted values. By just observing this extended model, the higher adjusted R-squared (which are 39.5% and 41.7%) indicate that the additional occupation variables add value to the model.

**Table 7. Regression Results (Immigrants and Natives)**
**Extended model, Occupation codes**

| **Variables** | (1)<br>Immigrants | (2)<br>Non-immigrants |
|---|---|---|
| **A. *Sex*** | | |
| Male | 4.452***(0.320) | 4.018***(0.148) |
| **B. *Marital Status*** | | |
| Married or Common Law | 0.483*(0.364) | 1.831***(0.144) |
| **C. *Age* (20-24 years as reference)** | | |
| 25-29 years | 1.894***(0.852) | 2.591***(0.302) |
| 30-34 years | 3.636***(0.836) | 5.084***(0.298) |
| 35-39 years | 4.562***(0.826) | 7.163***(0.300) |
| 40-44 years | 6.290***(0.824) | 8.034***(0.301) |
| 45-49 years | 6.308***(0.823) | 8.899***(0.303) |
| 50-54 years | 6.604***(0.819) | 8.696***(0.302) |
| 55-59 years | 7.054***(0.834) | 8.11***(0.298) |
| 60-64 years | 5.728***(0.887) | 6.617***(0.318) |
| **D. *Educational Attainment*** **(0-8 years as reference**) | | |
| Some Highschool | -0.735(1.372) | 1.205(0.674) |
| Highschool Graduate | 1.698*(1.168) | 3.145*(0.637) |
| Some postsecondary | 1.389**(1.309) | 4.256**(0.680) |
| Postsecondary certificate | 3.005***(1.143) | 5.666***(0.629) |
| Bachelor's degree | 5.985***(1.152) | 11.237***(0.644) |
| Above bachelor | 9.601***(1.188) | 15.356***(0.670) |

| | | |
|---|---|---|
| **E. *Province (Quebec as reference)*** | | |
| Newfoundland and Labrador | -0.032(1.875) | -1.027(0.365) |
| Prince Edward Island | -3.406**(1.372) | -3.792**(0.383) |
| Nova Scotia | -0.051(1.024) | -3.365(0.300) |
| New Brunswick | -2.367**(1.103) | -3.864**(0.291) |
| Ontario | 3.073***(0.482) | 1.623***(0.186) |
| Manitoba | -2.304***(0.543) | 0.303***(0.250) |
| Saskatchewan | 0.603(0.729) | 2.039(0.269) |
| Alberta | 3.717***(0.576) | 5.760***(0.241) |
| British Columbia | 2.369***(0.559) | 2.435***(0.242) |
| **F. *Occupation (Education, law and Social community and government service as reference)*** | | |
| -Management | 11.933***(0.737) | 9.051***(0.299) |
| -Business, finance and administration | -2.261**(0.558) | -3.760***(0.228) |
| -Natural and applied science | 4.895***(0.601) | 3.389***(0.286) |
| -Health | -0.810*(0.623) | 0.505*(0.276) |
| -Art, culture, recreation sport | -2.480***(1.312) | -5.494***(0.538) |
| -Sales and service | -10.443***(0.543) | -10.097***(0.235) |
| -Trade, transport and equipment operator | -5.136***(0.653) | -3.565***(0.263) |
| -Natural resource, agriculture and related production | -4.444***(1.301) | -3.799***(0.417) |
| -Manufacturing and utilities | -8.609***(0.697) | -4.630***(0.352) |
| ***Cons*** | 17.712***(1.446) | 15.728***(0.695) |
| ***Adj. R-square*** | 36.5% | 38.8% |
| Observations | 6,516 | 31,192 |

Note: standard errors in brackets *p<0.05 **p<0.01 ***p<0.001

### 5.3 Empirical Results of the Blinder-Oaxaca decomposition and interpretation

The Blinder-Oaxaca decomposition technique, or simply the Oaxaca decomposition, decomposes wage differentials into two components: a portion that arises because two comparison groups, immigrants and non-immigrants, receive the same treatment as the explained component on average, but have different qualifications or credentials, based on sex, age, education, married status, province

resided, and different occupations in the labor market. Another portion that arises because one group is more favorably treated than the other, given the same individual characteristics, which appears as unexplained components. The two portions are also called characteristics and effects using the terminology of regression analysis; the coefficients effect is frequently interpreted as a measure of labor market discrimination. These variations come from the different values of coefficients and their means of the different groups that are taken into consideration. For a comprehensive review of issues related to labor market discrimination, see Altonji and Blank (1999). Here I use this decomposition technique for studying wage differentials and discrimination for immigrants and non-immigrants.

In order to examine sources of wage differentials between immigrants and non-immigrants, wage differentials can be decomposed into a characteristics effect, that is, differences between explained and unexplained variables. Table 8 shows the robust results behind the Blinder-Oaxaca decomposition technique by decomposing Group One: Immigrants and Group Two: Nonimmigrants, which are based on all the introduced variables, namely sex, marital status, age, educational attainment, provinces and occupation categories. In Table 8, we find out Group One's coefficient (hourly wage rate) is $28.549, which is $1.617 less than Group Two. The explained variables can account for $1.633 difference, meaning that the introduced variables can explain almost all the wage differentials; while the unexplained variables enlarge the wage gap to -$3.25. However, the unexplained differential in wages for the same values of explanatory variables should not be interpreted as only the result of discrimination. This

is because other explanatory variables not included in the regression (e.g., because they are unobserved) may also account for wage differences.

In Table 9, I run the same robust Blinder-Oaxaca decomposition excluding occupation categories. However, the explained variable can explain $2.306 of the wage differential, which is greater than the previous decomposition values. This means that the differences among provinces for immigrants and nonimmigrants also increase the wage gap. We can tell that geographic region is a determining factor for attracting immigrants in terms of wages. In Table 10, I use the same Blinder-Oaxaca robust technique but eliminate the provinces vector and find that the explained variable can explain $1.288 of wage differential between immigrants and nonimmigrants, which is much less than $2.306, which reflects that the occupations selected between immigrants and non-immigrants are not much different in terms of their hourly pay. The difference in coefficients is very important for the immigrant group as it is even higher than the total average offered wage. This means that they have more favorable characteristics than natives and, all things being equal, earn more than natives. The wage differentials that are due to differences in intercepts and coefficients, that is, the increases in wages when immigrants are treated as non-immigrants, are attributed to the coefficients effect or discrimination. The part of the wage gap attributed to differences in observed characteristics is dominated by the effect of geographic locations.

We use the Blinder-Oaxaca decomposition technique to try to avoid the coefficients effect that is not due to discrimination, but rather to unobserved differences

in productivity between immigrants and natives. It is believable that there is prevalent discrimination or that the magnitude of discrimination is bigger than the coefficients effect itself, and it may be argued that even differences in qualifications and credentials may be the result of premarket discrimination.

Therefore, those who believe in widespread discrimination in society may argue that the coefficients effect underestimates the magnitude of discrimination; hence, gross wage differentials may be an outcome of geographic discrimination.

**Table 8. Blinder-Oaxaca Decomposition (Robust) by introducing Provinces and Occupations**

| | | N. of obs = 37,708 | | | | |
|---|---|---|---|---|---|---|
| Group 1: Immigrants | | N. of obs in group1 = 6,516 | | | | |
| Group 2: Non-Immigrants | | N. of obs in group2 = 31,192 | | | | |
| Hourly wage | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
| group_1 | 28.549 | 0.179 | 159.13 | 0 | 28.198 | 28.901 |
| group_2 | 30.166 | 0.08 | 379.01 | 0 | 30.01 | 30.322 |
| difference | -1.617 | 0.196 | -8.24 | 0 | -2.001 | -1.232 |
| explained | 1.633 | 0.160 | 10.23 | 0 | 1.320 | 1.946 |
| unexplained | -3.250 | 0.175 | -18.58 | 0 | -3.593 | -2.907 |

**Table 9. Blinder-Oaxaca Decomposition (Robust) by introducing Provinces**

| | | N. of obs = 37,708 | | | | |
|---|---|---|---|---|---|---|
| Group 1: Immigrants | | N. of obs in group1 = 6,516 | | | | |
| Group 2: Non-Immigrants | | N. of obs in group2 = 31,192 | | | | |
| Hourly wage | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
| group_1 | 28.549 | 0.179 | 159.13 | 0 | 28.198 | 28.901 |
| group_2 | 30.166 | 0.08 | 379.01 | 0 | 30.01 | 30.322 |
| difference | -1.617 | 0.196 | -8.24 | 0 | -2.001 | -1.232 |
| explained | 2.306 | 0.144 | 15.98 | 0 | 2.023 | 2.589 |
| unexplained | -3.923 | 0.180 | -21.76 | 0 | -4.276 | -3.570 |

**Table 10. Blinder-Oaxaca Decomposition (Robust.) by introducing Occupations**

| | | N. of obs = 37,708 | | | | |
|---|---|---|---|---|---|---|
| Group 1: Immigrants | | N. of obs in group1 = 6,516 | | | | |
| Group 2: Non-Immigrants | | N. of obs in group2 = 31,192 | | | | |
| Hourly wage | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
| group_1 | 28.549 | 0.179 | 159.13 | 0 | 28.198 | 28.901 |
| group_2 | 30.166 | 0.08 | 379.01 | 0 | 30.01 | 30.322 |
| difference | -1.617 | 0.196 | -8.24 | 0 | -2.001 | -1.232 |
| explained | 1.288 | 0.138 | 9.30 | 0 | 1.017 | 1.559 |
| unexplained | -2.905 | 0.166 | -17.54 | 0 | -3.229 | -2.580 |

## 6. Conclusions

In this paper we investigated native and immigrant wage differentials in the Canadian labor market. We have employed the most recent September 2020 LFS database. By remodeling the human capital equations and adding provincial and occupational-selectiveness variables, we estimated wage equations for representative samples of employed native and immigrant workers. Following this, an augmented decomposition technique was utilized in order to allocate unexplained native–immigrant wage differentials to within- and between-provincial and occupational factors.

After decomposition of the wage differential between immigrants and natives, our results demonstrate that native workers enjoy significantly higher wages than immigrants and that this differential is to a large extent (around -$3.25) unexplained by differences in observed characteristics of the two worker-groups, which is much higher than the explained differences ($1.633).[17] Furthermore, by comparing Tables 9 and 10, the decomposition analysis reveals that $2.306 of the explained part can be attributed to regional difference and $1.288 can be explained by the occupational one. This finding implies in turn that the underlying cause of observed wage differentials arises mostly due to the different geographic locations but not the asymmetrical occupational access of natives and immigrants.

[17] By observing the absolute value that $3.25 is greater than $1.633.

## References


Altonji, J. & Blank, R. (1999). Race and gender in the labor market. *Handbook of Labor Economics*, Vol. 3C, North-Holland, Amsterdam, 3143-3259.

Antón, J., Bustillo, R.M., & Carrera, M. (2010). From guests to hosts: immigrant-native wage differentials in Spain. *International Journal of Manpower, 31*(6), 645–659.

Aydemir, A. & Skuterud, M. (2008). The Immigrant Wage Differential within and across Establishments. *Industrial and Labour Relations Review, 61*(3), 334–351.

Bragg, B. (2013). *A Guide to Canada's Changing Immigration Policy*. Ethno-Cultural Council Calgary, 1-30.

Cai, L. & Liu, A.Y.C. (2014). Wage differentials between immigrants and the native-born in Australia. *International Journal of Manpower, 36*(3), 374–396.

Chiswick, C. U., Chiswick, B. R., & Karras, G. (1992). The impact of immigrants on the macroeconomy. In *Carnegie-Rochester Conference Series on Public Policy*, 37, 279–316.

Dell'Aringa, C., Lucifora, C., & Pagani, L. (2015). Earnings differentials between immigrants and natives: the role of occupational attainment. *IZA Journal of Migration, 4*(1), 8.

Demoussis, M., Giannakopoulos, N. & Zografakis, S. (2010). Native–immigrant wage differentials and occupational segregation in the Greek labour market. *Applied Economics, 42*, 1015–1027.

Gabriel, P & Schmitz, S. (1987). The relative earnings of native and immigrant males in the United States. *Quarterly Review of Economics and Business, 27*(3), 91–101.

Kee, P. (1995). Native-immigrant wage differentials in the Netherlands: discrimination? *Oxford Economic Papers, 47*(2), 302–317.

Nicodemo, C. & Ramos, R. (2012). Wage differentials between native and immigrant women in Spain. *International Journal of Manpower, 3*(1), 118–136.