The earnings difference between immigrants and native-born Canadians in different-sized urban centres

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Abstract

This paper uses the individual file from the 2016 Census datasets to study earning differences between immigrants and native-born Canadians based on gender and minority status in three different levels of CMAs. The results show that the earnings gap between female immigrants and native-born female Canadians increases with an increase in the CMA level. This remains true for both visible and nonvisible minorities. However, such an effect does not happen when examining immigrants and native-born men. In addition, both male and female visible immigrants face more serious earning gap in higher levels of CMAs. In the category of Big CMA, female visible immigrants face more serious problems on earnings than male visible immigrants. In the category of Other CMA, male visible immigrant face more serious earning problems than female visible immigrants.

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1. Introduction

The immigrant population shares a large proportion of the total Canadian population. Based on 2011 census data, immigrants represent 20.6% of the total population. Of immigrants, 91% live in the census metropolitan areas (CMAs). The three largest cities, Toronto, Vancouver and Montreal, attract around two-thirds of immigrants. More specifically, Toronto has about 2,537,400 immigrants, which is almost half of total population.[1] Based on the above figures, it is clear that immigrants play an important role in the Canadian labour market, especially in big cities.

In general, Canada has three major classes of immigration including family class, economic class and the refugee class. Sweetman (2017) indicates the economic class forms the largest part of immigration from 1985 to 2016, except in 1992. Immigrants from the economic class contribute more to the labour market because they are usually well-educated and have working experience.

There are some findings from the literature relevant to large cities. Beckstead et al. (2010) indicate that people with higher education degrees tend to live in large cities rather than in smaller cities. Additionally, Peri (2007) indicates that immigrants tend to compete directly with previous immigrants rather than with native-born workers in big cities based on the evidence from California.

However, there are few studies that discuss immigrants' earnings in small cities. It is possible that immigrants choose to live in a small city because they may not have enough assets to settle in a large city, which means they have to put more effort on working, so their education

[1] All figures are based on the 2011 National Household Survey.

and working experience might have a strong effect on earnings. Therefore, I will study the earnings difference between immigrants and native-born Canadians based on different CMA levels. The CMAs are separated into three levels including Big CMA, Other CMA and Not CMA based on the population. Big CMA represents census metropolitan areas over 1,000,000 inhabitants. Other CMA represents other large census metropolitan areas that have less than 1,000,000 inhabitants. Not CMA represents other non-census metropolitan areas. In order to see some more details on the economic return and earning difference between immigrants and native-born Canadians, the population is separated into 12 groups based on gender, minority status and CMA level. In this study, I make one assumption in order to compare the labour market performance between visible[2] and nonvisible[3] immigrants in the same CMA. The assumption is that there is no discrimination between nonvisible native-born Canadians and visible native-born Canadians, which is based on the findings from Pendakur and Pendakur (1998).

The different sections will be discussed in the following sequence: In Section 2, I carry out a review of the literature. Section 3 discusses the dataset. Section 4 discusses the variables. Section 5 discusses the summary statistics**.** In Section 6, I present the economic model. Section 7 interprets the result and Section 8 concludes.

2. Literature review

The earnings difference between immigrants and native-born Canadians is discussed in the literature. In this section, I interpret some of these findings by focusing on ethnic minorities, cities and other characteristics.

[2] Visible immigrants represent people are non-white in colour.
[3] Nonvisible immigrants represents people are white in colour.

Pendakur and Pendakur (1998) focus on the earnings difference between white people and visible minorities using the 1991 Census Public Use Microdata File. They set personal characteristics, location and work characteristics as controls to conduct the study. They find an obvious earning difference between white and visible minority people for both genders.

When focusing only on male subjects, there are different categories including native-born Canadians (white and visible minority), aboriginal Canadians and immigrants (white and visible minority). After setting white native-born Canadians as the comparison group, they find visible minority native-born Canadians earn less than 8% when compared to the comparison group. This earning gap is 13% for the aboriginal Canadian. White immigrants earn 2% less than the comparison group. This figure grows to 16% for visible immigrants.

For the female subjects, visible female Canadians do not suffer lower earnings than native-born white Canadians. However, aboriginal women suffer a 7% earning gap compared to their native-born white Canadian counterparts. For female immigrants, there is less than a 1 percent earning gap compared to native-born white Canadians. However, this gap grows to 9% when considering visible immigrants.

These findings suggest that discrimination is more likely to occur for visible minority immigrants rather than for native-born visible Canadians. However, it appears that there is no discrimination between white native-born Canadians and visible minority native-born Canadians. The earnings gap between those two groups is not a result of the employer's preference. The findings could also indicate that the visible minority status has a limited effect in representing discrimination as there is a large unexplained earning difference within

the population groups. They also suggest that the earnings difference still exists after controlling for place of schooling.

Swidinsky and Swidinsky (2002) study the earnings difference of visible minority immigrants and native-born Canadians using the 1996 Canadian census. They find that visible immigrants face more discrimination in the labour market. Visible male immigrants suffer a greater wage gap when compared with white male immigrants. In addition, those visible male immigrants face more disadvantages if they come to Canada at an older age. The study further indicates that work experience in their home countries is valued less in the Canadian labour market.

Li (2008) studies the earnings difference between immigrant and native-born Canadians using micro data from the 1996 Canadian census. He separates immigration into four groups based on the CMA levels. Then, he compares the earnings differences between immigrants and native-born Canadians based on gender and minority status. When comparing the earnings difference between immigrant and native-born women from visible minority groups, there is a huge gap in all CMA levels. Immigrant females earn about $6100 to $8200 less annually than other women. Immigrant women who are not visible minorities have a smaller gap. On the other hand, immigrant men from nonvisible minority groups have the best performance when compared to other immigrant groups. The earnings gap between nonvisible immigrant men and nonvisible native-born Canadian men is similar in all CMA levels, except the large CMA. The earnings gap is around $3700. However, for visible male immigrants, the earnings gap keeps increasing with the CMA level; the gap increases from $3115 to $7133. He believes that the earnings difference between immigrants and native-born Canadians depends more on gender and race than on CMA levels.

Warman and Worswick (2004) indicate that different cities have different living costs, so it is better to conduct the research at the city level. They conducted their study in the 8 large CMAs using the Canada census data from 1981 to 2001. The immigrant cohorts include immigrant data from 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, and 1996-2000. When controlling for the same arrive time, they find that most of the time, the later immigrant cohort earns less than the previous immigrant cohort for both men and women in large Canadian cities. However, male immigrants from the 1996 to 2000 cohort performed better than many previous cohorts in many cities; this is not reflected in the data for female immigrants from the same cohort group. In general, the earnings difference between immigrants from different cohorts and native-born Canadians is similar across large Canadian cities.

Hall and Khan (2008) use Canadian census data from 1991 to 2001 to study the earnings difference between immigrants and native-born Canadians in the hi-tech industry based on 43 census metropolitan areas and census agglomerations. According to characteristics for the hi-tech sector and immigrants, they regroup the 43 cities in to 4 groups, including 5 big cities, tech cities, midsized cities and smaller cities. They indicate that the earnings disparity between immigrants and native-born Canadians changes based on location. The evidence shows that Ottawa has advantages that other cities do not have. More specifically, the telecommunication industry becomes more important than other industries in Ottawa in the late 1990s. Consequently, the earnings difference gap between immigrants and native-born Canadians is closed in Ottawa, while it nevertheless remains large in Toronto. They also indicate that urban hierarchy does not work perfectly to explain the earnings difference. They find immigrants earn less than native-born Canadians between 1990 and 2000. Furthermore,

this gap becomes bigger in the large five cities during this period. However, for the other three city groups, the gap is not remarkable, especially between 1990-1995. After this, the gap is reduced during the next 5 years, except in tech cities.

Aydemir and Skuterud (2005) look for reasons to explain the deteriorating entry earnings of immigrant cohorts in Canada by using the census data from 1981 to 2001. They find that the wage returns do not heavily rely on foreign labour market experience, which is one of the main reasons for the deteriorating entry earnings. This result is more common for immigrant men who are from the non-traditional source countries. However, foreign education does still have a positive effect on the entry earning.

On the other hand, they also find that language barriers are the other main reason to explain the deteriorating entry earnings. Finally, they indicate that the male immigrant cohorts who arrive Canada in the 1990s perform better in terms of their entry earnings than other cohorts arriving in Canada in the 1960s. However, the reason behind this difference is not clear.

Ferrer and Riddell (2008) study the effect of human capital on earnings in Canada by using the census data from 1981 to 2001. There are two variables related to human capital, including years of schooling and academic degree. They find the years of schooling and work experience have a lower return for immigrant than for native-born Canadians. However, getting a degree is beneficial for immigrants as it reduces the earnings gap with native-born Canadians. After comparing the gains in earnings from academic degrees, they find immigrants' earnings from academic degrees are higher than native-born Canadians for both genders. The size of the gap depends on the academic degree. The biggest difference comes from people with postgraduate degrees. The earnings gain for immigrants with a postgraduate degree is 5 percent more than native-born Canadians with the same degree. These results mainly focus on the specific group of immigrants who arrive in Canada as adults. In addition,

such findings are also directly related to where immigrants came from. Immigrants from the UK and US have similar earnings when compared to native-born Canadians, regardless of the years of schooling or degrees. However, immigrants from other countries experience a greater return from the degree and a smaller return for the years of schooling.

Sorensen (1995) studies the value of the education credentials for female immigrants using the 1986 Canadian census data. The results show that highly educated female immigrants could have the same opportunity to get a job as native-born Canadian women. There is no discrimination in the labour market for female immigrants. Additionally, employers do not always undervalue foreign credentials. Such findings indicate that the highly educated female immigrants can take more professional jobs at the same rate as native-born female Canadians. That is, it is not always necessary for them to take the less skilled jobs, which might not match their academic background. However, this result could be overvalued because many female immigrants get some education in Canada, especially for those who arrive at a younger age. In addition, there are some limitations in matching the education credentials to occupations because of the wide-ranging occupational group.

Li (2001) studies the market worth of an immigrant's education degree in Canada using the 1996 census data. He separates the population into four groups, including native-born Canadian graduates with degrees from Canadian schools, immigrants with degrees from Canadian schools, immigrants with degrees from both Canadian and foreign schools and immigrants with degrees from only foreign schools. He finds that the gender and minority of the individuals are also important to consider along with the degree, so he regroups further into 16 groups based on the gender, minority origin and education degree. The results show that an immigrant's degrees have less value in relation to earnings than a Canadian's degrees.

The large earning gap is observed between native-born Canadians with a Canadian school degree and immigrants with a foreign school degree. Such a gap is even larger between visible female immigrants and visible female Canadians; visible female immigrants with a foreign school degree earn about half of what visible female Canadians with a Canadian school degree earns.

Picot et al. (2008) study the poverty dynamics for successive immigrants between 1992-2004 by using the longitudinal administrative databank and the longitudinal immigrant database. They find that new immigrants with higher educational credentials and a more skilled class of immigrants do not contribute to a more remarkable improvement in issues related to poverty when compared to previous immigrant cohorts after controlling for the economic cycles and policy changes. For the entry poverty rate, this figure is lower in the 1990s than in the earlier 2000s. When considering chronic poverty, over 20% of immigrants suffer in poverty for four years after immigrating. Such a figure decreases for immigrants in the 2000s, but these decreases may be directly related to the economic cycle rather than to the better educated immigrants in the 2000s. In general, the results indicate that immigrants in early 2000s have a worse labour market performance than the previous immigrant cohort of the 1990s. As an increasing number of people have a bachelor's degree, the bachelor's degree for latter immigrants no longer shows a huge advantage as before when compared to the high school degree.

The explanation for these findings could come from three aspects. First, Canada had a high demand for immigrants with high-tech background in the 1990s. After the 1990s, the demand for those immigrants dropped dramatically, so many people may have needed to find other jobs outside of the high-tech field. Second, immigrants with credentials in a general field

such as social science have more difficulty in finding a job than others with science degrees. Third, some immigrants suffer from language barriers, which also contributes to poverty.

Kaida (2015) studies the female immigrant's contributions to reducing family poverty and also measures the impact of ethnic difference by using the longitudinal survey of immigrants to Canada data collected between 2000-2001. He finds that female immigrants contribute a lot to improve their quality of life. This effect is more remarkable for female immigrants from European countries. However, female immigrants from non-European countries experience lower employment rates. Therefore, ethnic origin determines how long it will take to get out of poverty, and immigrants from non–European countries take longer to improve their living conditions. More specifically, more than half of female immigrants from European countries get out of poverty. This figure decreases to 22% for Arab female immigrants and to 28% for West Asian female immigrants. Additionally, he indicates that those female immigrants from non-European countries who suffer from family poverty, also face persistent poverty over a long period of time. This implies that it is important to have a job in the earlier settlement stage. Ultimately, Kaida suggests that the immigrant inequality problem results from both ethnic and gender inequality.

Banerjee (2009) studies the income growth for new immigrants in Canada by using the Survey of Labour and Income Dynamics from 1999-2004. This dataset is the longitudinal panel survey and it can be used to study the changes in income over the long-term. There are two hypotheses about the immigrant labour market performance that are confirmed based on his study. The first one is that new immigrants tend to invest more on improving their human capital. He finds that white new immigrants take less time to reduce the earnings difference than visible immigrants. The return of the previous human capital investment speeds up the income growth rate for them. The second hypothesis is that new immigrants tend to mismatch their roles in the labour market. He finds that the income growth rate for visible minority

immigrants is slower than white immigrants. Further, he expresses concern for the future because visible immigrants' income growth rate is similar to native-born Canadians, so it would be difficult to ever close the earnings gap between them and native-born Canadians, even over a long time period. However, Canada faces a large aging population and needs more immigrants to enter the labour market. Therefore, the earnings gap between visible immigrants and native-born Canadians needs to be examined because immigrants play a big role in the Canadian labour market.

Fong and Hou (2013) study the effect of ethnic enclosure on earnings based on residence communities, workplace sand industry sectors by using the 2006 Canadian census data. The population group is focused on the six ethnic new immigrant groups in the eight biggest Canadian cities. They find that the majority of immigrants from all ethnic groups tend to live and work in an environment with the same ethnic background. The earnings for those ethnic employees are negatively related to living or working in such environment. This effect is not clear in industry sectors. However, the result changes when those immigrants live and work in the highly concentrated and enclosed environment at the same time. Those people tend to have higher earnings by taking advantage of the highly concentrated ethnic enclosure environment. Such effects vary for different ethnic groups. The explanation for this is they can extend the network between living communities, work places and industry sectors. Therefore, ethnic immigrants have more opportunities and higher wages than others who live in an enclosed environment that is not highly concentrated.

Antecol (2001) studies the effect of cultural factors from immigrants' home country on the gender wage gap. He uses the US census data to conduct the research. He finds that the gender wage gap for immigrants in the US is positively correlated with the gender wage gap

in their home countries. Such a gap is consistent for all first-generation immigrants. More specifically, he indicates human capital and the wage related variables from employers could not fully explain the gender wage gap for immigrants from different countries. However, cultural factors, including the structure of the family and women's roles, could be used to explain the different gender wage gap for immigrants. Nevertheless, he claims that cultural factors have a limited effect on the gender wage gap for immigrants and that it may not be the dominant factor in the gender wage gap.

There are few literatures directly discussing the earning difference between immigrants and native-born Canadians in different seized urban centers. I follow the idea from Li (2008) to conduct the study by using different estimating method. However, there are many literatures discussing what affect the earning of immigrants. In the above literature review, those factors are discussed, including different immigrant cohorts' performance, cultural effect, the effect of ethnic enclosure and so on. Those findings could be used to discuss the earning difference between immigrants and native-born Canadians by combing the CMA levels together.

3. Data

In this study I use the Public Use Microdata File (individual file) from the 2016 Census datasets. The Census dataset provides detailed data for the Canadian population's characteristics, including demographic, social and economic characteristics. The objective of the Census dataset is to better understand society based on the characteristics from the population. The reason why I use the census dataset is that it includes more detailed information connected to the demographic, education and job-related variables. It is clear that this information is correlated to immigration, so it can be used as control variables in the model.

In my study, I focus on immigrant and native-born Canadians who are between the ages of 25 and 64. The majority of people will finish their studies around age 25 and start working. On the other hand, I set the upper limit to the age 64 because many people choose to retire after 64. The sample focuses on Canadian citizens who were employed in 2016. Therefore, the unemployed people and people who are not in the labour force are excluded in the sample. In order to make sure people have positive earnings, self-employed people are also excluded from the sample. The study also takes an earning range between $500 and $200,000 into account. After clearing up the data, the sample size is 214,838, which includes 104,109 males and 110,729 females. In addition, the number of immigrants is 19.64% of the total sample size.

4. Variables

Table A1 provides a detailed description for all variables. The dependent variable is the logarithm of the annual earning (LNWAGE). It represents the earnings difference in percentage when changing any other explanatory variable by one unit. The key explanatory variable is the immigrant variable (IMMIGRANT), which is a dummy variable. It takes the value of one if people are immigrants. Otherwise, people are native-born Canadians. Other explanatory variables are separated into 3 groups based on the different characteristics, including demographic, education, and job-related variables.

In terms of the demographic category, it consists of marital status (MARRY), numbers of children (CHILD) and the time length of immigration (ARRIVEDY) if people are immigrants. More specifically, the marital status is separated into two dummy variables including single and married. The single group is set as the reference group. The number of

children is separated into four dummy variables including people with no children, people with children aged between 0 and 1 years old, people with children aged 2 and 5 years old and people with children aged between 6 and 14 years old. The people with no children are set as the reference group. The length of immigration is calculated based on the years of immigration by using the formula: 2016 - landed year of the immigration. The length of immigration is 0 for native-born Canadians. In the census dataset, the landed year of immigration is recorded as the group before 1990. So, I take the midpoint year of the group to calculate the length of immigration.

The education category consists of five education levels. The first is no certificate, diploma or degree (the reference group). The second is high school diploma (EDUC2). The third is postsecondary below bachelor degree (EDUC3). The fourth is bachelor degree (EDUC4). The fifth is the master's and doctorate (EDUC5). More details are in Table 2.

Table 2
Grouping details for the education variable

Education variable	Highest certificate, diploma or degree
No certificate, diploma or degree	No certificate, diploma or degree
High school degree	High school degree
Postsecondary below bachelor degree	Trades certificate or diploma
	Certificate of Apprenticeship
	Program of 3 months to less than 1 year in College, CEGEP and other non-university
	Program of 1 to 2 years in College, CEGEP and other non-university
	Program of more than 2 years in College, CEGEP and other non-university
	University certificate or diploma below bachelor
Bachelor degree	Bachelor's degree
	University certificate or diploma above bachelor
	Degree in medicine, dentistry, veterinary medicine or optometry
Master and doctorate	Master's degree
	Earned doctorate

Source: Author

The work-related category consists of the industry (INDS), working experience (YEAROFWK), the square of working experience (YEAROFWK2), full time (FULLTIME), weeks of work (WKSW) and occupation (OCC). For the industry variable, there are 19 industry groups in the census dataset. I regroup the data into 7 industry groups. The agriculture/natural resource is the reference group. For further detail, see Table 3.

Table 3
Grouping details for the industry variable

Agriculture/natural resource	Agriculture, forestry, fishing and hunting
	Mining, quarrying, and oil and gas extraction
	Utilities
Construction	Construction
Manufacturing	Manufacturing
Commerce	Retail trade
	Finance and insurance/55 Management of companies
	Real estate and rental and leasing
	Wholesale
Service	Administrative and support, waste management
	Educational services
	Health care and social assistance
	Accommodation and food services
	Transportation and warehousing
	Public administration
	Other services (except public administration)
Entertainment	Information and cultural industries
	Arts, entertainment and recreation
Science	Professional, scientific and technical services

Source: Author

The working experience variable is calculated based on the years of schooling by using the formula: age - years of schooling - 6. The years of schooling is approximate for different degrees based on the assumption that people take 12 years to finish high school. Age data is not a continuous variable in the census; rather, it is based on the age groups. As such, I take the mid-point age of each group to get the age data. The square of the working experience indicates the fact that earning decreases as years of working increase. The full-time variable is a dummy variable. It equals one if people have a full time job; otherwise, it is zero. The

week of work is a dummy variable. The reference group is made up of people who work between 0-9 weeks. For the occupation variable, there are 30 occupation categories. I regroup those categories into 8 categories based on the job's position and skills. For more details, see Table 4. Office support is set as the reference group.

Table 4
Grouping details for the occupation variable

Office support	Office support occupations
	Finance, insurance, distribution, tracking
	Public protection, care providers, educational
Manager	Senior management
	Specialized middle management
	Middle management occupations in retail and wholesale
	Middle management occupations in trades and transportation
Professional	Business and finance
	Natural and applied science
	Health and nursing
	Education service
	Law and social community
	Transport and heavy equipment operation
Semi professional	Technical and assisting occupations in health
	Paraprofessional occupations in legal, social and community
	Professional and technical occupations in art and culture
	Supervisors, technical occupations
	Technical occupations related to natural and applied science
Supervisor in sale/service	Retail sales supervisors and specialized sales
	Service supervisors and specialized service
Other supervisor	Supervisors and operators in processing and manufacturing
	Administrative and financial supervisors
Trade /manual labour	Industrial, electrical and construction trades
	Maintenance and equipment operation trades
	Trade helpers, construction labourers and installers
	Assemblers and labourers in processing and manufacturing
Sale/service	Sales representatives and wholesale
	Service representatives and other customer service
	Sales support occupations
	Service support and other service occupations

Source: Author

5. Summary statistics

Table A2 represents the mean of values for the annual earning, log of wages and three

grouped control variables including personal demographic, education, and job-related variables. The table is organized based on gender and immigration identity. The average earning for male native-born Canadians is $67,926 and the average earning for male immigrants is $63,304. Furthermore, the average earning for female native-born Canadians is $48,200 and the average earning for female immigrants is $45,964. It is clear that native-born Canadians earn more than immigrants on average for both genders. However, the earnings gap between male native-born Canadians and male immigrants is $4,621, which is more than double of the earnings gap between female native-born Canadians and female immigrants. The earnings gap between female native-born Canadians and female immigrants is $2,236.

When considering the marriage variable, the majority of people get married. There is no big difference between native-born Canadians and immigrants in this regard. Both native-born Canadians and immigrants considered in this study are most likely to have children between the ages of 6 to 14 years old. Around 30% immigrants have children in this age range; for native-born Canadians, this figure degreases to around 25%. There are fewer immigrants and native-born Canadians who have children under 6 years old. For academic achievement, it is clear that a higher proportion of immigrants have a bachelor's degree for both genders. 29.6% of male immigrants have a bachelor's degree, which is 12.35% higher than the percentage of native-born male Canadians. In contrast, 32.99% of female immigrants have a bachelor's degree, which is 7.93% higher than the percentage of native-born female Canadians. In addition, there are more immigrants with master's or doctorate degrees than native-born Canadians of both genders. It is clear that immigrants tend to have more education than native-born Canadians. In terms of working, men work fulltime jobs more often than women. 94.74% of male immigrants have a full-time job; this figure is a little bit higher for native-born male Canadians, at 95.12%. More women work part time, and the figures for native-

born female Canadians and female immigrants are similar.

Some more information can be uncovered about the average earning differences between immigrants and native-born Canadians after regrouping the population into 12 groups based on gender, minority and CMA level. Table 5 shows the average annual earning and the sample size for native-born Canadians and immigrants based on different population groups. It is clear that the earnings gap between immigrants and native-born Canadians is not large in the majority of population groups. Immigrants tend to earn more than native-born Canadians in the Not CMA category in general. However, visible women in the Other CMA and Big CMA categories face a larger earning gap than native-born Canadians. They earn less than 15% and 12% compared to their counterparts in Other CMA and Big CMA, respectively. For immigrants, nonvisible men in Big CMA have the highest average earning than the other male immigrants. The average earning for them is $73,500. Nonvisible female immigrants in Big CMA also have the highest average earning compared to other immigrants. The average earning for them is $52,698. Based on the overall figure, it is clear that immigrants earn more than native-born Canadian in Not CMA for both genders. However, immigrants start to suffer the earnings difference compared to their counterparts in the Other CMA for both genders. This earnings gap becomes bigger in the Big CMA.

Table 5
Average annul earning and sample size based on immigrant identity and population groups

Male	(1)Native-born Canadian	Sample size	(2)Immigrant	Sample size	Differential (2)/(1)%
Not CMA					
Nonvisible minority	$64050	30,323	$$68784	719	107%
Visible minority	$66566	90	$68585	152	103%
Overall	$64057	30,413	$68750	871	107%

Other CMA					
Nonvisible minority	$66879	20,505	$72627	1,012	109%
Visible minority	$59829	326	$59778	952	100%
Overall	$66769	20,831	$66399	1,964	99%
Big CMA					
Nonvisible minority	$73506	29,539	$73500	4,407	100%
Visible minority	$60158	2,971	$59052	13,113	98%
Overall	$72286	32,510	$62686	17,520	87%

Female					
	(1)Native-born Canadian	Sample size	(2)Immigrant	Sample size	Differential (2)/(1)%
Not CMA					
Nonvisible minority	$42684	32,486	$44599	676	104%
Visible minority	$45780	106	$44376	234	97%
Overall	$42694	32,592	$44542	910	104%
Other CMA					
Nonvisible minority	$48393	21,472	$47032	1,003	97%
Visible minority	$47308	339	$39986	939	85%
Overall	$48376	21,811	$43626	1,942	90%
Big CMA					
Nonvisible minority	$53584	31,322	$52698	4,609	98%
Visible minority	$50408	3,160	$44211	14,383	88%
Overall	$53293	34,482	$46271	18,992	87%

Note: All values are weighted by census given weights. Source: Census 2016

6. Econometric model

In order to see earning differences between immigrants and native-born Canadians, I generate the regression, which is represented as below:

$$ln(wage)_i = \beta_0 + \beta_1 immigrant_i + x_i\gamma + \varepsilon_i \qquad (1)$$

where $\ln(\text{wage})_i$ is the logarithm of annual earning for individual *i*. $immigrant_i$ is a binary variable that equals one if people are immigrants and zero otherwise. x_i represents control variables, including demographic variables, education variables and work related variables.

I run regression two times in order to compare the effect of adding control variables. In the first specification, I regress wage on the immigrant and demographic variables. In the second specification, I add the education and work-related variable as control variable.

7. Results

7.1 Specification 1 for females

Table A3 shows the OLS regression result based on the first specification for the female visible minority and nonvisible minority in the three CMA levels. All female immigrant population groups suffer the earnings difference compared to native-born female Canadians from the same minority origin and same place. The earnings difference between nonvisible female immigrants and their native-born Canadian counterparts is 4.8% in Not CMA. This figure is not statistically significant. This earning gap increases to 10.3% in Other CMA at the 5% level of statistical significance. In Big CMA, this gap increases to 31.3% at the 1% level of significance.

Visible female immigrants suffer a higher earning difference than nonvisible female immigrants in general. The earnings difference between them and native-born Canadian women is 3.8% in Not CMA. This figure is not statistically significant. In the Other CMA and Big CMA categories, the earnings gaps between female visible immigrants and native-born female Canadians are 31.3% and 50.5%, respectively. Both figures are statistically significant at the 1% level of significance.

In general, the earnings difference increases with increases in the CMA level. More specifically, visible female immigrants suffer a more serious earnings gap in the Other CMA and Big CMA categories. Nonvisible female immigrants have a better performance than

visible female immigrants, especially in Other CMA because their comparable groups are equivalent based on the assumption that there is no discrimination between visible native-born Canadians and nonvisible native-born Canadians.

There are some other findings from the Table 1A. Marriage contributes to an increase in earning for all population groups. Visible women in the Other CMA category gain the most from marriage. They earn 24.8% more than people who are not married. In addition, earnings of women with children under 2 years old are affected the most. As their children grow up, these women can spend more effort on working. For visible female immigrants in Big CMA, the arrived landing years has the biggest effect on their earning compared to other groups. It seems like longer years since immigration has a positive effect on people who live in large scale CMAs, rather than Not CMA.

7.2 Specification 1 for males

Table A4 shows the OLS regression result based on the first specification for the male visible minority and nonvisible minority in three CMA levels. In most cases, the coefficients of the immigrant variable have the expected sign, except for nonvisible men in the Other CMA. Nonvisible male immigrants earn 0.6% more than native-born Canadian counterparts. I think this figure cannot represent the true economic meaning and this figure is also not statistically significant. Nonvisible male immigrants in the Big CMA suffer a 12% earning difference compared to their native-born Canadian counterparts at 1% level of statistical significance.

For visible male immigrants, the earnings difference between them and their native Canadian counterparts increases slightly in the Big CMA than the Other CMA. The earnings gap is 28.7% and 30.9% in Other CMA and Big CMA, respectively. Both figures are significant at

1%.

It is clear that for male immigrants, the CMA level does not always have a huge effect on the earnings difference because earnings gaps for visible male immigrants are similar in Other CMA and Big CMA. On the other hand, visible immigrants suffer a dramatically higher earning gap than nonvisible immigrants in the Big CMA. This finding is also true in the case of female immigrants. Therefore, visible immigrants for both genders suffer the most serious earning difference in the Big CMA. However, male visible immigrants suffer less of an earning gap than female visible immigrants. This implies that women tend to spend more time on household work than men, so they suffer more earning differences than men. In addition, visible female immigrants suffer the most on earning because the negative effects of minority origin and gender work together.

There are also some other findings for visible or not visible men based on different CMA levels, regardless of whether they are immigrants or not. Marriage has a positive effect on earnings for all population groups. Nonvisible men in the Other CMA take the biggest advantage on earning. They earn 68.4% more than others who are single. For people with children, it seems like men's earnings are not affected by having children, especially when the children are less than 2 years old. This finding is totally different than it was for women. However, this result changes for men who have children between the ages of 6 and 14. Men tend to earn more if they have older children. This implies that these men tend to work harder in order to offer a better life for their children. In addition, visible male immigrants have a greater advantage on earning than nonvisible men related to an increasing immigration year. This implies that nonvisible immigrants face a higher earning growth rate than visible immigrants. Therefore, the years of immigration contribute less to earning for nonvisible

immigrants because the earnings gap between them and native-born Canadians is not large.

7.3 Specification 2 for females

Table A5 shows the OLS regression result based on the second specification for the female visible minority and nonvisible minority in the three CMA levels. For nonvisible female immigrants, the earnings difference between them and their native-born Canadian counterparts increases as the level of CMA increases. This earning gap is 11.3% and 22.9% in the Other CMA and Big CMA categories, respectively. Both figures are statistically significantly at a 1% level.

For visible female immigrants, the earnings difference between them and their native-born Canadian counterparts also increases as the level of CMA increases. The earnings differences between them and their native-born Canadian counterparts are 16% and 34.8% in Other CMA and Big CMA, respectively.

After controlling the education and job-related variables, earnings gaps for both visible and nonvisible female immigrants increase with the CMA level, and the CMA level affects the earnings gap dramatically for each population group. In addition, the performance of visible female immigrants is much better after controlling the education and job-related variables. In the Other CMA, visible female immigrants have a similar performance as nonvisible female immigrants. In the Big CMA, the earnings gap between visible female immigrants and nonvisible immigrants is smaller than the previous case without controlling the education and job-related variables, although visible female immigrants still perform worse than non-visible female immigrants. The above finding is based on the assumption in this study that there is no discrimination between nonvisible and visible native-born Canadians. For female

immigrants, after controlling the education and job-related variables, the earnings difference between nonvisible female immigrants and visible female immigrants is 4.7% in the Other CMA and 11.9% in the Big CMA. Before controlling the education and job-related variables, the earnings difference between nonvisible female immigrants and visible female immigrants is 21% in the Other CMA and 31% in the Big CMA.

After controlling the education and the job-related variables, there are also some other findings for visible men or not visible men based on different CMA levels, regardless of whether they are immigrants or not. Marriage still has a positive effect on earning for all population groups in general, but this effect is not as strong as before. This result is also for women with children less than 2 years old. The years of immigration also contributes to a higher positive effect on visible immigrants than nonvisible immigrants, which is as same as before.

On the other hand, there are some new findings related to the education and the job-related variables. For the education variable, earnings increase for all population groups as people get higher level academic degrees. Nonvisible females in the Not CMA enjoy the biggest advantage on earnings from the master's or doctorate degree. They earn 66.6% more than people who drop out of high school. Full-time jobs contribute to higher earnings than part-time jobs for all population groups. The week of work variables make sense as well, as earning increases as the week of work increases. Working experience contributes to more earnings for nonvisible women in the Big CMA than other groups; earnings increase by 4% after adding 1 more year working for nonvisible women in the Big CMA.

7.4 Specification 2 for males

Table A6 shows the OLS regression result based on the second specification for the male visible minority and nonvisible minority in the three CMA levels. The earnings difference between nonvisible male immigrants and their native-born Canadian counterparts does not increase when the level of CMA increases. The earnings gap is 11.7% in the Not CMA and it is statistically significant at the 1% level. This gap decreases to 6.8% at a 10% level of statistical significance in the Other CMA and increases to 21.7% in the Big CMA at a 1% level of significance.

For visible male immigrants, the earnings difference between them and their native-born Canadian counterparts does not increase as the level of CMA increases as well. The earnings gap is 37.9% in the Not CMA. This gap increases slightly to 40.5% in the Other CMA and decreases to 30.5% in the Big CMA. All the figures are statistically significant at the 1% level of significance.

The evidence shows that the CMA level has an unequal effect for nonvisible and visible immigrant men, and the earnings difference does not follow any patterns. For example, the earnings difference is large in the higher-level CMAs. For male visible immigrants, the earnings gap is bigger in the Other CMA than in the Big CMA. For male nonvisible immigrants, the earnings gap is large in the Not CMA and is small in the Other CMA.

After adding education and job-related variables, visible male immigrants in the Other CMA and nonvisible male immigrants in the Big CMA face a larger earning gap than their native-born Canadian counterparts. For visible male immigrants in the Other CMA, the gap increases from 28.7% to 40.5%. For nonvisible male immigrants in the Big CMA, the gap

increases from 12% to 21.7%. One way to explain this is that those two groups take advantage by mismatching their academic degree to the job position, so they suffer less earning difference than their native-born Canadian counterparts. After controlling the education and job-related variables, they face a higher earning difference than before.

This study showed that visible male immigrants perform worse than nonvisible male immigrants. However, the gap between them varies in conjunction with different CMA levels. Nonvisible male immigrants and visible immigrants are compared to the native-born Canadian group, no matter whether they are visible or nonvisible, based on the assumption that there is no discrimination between visible native-born Canadians and nonvisible native-born Canadians. Therefore, the earnings gap between visible and nonvisible male immigrants could be calculated. The earnings differences between visible and nonvisible male immigrants are 26.2%, 33.7% and 8.8% in Not CMA, Other CMA and Big CMA, respectively. Visible male immigrants suffer the biggest earning gap between the two immigration groups in Other CMA. In addition, visible male immigrants have a similar performance as nonvisible male immigrants in the Big CMA. This finding conflicts with the previous finding from specification (1). Before adding education and job-related variables, the earnings gap between visible male immigrants and nonvisible male immigrants is 18.9%, which is larger than 8.8%.

After comparing the OLS regression male and female results based on equation (2), I find female immigrants have a better or similar performance when compared to male immigrants in terms of the earnings difference between them and native-born Canadians, except the case of visible women in the Big CMA. For nonvisible immigrants, the earnings gap between them and their counterparts is similar for nonvisible female immigrants and nonvisible male

immigrants in the Other CMA and in the Big CMA. The difference is less than 2%. Visible female immigrants perform better than visible male immigrants, as a result of the bad performance of visible male immigrants. The earnings gap is up to 33.6% in Not CMA and 36.6% in Other CMA.

7.5 Specification 1 vs specification 2

After controlling education and job-related variables, the earnings difference between immigrants and native-born Canadians varies. For more detail, see Table 5. In general, nonvisible immigrants face an increase in the earnings gap and visible immigrants experience a decrease in the earnings gap. Those findings are based on the evidence in the CMA. In Not CMA, many results are not statistically significant.

The result for visible immigrants is reasonable because they have a better performance in the labour market after adding education and job-related variables. This implies that visible immigrants invest more in human capital and work hard. Through effort in studying and working, they reduce the earnings gap. Furthermore, the result for nonvisible immigrants is also reasonable. They experience an earning gap when they are new immigrants to Canada but they take less time than visible immigrants to reduce the earnings gap. So, they might not put as much effort into study and work as visible immigrants. This result shows that nonvisible immigrants perform a little bit worse after adding education and job-related variables. For instance, nonvisible women in Other CMA and in Big CMA earn less than 3% after adding education and job-related variables.

Table 5
The earnings difference between immigrants and native-born Canadians

Not CMA	Specification1	Specification2

Nonvisible minority	Male	-0.078	-0.117***
Visible minority	Male	-0.103	-0.379***
Nonvisible minority	Female	-0.048	-0.062
Visible minority	Female	-0.038	0.041
Other CMA			
Nonvisible minority	Male	0.006	-0.068*
Visible minority	Male	-0.287***	-0.405***
Nonvisible minority	Female	-0.103**	-0.113***
Visible minority	Female	-0.313***	-0.160***
Big CMA			
Nonvisible minority	Male	-0.120***	-0.217***
Visible minority	Male	-0.309***	-0.305***
Nonvisible minority	Female	-0.195***	-0.229***
Visible minority	Female	-0.505***	-.0348***

Notes, The regressions are weighted. * indicates level of significance at 10%; ** indicates level of significance at 5%; *** indicates the level of significance at 1%.

8. Conclusion

In this study, I examine the earnings difference between immigrants and native-born Canadians by using the 2016 census data. The population group is separated into 12 groups based on gender and minority in three different levels of CMAs. In addition, my study focuses on employed Canadian citizens who are between 25 and 64 years old. I exclude all self- employed people. The OLS regression is used to conduct the study. In general, the CMA level has a huge effect on the earnings gap between female immigrants and native-born female Canadians for both visible and nonvisible minorities. The earnings gap increases as the CMA level increases. However, such an effect does not happen in the earnings difference between male immigrants and native-born Canadians.

The result is as expectation. For female immigrants, especially for some visible female immigrants, they need to spend more time on family as the result of cultural reasons. So those

female immigrants tend to perform worse in the labour market than other native born female competitors. In Big CMA, the earning gap is even bigger because those native born female competitors have more education resources and working opportunities. Therefore, the earning gap increases as the CMA level increases. For male immigrants, they do not need to spend more time at home as women in general. Based on the finding from Fong and Hou (2013), they find that the majority of immigrants from all ethnic groups tend to live and work in an environment with the same ethnic background. Those ethnic groups include Chinese, Black, South Asian, Filipinos, Italian and Portuguese. In general, the earnings for those ethnic employees are low when they live or work in such environment. However, the result changes if those immigrants live and work in the highly concentrated and enclosed environment at the same time. In Big CMA, there is high probability to generate the more concentrated and enclosed environment as the result of high density of immigrant population. So for the visible male immigrants in Big CMA, they tend to have the better earning. For the male immigrant in Other CMA and not CMA, they may choose to work and live as the native-born Canadians, rather than live and work in enclosed environment. So the earning gap changes between the male immigrants and native-born Canadians depend less on CMA levels.

The other finding is that visible male and female immigrants work harder than nonvisible male and female immigrants in large scale CMAs. After adding education and job-related variables, the earnings gap between visible immigrants and native-born Canadians decreases dramatically. However, nonvisible male and female immigrants suffer a little more earning difference than before. Banerjee (2009) indicates that nonvisible immigrants take less time to decrease the earnings gap between them and native-born people, while it takes longer time for visible immigrants to close that gap. This implies that visible immigrants have to spend more effort than nonvisible immigrants in order to reduce the earnings gap. The best way to

do this is to work harder in academic studies and to accumulate work experience. The finding in this study confirms that getting an academic degree and accumulating work experience serves to reduce the earnings gap for visible immigrants in higher level CMAs. In addition, Ferrer and Riddell (2008) confirm that the earnings gain from education for an immigrant is more than the native-born Canadian. This also could be used to explain why visible immigrants decrease the earnings gap after adding education and job-related variables. However, the earnings gap between visible immigrants and visible native-born Canadians is still large after adding education and job-related variables.

In addition, there is also a large earnings gap between visible immigrants and nonvisible immigrants. In the Big CMA, female visible immigrants face more serious problems on earning than male visible immigrants. In Other CMA, male visible immigrants face more serious earning problems than females. The visible immigrants face more challenging than other competitors in the labour market but judging visible immigrants face discrimination in the labour market could be overstated because some unobserved production inputs do not taken into account.

There are some limitations in this study. For instance, in the case of Not CMA, the sample size is small, especially for both male and female visible cases. As such, the results in this paper mainly focus on the Other CMA and the Big CMA. In addition, the census dataset cannot capture all effect, such as immigrant cohort effect because of the limitation of the dataset itself.

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Appendices

Table A1
Variable descriptions

LNWAGE	Logarithms of annul earning
IMMIGRANT	Dummy variable represents one, if people are immigrants (reference: Native born Canadian)
MARRY	Dummy variable represents one, if people get married (reference: Single person)
CHILD01	Dummy variable represents one, if people have kids between age 0 to 1 years old. (reference: People do not have kids with age 0 to 1 years old.)
CHILD25	Dummy variable represents one, if people have children between age 2 to 5 years old. (reference: People do not have children with age 2 to 5 years old
CHILD614	Dummy variable represents one, if person has children between age 6 to 14 years old. (reference: People do not have children with age 6 to 14 years old.)
ARRIVEDY	The time length for immigrants to indicate how long have them been in Canada
EDUC2	Dummy variable represents one, if people have high school degree. (reference: No degree)
EDUC3	Dummy variable represents one, if people have postsecondary degree below the bachelor degree. (reference: No degree)
EDUC4	Dummy variable represents one, if people have bachelor degree. (reference: No degree)
EDUC5	Dummy variable represents one, if people have master or doctorate degree. (reference: No degree)
OCC2	Dummy variable represents one, if people work as manager. (reference: Office support)
OCC3	Dummy variable represents one, if people have a professional job. (reference: Office support)
OCC4	Dummy variable represents one, if people have a semi professional job. (reference: Office support)
OCC5	Dummy variable represents one, if people work as supervisor in sale or service. (reference: Office support)
OCC6	Dummy variable represents one, if people work as supervisor in other fields. (reference: Office support)
OCC7	Dummy variable represents one, if people work as trade or manual labour. (reference: Office support)
OCC8	Dummy variable represents one, if people work in sale or service. (reference: Office support)
INDS2	Dummy variable represents one, if people work in the construction industry. (reference: Agriculture/natural resource)
INDS3	Dummy variable represents one, if people work in the manufacturing industry. (reference: Agriculture/natural resource)
INDS4	Dummy variable represents one, if people work in the commerce industry. (reference: Agriculture/natural resource)
INDS5	Dummy variable represents one, if people work in the service industry. (reference: Agriculture/natural resource)
INDS6	Dummy variable represents one, if people work in entertainment industry. (reference: Agriculture/natural resource)
INDS7	Dummy variable represents one, if people work in science industry. (reference: Agriculture/natural resource)
FULLTIME	Dummy variable represents one, if people have the fulltime job. (reference: people have the part time job.

WKSW2	Dummy variable represents one, if people work between 10 to 19 weeks. (reference: people work 1 to 9 weeks)
WKSW3	Dummy variable represents one, if people work between 20 to 29 weeks. (reference: people work 1 to 9 weeks
WKSW4	Dummy variable represents one, if people work between 30 to 39 weeks. (reference: people work 1 to 9 weeks
WKSW5	Dummy variable represents one, if people work between 40 to 48weeks. (reference: people work 1 to 9 weeks
WKSW6	Dummy variable represents one, if people work between 49 to 52 weeks. (reference: people work 1 to 9 weeks
YEAROFWK	The years of working
YEAROFWK2	The square of yeas of working

Table A2
Means of variables for both genders crossed by immigration identity

	Male		Female	
	Native born Canadian	Immigrant	Native born Canadian	Immigrant
Wages	67926	63304	48200	45964
	(37610.58)	(36947.35)	(30420.97)	(29769.51)
Lnwages	10.93	10.84	10.54	10.48
	(0.7306)	(0.7596)	(0.8037)	(0.8142)
MARRY	0.8816	0.9018	0.8347	0.8339
	(0.3231)	(0.2975)	(0.3714)	(0.3722)
CHILD01	0.0906	0.0710	0.0643	0.0454
	(0.2871)	(0.2568)	(0.2452)	(0.2082)
CHILD25	0.1537	0.1590	0.1354	0.1188
	(0.3607)	(0.3657)	(0.3422)	(0.3236)
CHILD614	0.2537	0.3288	0.2642	0.3078
	(0.4351)	(0.4698)	(0.4409)	(0.4616)
ARRIVEDY	-	22.1926	-	22.5129
	-	(12.3593)	-	(12.1300)
EDUC1	0.0959	0.0900	0.0557	0.0713
	(0.2944)	(0.2861)	(0.2293)	(0.2574)
EDUC2	0.2467	0.1957	0.2227	0.1895
	(0.4311)	(0.3968)	(0.4160)	(0.3919)
EDUC3	0.4379	0.2803	0.4116	0.3103
	(0.4961)	(0.4492)	(0.4921)	(0.4626)
EDUC4	0.1725	0.2960	0.2506	0.3299
	(0.3778)	(0.4565)	(0.4333)	(0.4702)
EDUC5	0.0470	0.1380	0.0595	0.0990
	(0.2117)	(0.3449)	(0.2365)	(0.2986)

OCC1	0.0767	0.0607	0.1525	0.1429
	(0.2661)	(0.2388)	(0.3595)	(0.3500)
OCC2	0.1366	0.1185	0.0959	0.0782
	(0.3435)	(0.3233)	(0.2945)	(0.2686)
OCC3	0.2221	0.2944	0.2547	0.2256
	(0.4157)	(0.4558)	(0.4357)	(0.4180)
OCC4	0.1166	0.1002	0.1547	0.1638
	(0.3209)	(0.3002)	(0.3617)	(0.3701)
OCC5	0.0357	0.0561	0.0447	0.0540
	(0.1856)	(0.2301)	(0.2067)	(0.2261)
OCC6	0.0631	0.0646	0.1289	0.1025
	(0.2432)	(0.2457)	(0.3350)	(0.3034)
OCC7	0.1008	0.1133	0.1495	0.1850
	(0.3011)	(0.3170)	(0.3566)	(0.3883)
OCC8	0.2483	0.1921	0.0190	0.0478
	(0.4320)	(0.3940)	(0.1366)	(0.2133)
INDS1	0.0638	0.0218	0.0171	0.0093
	(0.2444)	(0.1459)	(0.1295)	(0.0962)
INDS2	0.1216	0.0658	0.0189	0.0125
	(0.3268)	(0.2479)	(0.1362)	(0.1113)
INDS3	0.1526	0.1932	0.0492	0.0891
	(0.3596)	(0.3948)	(0.2163)	(0.2849)
INDS4	0.1968	0.2195	0.2124	0.2390
	(0.3975)	(0.4139)	(0.4090)	(0.4265)
INDS5	0.3678	0.3579	0.6126	0.5560
	(0.4822)	(0.4794)	(0.4872)	(0.4969)
INDS6	0.0396	0.0415	0.0320	0.0260
	(0.1949)	(0.1994)	(0.1761)	(0.1590)
INDS7	0.0580	0.1005	0.0577	0.0681
	(0.2337)	(0.3006)	(0.2333)	(0.2519)
FULLTIME	0.9512	0.9471	0.8100	0.8162
	(0.2155)	(0.2239)	(0.3923)	(0.3873)
WKSW1	0.0104	0.0133	0.0186	0.0197
	(0.1016)	(0.1144)	(0.1351)	(0.1391)
WKSW2	0.0179	0.0179	0.0312	0.0313
	(0.1324)	(0.1325)	(0.1738)	(0.1742)
WKSW3	0.0373	0.0328	0.0449	0.0471
	(0.1896)	(0.1782)	(0.2071)	(0.2118)
WKSW4	0.0432	0.0367	0.0480	0.0526
	(0.2034)	(0.1880)	(0.2137)	(0.2232)
WKSW5	0.1621	0.2055	0.1731	0.2232
	(0.3685)	(0.4041)	(0.3783)	(0.4164)
WKSW6	0.7290	0.6938	0.6842	0.6261
	(0.4445)	(0.4609)	(0.4648)	(0.4839)
YEAROFWK	23.8643	25.6430	23.4022	25.1156
	(11.0997)	(10.5551)	(11.0972)	(10.4161)

YEAROFWK2	692.7091	768.9706	670.8103	739.2827
	(558.5124)	(545.3112)	(542.4256)	(527.5213)
Observation	83,754	20,355	88,885	21,844

Notes: All the variables are weighted. The standard deviations are in brackets.

Table A3
OLS results on earning difference for female based on specification (1)

	Not CMA		Other CMA		Big CMA	
	Nonvisible	Visible	Nonvisible	Visible	Nonvisible	Visible
IMMIGRANT	-0.048	-0.038	-0.103**	-0.313***	-0.195***	-0.505***
	(-0.066)	(-0.13)	(-0.05)	(-0.066)	(-0.024)	(-0.021)
MARRY	0.202***	0.052	0.226***	0.248***	0.214***	0.179***
	(-0.013)	(-0.226)	(-0.014)	(-0.067)	(-0.011)	(-0.015)
CHILD01	-0.606***	-0.491**	-0.565***	-0.599***	-0.502***	-0.464***
	(-0.02)	(-0.195)	(-0.021)	(-0.097)	(-0.017)	(-0.027)
CHILD25	-0.097***	-0.144	-0.018	-0.127**	-0.02	0.034*
	(-0.014)	(-0.133)	(-0.015)	(-0.062)	(-0.013)	(-0.018)
CHILD614	-0.001	-0.126	0.060***	-0.026	0.045***	-0.036***
	(-0.01)	(-0.103)	(-0.012)	(-0.045)	(-0.01)	(-0.013)
ARRIVEDY	0.001	-0.002	0.001	0.007***	0.006***	0.014***
	(-0.002)	(-0.005)	(-0.001)	(-0.002)	(-0.001)	(-0.001)
Constant	10.275***	10.538***	10.395***	10.400***	10.501***	10.539***
	(-0.013)	(-0.217)	(-0.014)	(-0.062)	(-0.01)	(-0.017)
Observations	33,162	340	22,475	1,278	35,931	17,543
R-squared	0.039	0.029	0.043	0.053	0.035	0.054

Notes: Dependent variable is the log of annual earning. The regressions are weighted. The standard deviations are in brackets. * indicates level of significance at 10% ; ** indicates level of significance at 5%; *** indicates the level of significance at 1%.

Table A4

OLS results on earning difference for male based on specification (1)

	Not CMA		Other CMA		Big CMA	
	Nonvisible	Visible	Nonvisible	Visible	Nonvisible	Visible
IMMIGRANT	-0.078	-0.103	0.006	-0.287***	-0.120***	-0.309***
	(-0.052)	(-0.136)	(-0.046)	(-0.061)	(-0.021)	(-0.021)

MARRY	0.495***	0.630***	0.611***	0.684***	0.564***	0.473***
	(-0.014)	(-0.198)	(-0.016)	(-0.066)	(-0.012)	(-0.017)
CHILD01	-0.015	-0.118	-0.036**	0.01	-0.015	-0.014
	(-0.015)	(-0.17)	(-0.017)	(-0.08)	(-0.014)	(-0.022)
CHILD25	0.019	-0.051	0.063***	0.045	0.056***	0.085***
	(-0.012)	(-0.12)	(-0.014)	(-0.055)	(-0.011)	(-0.017)
CHILD614	0.135***	0.077	0.169***	0.120***	0.157***	0.064***
	(-0.009)	(-0.101)	(-0.011)	(-0.043)	(-0.009)	(-0.014)
ARRIVEDY	0.004***	0.003	0.002*	0.009***	0.003***	0.008***
	(-0.001)	(-0.005)	(-0.001)	(-0.002)	(-0.001)	(-0.001)
Constant	10.381***	10.366***	10.322***	10.224***	10.472***	10.443***
	(-0.013)	(-0.182)	(-0.015)	(-0.058)	(-0.011)	(-0.017)
Observations	31,042	242	21,517	1,278	33,946	16,084
R-squared	0.051	0.052	0.085	0.119	0.082	0.065

Notes: Dependent variable is the log of annual earning. The regressions are weighted. The standard deviations are in brackets. * indicates level of significance at 10% ; ** indicates level of significance at 5%; *** indicates the level of significance at 1%.

Table A5
OLS results on earning difference for female based on specification (2)

	Not CMA		Other CMA		Big CMA	
	Nonvisible	Visible	Nonvisible	Visible	Nonvisible	Visible
IMMIGRANT	-0.062	0.041	-0.113***	-0.160***	-0.229***	-0.348***
	(-0.048)	(-0.108)	(-0.036)	(-0.052)	(-0.018)	(-0.017)
MARRY	0.079***	-0.146	0.072***	0.037	0.084***	0.058***
	(-0.01)	(-0.178)	(-0.011)	(-0.053)	(-0.008)	(-0.012)
CHILD01	-0.286***	-0.528***	-0.247***	-0.312***	-0.205***	-0.223***
	(-0.016)	(-0.156)	(-0.017)	(-0.075)	(-0.014)	(-0.021)
CHILD25	-0.043***	-0.075	0.033***	-0.038	0.012	0.051***
	(-0.011)	(-0.104)	(-0.012)	(-0.048)	(-0.01)	(-0.014)
CHILD614	-0.045***	-0.202**	0.003	-0.023	-0.006	-0.031***
	(-0.008)	(-0.084)	(-0.009)	(-0.036)	(-0.008)	(-0.011)
ARRIVEDY	0.002	0.002	0.003**	0.006***	0.006***	0.010***
	(-0.001)	(-0.004)	(-0.001)	(-0.002)	(-0.001)	(-0.001)
EDUC2	0.170***	0.255*	0.144***	0.116*	0.198***	0.128***
	(-0.013)	(-0.152)	(-0.019)	(-0.069)	(-0.016)	(-0.021)
EDUC3	0.255***	0.207	0.248***	0.257***	0.273***	0.246***
	(-0.013)	(-0.162)	(-0.019)	(-0.072)	(-0.016)	(-0.021)
EDUC4	0.505***	0.460***	0.419***	0.313***	0.481***	0.351***
	(-0.016)	(-0.169)	(-0.021)	(-0.073)	(-0.017)	(-0.022)

EDUC5	0.666***	0.531**	0.552***	0.285***	0.588***	0.440***
	(-0.022)	(-0.208)	(-0.024)	(-0.086)	(-0.019)	(-0.026)
OCC2	0.221***	0.127	0.319***	0.185**	0.379***	0.358***
	(-0.014)	(-0.175)	(-0.015)	(-0.088)	(-0.013)	(-0.02)
OCC3	0.344***	0.658***	0.384***	0.562***	0.337***	0.449***
	(-0.012)	(-0.132)	(-0.013)	(-0.058)	(-0.011)	(-0.016)
OCC4	0.047***	0.147	0.074***	0.227***	0.060***	0.159***
	(-0.011)	(-0.126)	(-0.013)	(-0.055)	(-0.012)	(-0.017)
OCC5	-0.151***	-0.503***	-0.110***	-0.168**	-0.039**	-0.056**
	(-0.017)	(-0.15)	(-0.02)	(-0.081)	(-0.017)	(-0.023)
OCC6	0.072***	0.167	0.084***	0.241***	0.096***	0.104***
	(-0.012)	(-0.158)	(-0.014)	(-0.07)	(-0.012)	(-0.019)
OCC7	-0.257***	-0.293**	-0.248***	-0.178***	-0.193***	-0.134***
	(-0.012)	(-0.125)	(-0.014)	(-0.057)	(-0.012)	(-0.016)
OCC8	-0.013	-0.096	-0.057*	0.046	-0.097***	-0.114***
	(-0.023)	(-0.249)	(-0.031)	(-0.094)	(-0.028)	(-0.026)
INDS2	-0.014	0.771**	-0.203***	0.549	-0.321***	-0.324***
	(-0.031)	(-0.321)	(-0.053)	(-0.34)	(-0.033)	(-0.067)
INDS3	-0.028	0.485**	-0.159***	0.364**	-0.315***	-0.326***
	(-0.025)	(-0.242)	(-0.048)	(-0.152)	(-0.029)	(-0.054)
INDS4	-0.050**	0.124	-0.238***	0.426***	-0.354***	-0.279***
	(-0.021)	(-0.197)	(-0.045)	(-0.145)	(-0.027)	(-0.051)
INDS5	-0.023	0.243	-0.265***	0.412***	-0.399***	-0.349***
	(-0.02)	(-0.176)	(-0.044)	(-0.141)	(-0.026)	(-0.051)
INDS6	-0.111***	0.055	-0.207***	0.626***	-0.332***	-0.220***
	(-0.029)	(-0.389)	(-0.049)	(-0.182)	(-0.03)	(-0.057)
INDS7	-0.054**	0.503*	-0.277***	0.380**	-0.335***	-0.329***
	(-0.026)	(-0.277)	(-0.047)	(-0.158)	(-0.028)	(-0.053)
FULLTIME	0.617***	0.626***	0.691***	0.514***	0.735***	0.697***
	(-0.008)	(-0.085)	(-0.01)	(-0.042)	(-0.009)	(-0.013)
WKSW2	0.295***	0.36	0.177***	-0.092	0.162***	0.052
	(-0.029)	(-0.289)	(-0.036)	(-0.138)	(-0.029)	(-0.038)
WKSW3	0.728***	0.879***	0.558***	0.203	0.537***	0.555***
	(-0.027)	(-0.261)	(-0.034)	(-0.128)	(-0.027)	(-0.036)
WKSW4	0.919***	0.717***	0.729***	0.524***	0.724***	0.720***
	(-0.027)	(-0.267)	(-0.034)	(-0.129)	(-0.027)	(-0.035)
WKSW5	1.186***	1.120***	1.005***	0.767***	1.002***	0.972***
	(-0.025)	(-0.238)	(-0.03)	(-0.115)	(-0.024)	(-0.031)
WKSW6	1.305***	1.106***	1.106***	0.837***	1.105***	1.072***
	(-0.024)	(-0.234)	(-0.029)	(-0.112)	(-0.023)	(-0.031)
YEAROFWK	0.025***	0.034**	0.038***	0.013*	0.040***	0.028***
	(-0.002)	(-0.016)	(-0.002)	(-0.007)	(-0.001)	(-0.002)
YEAROFWK2	-0.000***	-0.001*	-0.001***	0	-0.001***	-0.001***
	(0)	(0)	(0)	(0)	(0)	(0)
Constant	8.088***	8.117***	8.312***	8.343***	8.389***	8.627***
	(-0.039)	(-0.391)	(-0.059)	(-0.209)	(-0.041)	(-0.066)

Observations	33,162	340	22,475	1,278	35,931	17,543
R-squared	0.487	0.531	0.502	0.499	0.469	0.475

Notes: Dependent variable is the log of annual earning. The regressions are weighted. The standard deviations are in brackets. * indicates level of significance at 10% ; ** indicates level of significance at 5%; *** indicates the level of significance at 1%

Table A6
OLS results on earning difference for male based on specification (2)

	Not CMA		Other CMA		Big CMA	
	Nonvisible	Visible	Nonvisible	Visible	Nonvisible	Visible
IMMIGRANT	-0.117***	-0.379***	-0.068*	-0.405***	-0.217***	-0.305***
	(-0.045)	(-0.115)	(-0.037)	(-0.054)	(-0.018)	(-0.018)
MARRY	0.269***	0.488***	0.237***	0.319***	0.234***	0.230***
	(-0.013)	(-0.179)	(-0.014)	(-0.068)	(-0.011)	(-0.017)
CHILD01	0.008	-0.088	0.017	0	0.020*	-0.017
	(-0.013)	(-0.137)	(-0.014)	(-0.07)	(-0.012)	(-0.019)
CHILD25	0.027***	-0.183*	0.069***	0.013	0.047***	0.026*
	(-0.01)	(-0.095)	(-0.011)	(-0.047)	(-0.01)	(-0.014)
CHILD614	0.048***	0.033	0.058***	0.031	0.049***	0.018
	(-0.009)	(-0.086)	(-0.009)	(-0.038)	(-0.008)	(-0.012)
ARRIVEDY	0.004***	0.013***	0.003***	0.013***	0.005***	0.010***
	(-0.001)	(-0.005)	(-0.001)	(-0.002)	(-0.001)	(-0.001)
EDUC2	0.157***	0.056	0.139***	-0.014	0.143***	0.087***
	(-0.012)	(-0.142)	(-0.015)	(-0.067)	(-0.013)	(-0.021)
EDUC3	0.295***	0.136	0.301***	0.262***	0.296***	0.275***
	(-0.011)	(-0.149)	(-0.015)	(-0.068)	(-0.013)	(-0.021)
EDUC4	0.418***	0.431***	0.461***	0.340***	0.443***	0.399***
	(-0.015)	(-0.149)	(-0.017)	(-0.072V	(-0.014)	(-0.021)
EDUC5	0.562***	0.564***	0.527***	0.504***	0.533***	0.506***
	(-0.025)	(-0.18)	(-0.023)	(-0.084)	(-0.017)	(-0.025)
OCC2	0.01	-0.306	0.111***	0.097	0.162***	0.216***
	(-0.017)	(-0.227)	(-0.017)	(-0.085)	(-0.014)	(-0.024)
OCC3	-0.059***	-0.199	-0.053***	0.114	0.022	0.157***
	(-0.015)	(-0.223)	(-0.016)	(-0.075)	(-0.014)	(-0.021)
OCC4	-0.128***	-0.492**	-0.119***	-0.068	-0.099***	0.068***
	(-0.017)	(-0.24)	(-0.018)	(-0.084)	(-0.015)	(-0.024)
OCC5	-0.289***	-0.597**	-0.206***	-0.215**	-0.172***	-0.235***
	(-0.024)	(-0.263)	(-0.023)	(-0.106)	(-0.02)	(-0.026)
OCC6	-0.025	-0.373	-0.053***	-0.015	-0.044**	0.049*
	(-0.019)	(-0.242)	(-0.02)	(-0.096)	(-0.018)	(-0.027)

OCC7	-0.337***	-0.677***	-0.292***	-0.189**	-0.250***	-0.153***
	(-0.018)	(-0.236)	(-0.018)	(-0.086)	(-0.016)	(-0.023)
OCC8	-0.115***	-0.379*	-0.097***	-0.08	-0.065***	0.032
	(-0.015)	(-0.219)	(-0.016)	(-0.078)	(-0.015)	(-0.023)
INDS2	-0.218***	-0.192	-0.320***	-0.102	-0.278***	-0.334***
	(-0.014)	(-0.189)	(-0.023)	(-0.148)	(-0.021)	(-0.043)
INDS3	-0.262***	-0.042	-0.322***	-0.174	-0.318***	-0.309***
	(-0.013)	(-0.156)	(-0.022)	(-0.131)	(-0.021)	(-0.039)
INDS4	-0.346***	-0.302*	-0.400***	-0.232*	-0.373***	-0.337***
	(-0.014)	(-0.172)	(-0.022)	(-0.133)	(-0.02)	(-0.038)
INDS5	-0.327***	-0.310**	-0.398***	-0.351***	-0.396***	-0.412***
	(-0.012)	(-0.149)	(-0.021)	(-0.129)	(-0.02)	(-0.038)
INDS6	-0.416***	-0.627	-0.361***	-0.136	-0.337***	-0.260***
	(-0.025)	(-0.43)	(-0.028)	(-0.151)	(-0.023)	(-0.043)
INDS7	-0.283***	-0.159	-0.328***	-0.114	-0.271***	-0.290***
	(-0.022)	(-0.235)	(-0.025)	(-0.139)	(-0.022)	(-0.04)
FULLTIME	0.798***	1.085***	0.934***	0.433***	0.902***	0.745***
	(-0.017)	(-0.222)	(-0.018)	(-0.078)	(-0.016)	(-0.021)
WKSW2	0.088**	-1.256**	-0.02	-0.686***	-0.079*	-0.162***
	(-0.04)	(-0.512)	(-0.048)	(-0.175)	(-0.041)	(-0.053)
WKSW3	0.623***	0.068	0.338***	0.125	0.288***	0.381***
	(-0.037)	(-0.376)	(-0.043)	(-0.156)	(-0.036)	(-0.048)
WKSW4	0.730***	0.31	0.461***	0.143	0.432***	0.516***
	(-0.037)	(-0.352)	(-0.042)	(-0.153)	(-0.035)	(-0.047)
WKSW5	0.994***	0.787**	0.853***	0.554***	0.822***	0.822***
	(-0.035)	(-0.324)	(-0.038)	(-0.14)	(-0.032)	(-0.042)
WKSW6	1.094***	0.792**	0.964***	0.609***	0.928***	0.942***
	(-0.034)	(-0.322)	(-0.038)	(-0.137)	(-0.031)	(-0.041)
YEAROFWK	0.029***	0.027	0.040***	0.027***	0.042***	0.026***
	(-0.002)	(-0.02)	(-0.002)	(-0.009)	(-0.002)	(-0.002)
YEAROFWK2	-0.000***	-0.001*	-0.001***	-0.001***	-0.001***	-0.001***
	(0)	(0)	(0)	(0)	(0)	(0)
Constant	8.619***	8.980***	8.550***	9.438***	8.633***	8.870***
	(-0.045)	(-0.498)	(-0.051)	(-0.223)	(-0.044)	(-0.066)
Observations	31,042	242	21,517	1,278	33,946	16,084
R-squared	0.316	0.528	0.407	0.414	0.375	0.379

Notes: Dependent variable is the log of annual earning. The regressions are weighted. The standard deviations are in brackets. * indicates level of significance at 10% ; ** indicates level of significance at 5%; *** indicates the level of significance at 1%.