

A COMPARISON OF EARNINGS OF CHINESE AND INDIAN IMMIGRANTS IN  
CANADA: AN ANALYSIS OF THE EFFECT OF LANGUAGE ABILITY

by

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## DEDICATION

To my Mother, who has provided all the love, positivity and patience,

To my Father, for his encouraging words and for his faith in me,

To my Brother, for support and humour,

And

To my Grandmother for showering me with affection always

## TABLE OF CONTENTS

LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
ABSTRACT .....	viii
LIST OF ABBREVIATIONS USED .....	ix
ACKNOWLEDGEMENTS .....	x
CHAPTER 1 INTRODUCTION .....	1
CHAPTER 2 LITERATURE REVIEW .....	5
CHAPTER 3 DATA .....	8
CHAPTER 4: A COMPARISON OF CHINESE AND INDIAN COMMUNITIES .....	10
CHAPTER 5: ECONOMETRIC MODEL .....	15
CHAPTER 6: RESULTS .....	22
CHAPTER 7: CONCLUSION .....	30
REFERENCES .....	32
APPENDIX A: DESCRIPTIVE STATISTICS AND REGRESSION ESTIMATES .....	34
APPENDIX B: DESCRIPTION OF VARIABLES .....	48
APPENDIX C: OTHER TABLES .....	51

## LIST OF TABLES

Table 1:	Descriptive Statistics I (Only immigrants).....	34
Table2:	Descriptive Statistics II (Immigrants and Natives) .....	35
Table 3:	OLS Estimates of Log of annual wages of Immigrants, 2001 .....	36
Table 4:	OLS Estimates of Log of annual wages of Female Immigrants, 2001 .....	37
Table 5:	OLS Estimates of Log of annual wages of Male Immigrants, 2001 .....	38
Table 6:	OLS Estimates of Log of annual wages of Immigrants and Natives, 2001 .....	39
Table 7:	OLS Estimates of Log of annual wages of Female Immigrants and Natives, 2001 .....	40
Table 8:	OLS Estimates of Log of annual wages of Male Immigrants and Natives, 2001 .....	41
Table 9:	Tobit Estimates of Weeks Worked for Immigrants, 2001 .....	42
Table 10:	Tobit Estimates of Weeks Worked for Female Immigrants, 2001 .....	43
Table 11:	Tobit Estimates of Weeks Worked for Male Immigrants only, 2001 .....	44
Table 12:	Tobit Estimates of Weeks Worked for Immigrants and Natives, 2001 .....	45
Table 13:	Tobit Estimates of Weeks Worked for Female Immigrants and Natives, 2001 .....	46
Table 14:	Tobit Estimates of Weeks Worked for Male Immigrants and Natives, 2001 .....	47
Table 15:	Age Distribution by Communities in percentages, by Sex, 2001 .....	51
Table 16:	Educational attainment of the both communities and overall Canadian population aged 15 and over in percentages, by sex, 2001 .....	52
Table 17:	Percentage of the population employed for all communities, by age group and sex, 2001 .....	53

## LIST OF FIGURES

Figure 1:	Change in the source countries of immigrants in Canada from 1971 to 2006.....	2
Figure 2:	Average earnings of the East Indian and Chinese community and Canadian population, by age group and sex, 2000.....	11
Figure 3:	Average Earnings of Indian, Chinese and Canadian Communities, Females, by Age Group, 2000.....	14
Figure 4:	Median Total Earnings by Province for all, 2000 .....	19

## Abstract

The effect of knowledge of the official languages on the earnings of immigrants in Canada from its two largest source countries: China and India, is examined in this thesis. A visible difference is observed in the earning levels of these two immigrant groups. The difference is especially striking amongst the men of these groups. The role of language is assessed by estimating both annual earnings and weeks worked and by controlling for other variables that would affect the earning levels of individuals. The observed earnings gap between Chinese and Indian immigrants falls slightly when self-assessed language ability is controlled.



## LIST OF ABBREVIATIONS USED

PUMF            Public Use Microdata File

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## CHAPTER 1: Introduction

Immigration is defined, by Statistics Canada, as the movement of nationals of any given country to another country for the purpose of settlement. Immigration contributes to the formation of the society's cultural, social and economic development. Immigrants have been a major supplier to the labour force in Canada (Statistics Canada, 2001). In 2004, Canada had the highest per capita immigration rate in the world (Canada Immigration Program, 2004). Immigrants<sup>1</sup> accounted for 18.4 percent of the population in 2001 (Statistics Canada, 2001). The major source of immigrants was from Asia (59.4 percent of the total immigrants in 2001). Within Asia, the majority of immigrants originate from the two most populous countries in the world: China and India.

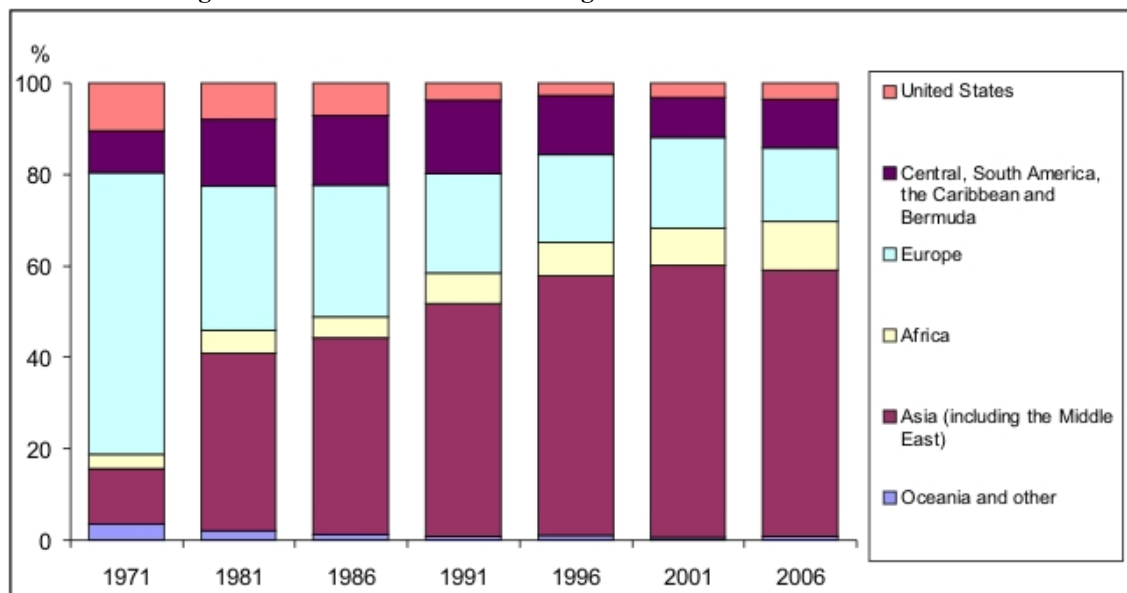
In the 1970's, immigrants were mainly from Europe. However, this changed drastically so that by 2001, the major source of immigrants had become Asia. This is shown in the Figure 1. The immigrants from Europe have their mother tongue as English, French, German, Italian, etc. The smaller the "linguistic distance" between English and the immigrant's mother tongue, the greater is the efficiency in the acquisition of the languages of Canada (Chiswick and Miller, 1998). Therefore, since European languages are more similar to English or French, which are the official languages in Canada, than Mandarin or Hindi, immigrants from China or India have lower efficiency in the official languages. However, in the past few decades, more immigrants originate from countries where the mother tongue is not similar to the official languages of Canada. The share of

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<sup>1</sup> First generation immigrants

immigrants from Eastern Europe, South Asia (India, Pakistan), East Asia (China, Korea, Japan), Western Asia (Iraq, Iran, Afghanistan) and Africa rose from 35 percent in 1981 to 72 percent in 2001 (Picot and Sweetman, 2005). The human capital from these countries would require more training for it to be adaptable to the Canadian labour market. This might be because of differences in the language, cultural and social settings and education differences.

**FIGURE 1: Change in the source countries of immigrants in Canada from 1971 to 2006**



Source: Picot and Sweetman, 2005,

In the 1990s, the immigrants who came into Canada had earnings levels 30 percent less than the Canadian-born workers while in the 1970s, the earnings of the immigrants were almost at par with the Canadian-born workers (Green and Worswick, 2004). Hence, the wage earnings gap has been increasing for the last few decades. Researchers have found a variety of reasons for the increase in the wage gap. Picot and Sweetman (2005) consider the change in the source of immigrants, the decline in the returns to schooling for immigrants and the decline in the returns to foreign experience in

the labour market as the main reasons for the rise in the gap. Language skills are one of the important factors in determining the earning levels of immigrants. Higher proficiency in an official language along with education and labour market experience would yield greater returns than just education and labour market experience without the knowledge of the official language (Chiswick and Miller, 2002).

In my thesis, I analyse the differences in the earnings levels of the two major groups of immigrants in Canada: Chinese and Indians. The average earnings of a male Chinese immigrant is 80 percent of a Canadian born male while the average earnings of a male Indian immigrant it is 90 percent without controlling for age, sex. etc. (Census Canada, 2001). However, for female Chinese and Indian immigrants, their earnings are roughly the same as Canadian-born females (Census Canada, 2001). One important characteristic that differentiates these two groups is the difference in the language ability of the host country.

About 15 percent of Chinese immigrants cannot converse in any official languages, however for Indian immigrants, only 7 percent lack knowledge of English or French (Statistics Canada, 2001). The reason for this difference in the knowledge of an official language is that India has English as one of its official languages. However, China's official language is Mandarin. Therefore, proficiency in the language of the destination can have major impacts on the earnings of the immigrants and hence I hypothesize language to be one of the explanations for the difference in the earning levels.

Therefore, the hypothesis for this study states that the earnings differential between the Chinese and Indian immigrants can be at least partially attributable to the differences in the language ability. The language ability has a positive relationship with the earning levels of immigrants (Chiswick and Miller, 2002). This study analyses this relationship for the two largest sources of immigrants in Canada.

Many papers have previously analysed this relationship for all the immigrants from various countries in Canada. However, the unique feature of this paper is that I choose to go in deeper within the heterogeneous group of immigrants. Chinese and Indian immigrants account for about 60 percent of immigrant population in Canada (Statistics Canada, 2001). This avoids lumping together individuals with very different cultures etc.

This paper uses the data from the Census 2001. The segregation of immigrants into Chinese and Indians is more specifically provided in the Census 2001 data as compared to recent years.

The next section provides a discussion of earlier studies conducted analysing the effect of language ability on the level of earnings, Chapter 3 explains the data, Chapter 4 examines the economic conditions of Chinese and Indian communities in Canada, Chapter 5 explains the econometric methodology used. Chapter 6 presents the results and finally Chapter 7 provides the conclusion.

## Chapter 2: Literature Review

This chapter discusses the methods used in past studies to analyse the effect of knowledge of the official language on earnings of immigrants. An individual arriving in a new country and aiming to participate in the labour force needs to have the required human capital skills. Language ability is a form of human capital that contributes to the earning levels of an individual.

Past researchers have found reasons for the difference in the level of earnings between immigrants and the Canadian-born individuals. Picot and Sweetman (2005), suggest that the main reasons for the earnings gap have been a shift in the source country, language abilities, decline in returns to schooling for immigrants, and decline in the returns to foreign experience in the labour market. Proficiency in the language of the destination country can have major impacts on the level of earnings of the immigrants. It is assumed that higher levels of education or schooling along with language ability would increase the returns to education (Chiswick and Miller, 2002). It has also been suggested that language proficiency plays a role as an input to the production of the human capital. This implies that the along with education, language proficiency will have a positive effect on the wage level (Chin, 2003).

The language ability has been defined in various terms by different authors. This has been defined as literacy by Ferrer, Green and Riddlell (2006) and by Chiswick and Miller (2002), as the ability to speak a language at home. There is an effect of

literacy on the level of earnings of immigrants that is equivalent to the change in the earnings associated with moving from high school dropout to university degree (Ferrer, Green and Riddell, 2003). However, literacy is the ability to read and write in English or French, which may not be sufficient for an individual to be absorbed into the labour market. Therefore, the measure I use is the knowledge of the official language: defined as the ability to conduct a conversation in English/French, the official languages of Canada. Furthermore, the effect of literacy is examined only on the second generations (Ferrer, Green and Riddell, 2006). However, the language deficiency is likely to be even more pronounced in immigrants themselves. An analysis of language proficiency would be applicable to all the immigrants for all generations. However, it is important to acknowledge a limitation of my measure that is that some individuals assume on their self that they are proficient in the language although, they are not proficient as others.

The issue that has been analysed by most recent studies is whether greater proficiency in the destination language improves the capability to earn higher earnings (Chiswick and Miller, 2002). Language knowledge eases the process of adaptation of an immigrant into the labour market. This is the first barrier for any immigrant planning to be absorbed into the destination labour market (Casey and Dustman, 2007). Language ability is dependent on various factors: the host country, origin of the parent and family characteristics as defined by Casey and Dustman (2007). However, this excludes the effect of years since immigration as the exposure of the immigrant individual will affect the ability to converse in the official language.



Exposure is assumed to have three components: exposure prior to immigration, time of exposure in the destination, and the intensity of exposure per unit of time in the destination as described by Chiswick and Miller, 2002. Hence, different countries with different languages from the destination country will have different exposure levels. The Chinese have a lower exposure level to English as compared to the Indians. This is because the official working language of India is English as declared by the Indian Union (Source: India 2010 - A Reference Annual). English is also widely used in schools and in the media in India. However, in China, Mandarin or Cantonese is mainly used in schools. Therefore, Indians have greater exposure levels to English. The question thus arises whether the country of origin affects the earnings of an immigrant as it would affect the knowledge of the official language.

## Chapter 3: Data

This study uses data from the 2001 Census of Canada, Public Use Microdata File (PUMF) on individuals, and is a 2.7 percent sample of the population. This dataset contains information on the social, demographic, and economic characteristics and specifically the ethnicity of each individual. Also, the knowledge of official language is also listed in this data. The knowledge of the official language is described as the ability to conduct a conversation in English only, in French only, in both English and French and in neither of the official languages. This variable is central in understanding how the knowledge of the official language would affect the level of the earnings. The other variables are age, years of education, years since immigration, knowledge of the official language, marriage and children. The age variable gives the age of the individual in the year 2000.

Years of education is the total sum of the years of schooling at the elementary, high school, university and college levels. Years since immigration shows how many years have passed since the individual received the immigrant status by the Government of Canada. The main variable in the analysis is the knowledge of an official language. This lists whether the individual can speak in English, or French or both. Dummy variables are created for children, marriage, Chinese individuals, provinces and knowledge of the official language. Appendix A gives the description of the variables and how dummies have been assigned to the variables.

This sample excludes all institutional residents, residents of incompletely enumerated Native reserves or settlements, and foreign residents, namely foreign diplomats, members of the Armed Forces of another country who are stationed in Canada, and residents of another country who are visiting Canada temporarily. For this analysis, I have excluded all respondents with wages and salaries (earnings) as zero or negative, and where the respondent has not provided an answer to any of the variables, like age, years since immigration etc. All individuals in the dataset fall into the age group of 18-75 years.

## CHAPTER 4: A Comparison of Chinese and Indian Communities

This thesis focuses on the two major groups of immigrants to Canada: Chinese and Indian. I discuss the characteristics of each group separately in comparison to Canadian-born. Then in the end of this chapter I compare the two communities.

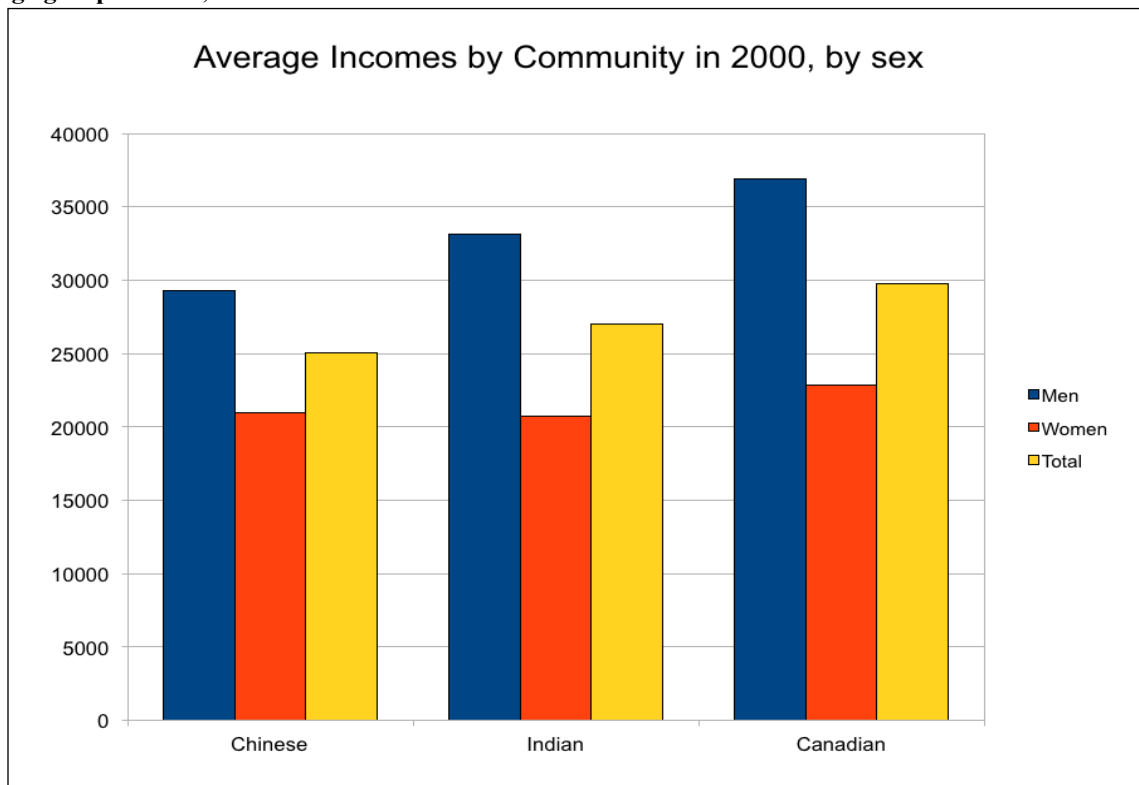
“Chinese community” refers to all individuals who were born in the People’s Republic of China and have been issued a landed immigrant status. A landed immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities (Census 2001, PUMF files). “Indian Community” refers to all individuals who were born in India and have been issued a landed immigrant status by Canadian authorities. Canadian Community refers to all individuals who were born in Canada.

The Indian and Chinese communities have very similar and yet different cultures. The Chinese were the largest non-European ethnic group in Canada in 2001 (Lindsay, 2001). They represent about 4 percent of the Canadian population (Lindsay, 2001). The Indians come after the Chinese in terms of contribution to the immigrant population in Canada. Both communities mostly live in British Columbia and Ontario (Lindsay, 2001).

The average earnings of a Chinese male immigrant are lower than an Indian male (see Figure 3). However, a Chinese female has higher average earnings than an Indian female. Looking only at the earnings of women by age groups, we see that all

Chinese, above the age of 25, earn more than the Indians (see Figure 4). The reason for this might be that the Indians have family based households and hence the woman is expected to take care of the household. After marriage, many Indian women quit their jobs in order to manage their household/family. Those who do work outside the home might take up professions that are closer to home, which might offer lower wages. Many Indian men bring wives who are not educated in Canada and therefore take up professions/jobs where only minimal education is required and are paid minimum wages. Also, the percentage of

**Figure 2: Average earnings of the East Indian and Chinese community and Canadian population, by age group and sex, 2000**



*Source: Statistics Canada, 2001 Census of Canada*

households with children is higher for Indians than Chinese and Canadian born. This might explain the reason for Indian women earning lower earnings. In the case of males,

irrespective of age group the Indians earn more than the Chinese counterparts. However, both Indians and Chinese earn lower than their Canadian-born counterparts irrespective of sex (see Figure 3).

The age distribution of all three communities is shown in Table 15, Appendix C. We can observe that the Chinese have an older community than the Indians. The percentage of people in the age group of 65 and over for Chinese is higher than for Indians. In comparison to Canadian-born individuals, the Chinese and the Indians have a younger population (fewer are in the age group of 65 and over) and implies that more individuals are likely to be in the labour market.

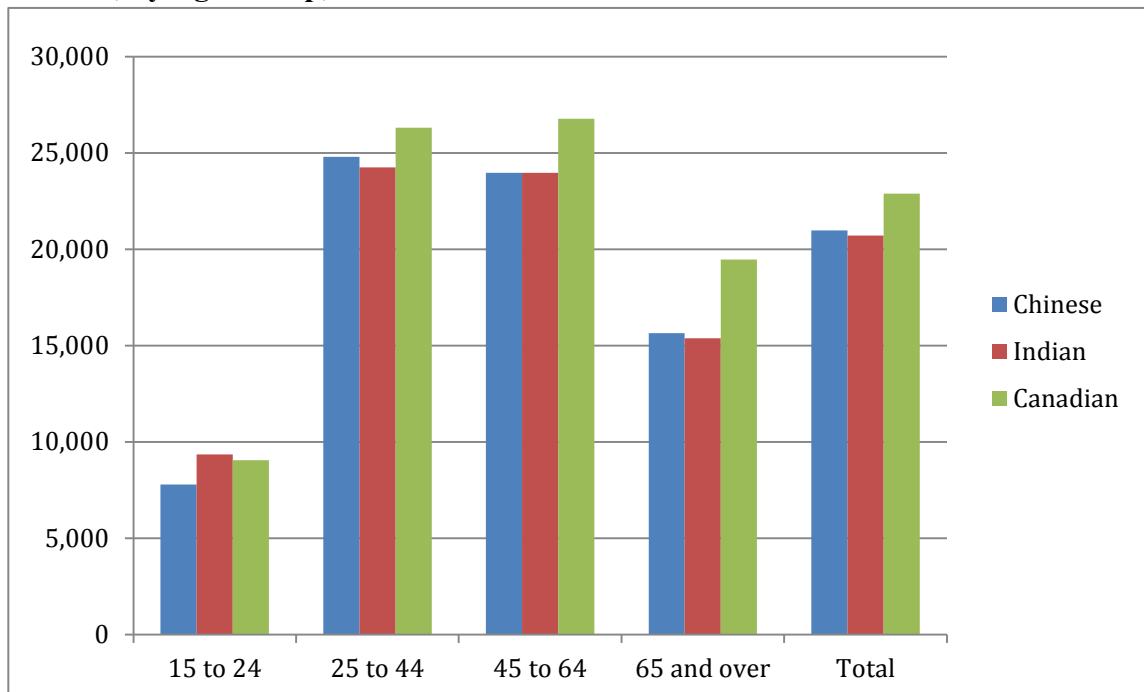
Table 1 shows the means and standard deviations of variables for immigrants only. The mean age of the Chinese is higher than for their Indian counterparts, however, the average number of years since immigration is slightly lower for Chinese. This shows that the Chinese may have less labour market experience in Canada and this can be one of the reasons for the lower level of earnings (Table 1). The years since immigration mean is lower for females who would thus have fewer potential years in the labour market (Table 1). The mean weeks worked in 2000 is higher for Indian immigrants, which shows that they work more weeks in a year and as well as having higher earning levels than the Chinese.

The educational attainment of Chinese male immigrants is comparatively higher than Indians in terms of individuals having a university degree (see Table 15,

Appendix C). Chinese and Indian females have almost the same education levels. The Chinese and Indians are more likely to have a post graduate degree than a Canadian born. About 27 percent of the Chinese community and 26 percent of the Indian community have a university degree, however, only 15.4 percent of the Canadian-born have a university degree. This is supported by the years of education mean, which is the highest for the Chinese and lowest for Canadians for both genders (Table 2).

The employment rate of Chinese men is lower than for Indian men by 11.5 percentage points (Table 17, Appendix C). For females, the same pattern holds. It is important to note, that the Chinese have the lowest employment rate for the age group of 15 to 24 among all three communities. Also, it is only for this age group, where the Chinese women have a higher employment rate than for Chinese men. This can be because the individuals have not spent enough time in the labour market and maybe at school. Language skills can be lacking at a younger age, as they have not been exposed to the destination language due to their low age. The main difference between the communities that might be a key reason for the difference in earning levels is the knowledge of the official language. Table 1 shows this major difference in the percentages of individuals who do not have the knowledge of the official languages of Canada for the Chinese and Indian communities. The Chinese group appear to have lower ability in an official language, and is almost double the percentage of the Indian. In the case of males, the percentage of Chinese who do not have knowledge of the official language is 12.0, however, it is only 6.1 percent for the Indians. This huge difference can be a reason for differences in the level of earnings. This study tries to explain the

**Figure 3: Average Earnings of Indian, Chinese and Canadian Communities, Females, by Age Group, 2000**



*Source: Statistics Canada, 2001 Census of Canada*

difference in earning levels between Chinese and Indian immigrants and analyzes whether language ability would be a reason that helps to explain this difference.



## Chapter 5: Econometric Model

The human capital earnings function has been widely used for labour market studies (Mincer, 1974). The Mincer equation uses the association between the logarithm of the wage of an individual and important human capital variables, especially age, age squared and years of education. In my study, I analyse the effect of language ability on the level of earnings controlling for other key human capital variables. I use the Mincer equation that shows the relationship between the natural logarithm of the earnings and factors like years of education, age, sex etc.

In my analysis I use two research strategies. The first strategy is to assess the effect of human capital variables along with language ability on the level of earnings using OLS regression analysis. In the second strategy, I analyse whether the weeks worked varies with ethnicity using Tobit Analysis (less than or equal to 52 weeks). Since the Chinese have a lower level of earnings, the question arises whether they work fewer weeks in a year and hence have lesser labour market exposure and in turn earn lower earnings.

In the first research strategy, the Mincer equation is expanded to include variables that influence the earnings of immigrants. This strategy has age, years of schooling, years since immigration, marriage, and number of children, a dummy variable indicating that the immigrant is Chinese, and knowledge of the official language as the variables that will influence the level of earnings. This strategy is applied to Chinese and

Indian immigrants only. Immigrants here refer to all individuals who are born in China or India and who have been granted the right to live in Canada by the immigration authorities.

Thus the human capital earnings function is expanded to:

$$(1) \ln Y_{ij} = \beta_0 + \beta_1 \text{age}_{ij} + \beta_2 \text{agesqr}_{ij} + \beta_3 \text{yreduc}_{ij} + \beta_4 \text{DFemale}_{ij} + \beta_5 \text{DChinese}_{ij} + \beta_6 \text{DMarried}_{ij} \\ + \beta_7 \text{yrimmig}_{ij} + \beta_8 \text{DProvince}_{ij} + \beta_9 \text{DChildren}_{ij} + \beta_{10} \text{DLang}_{ij} + e_{ij}$$

where  $\ln Y$  is the natural logarithm of the earnings of an individual  $i$  in the year 2000,  $\text{age}_{ij}$  is the age of the individual,  $\text{agesqr}_{ij}$  is the square of the age variable,  $\text{yreduc}_{ij}$  is the total number of years of schooling of the individual,  $\text{female}_{ij}$  indicates the sex of the individual, “ $\text{Chinese}_{ij}$ ” shows that the respondent is born China (base is born in India);  $\text{married}_{ij}$  shows whether the individual is married,  $\text{yrimmig}_{ij}$  shows how many years have passed since the individual received the landed immigrant status<sup>2</sup>,  $\text{province}_{ij}$  shows which province the individual currently resides,  $\text{children}_{ij}$  shows whether the individual has children or not, and  $\text{lang}_{ij}$  depicts the knowledge of the official language and  $e_{ij}$  is the residual term. Years of schooling variable is the sum of the years spent at the elementary, high school, university and college level which influences the earnings level, as the education level increases the earnings would rise (Yurtsever, 2005).

The main hypothesis of the first strategy is that we expect the “ $\text{Chinese}_{ij}$ ” variable will have a negative coefficient and will be statistically significant. This is

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<sup>2</sup> A landed immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities.

because; the Chinese have a lower level of earnings than the Indians. When the language variable is controlled for, we expect the coefficient to decrease indicating that the individual with no knowledge of the official language and being from China earns lower level of earnings.

In order to differentiate between the genders of the individual a dummy variable is used where female is assigned 1 and male 0. A comparison of earnings in the Figure 2, shows that a female earns less than a male. Therefore, a female dummy would have a negative coefficient. The “Chinese<sub>ij</sub>” variable is a dummy variable represents where the individual is born, China or India, where China is assigned the value 1 and India as 0. The variable married shows the marital status of the individual, where the married individual is given a value 1 and all other marital states are assigned 0.

“Years of immigration<sub>ij</sub>” variable shows how many years have passed, since the immigrant the individual received the immigrant status. Years since immigration shows indirectly the experience in the social and economic structure of Canada (Chiswick and Miller, 2002). It is expected that an individual who has spent more years in Canada will have higher earnings as opposed to an individual who just arrived in Canada. This is because an individual would have learnt about the institutions of the labour market of Canada and the cultural structure, would have the developed a series of networks for labour market contacts and have made investments in human capital skills which would cause an increase the success rate in the labour market (Chiswick and

Miller, 2002). Therefore more number of years spent in the destination country would yield higher level of earnings for the immigrants.

In order to control for the province of residence of the immigrant, dummy variables are assigned for each province with Ontario as the base. This is because the earning levels vary across provinces. As shown in the Figure 4, the highest earnings are in Alberta<sup>3</sup>.

The variable “children” is introduced to indicate whether the individual has any children. A negative relationship is expected to exist between the earning levels of the individual and the presence of children. This variable is a binary number, where the private households are assigned 1 with children and 0 is assigned to private households without children and for non-family households<sup>4</sup>.

Language variable shows the knowledge of the official languages: English and French of each individual. This indicates whether the individual has the ability to conduct a conversation in only English, only French, both English and French or neither of the languages. If the individual cannot conduct a conversation in any of the language then the value assigned is 1 and the rest are assigned 0. As discussed before, if the official languages are unknown to the individual then we expect earning levels to be lower.

Possessing proficiency in the language of

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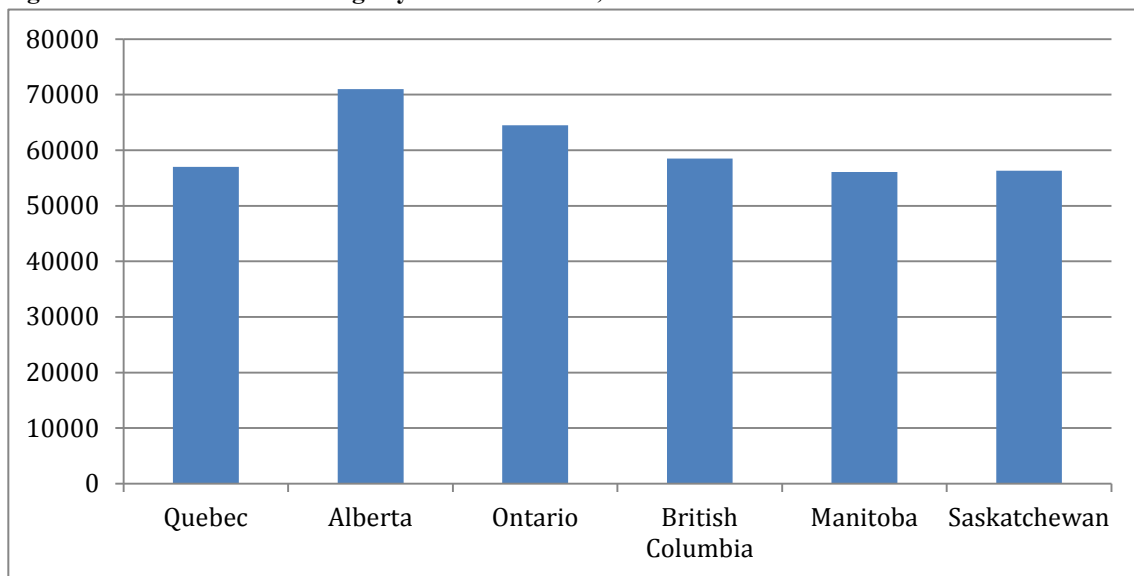
<sup>3</sup> The sample excludes individuals from Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland and Labrador, Nunavut and Northwest Territories as the number of immigrants in these areas is negligible in 2000.(Census, 2001)

<sup>4</sup> Non-Family households refer to either one person living alone in a private dwelling or to a group of two or more people who share a private dwelling, but who do not constitute a census family.

the destination country would trigger higher earnings along with other skills acquired.

I analyse the effects of these variables using the first research strategy for two groups of individuals. The first group includes only the immigrants, who are born in China or India and have been granted a right to live in Canada. The second group includes the immigrants along with Canadian-born individuals. Equation (1) is estimated for both

**Figure 4: Median Total Earnings by Province for All, 2000**



*Source: Statistics Canada, 2001*

groups using OLS regressions. (The first group has 362 observations and the second group has 3342 observations.)

I include the Canadian born individuals in the second group to show how the two immigrant groups differ in various aspects, especially in terms of earnings, from the Canadian-born. For this group, the variables “years since immigration<sub>ij</sub>” and “language<sub>ij</sub>” are dropped. Since the Canadian-born individuals are born in Canada and thus do not need any time to adapt into labour market, the years since immigration variable does not

exist for them. Similarly, individuals born in Canada are expected to know at least English or French or will have either of them as their mother tongue. Therefore, the variable “language<sub>ij</sub>” which shows the whether the individual has any knowledge of an official language does not hold. Therefore, the strategy is applied as:

$$(2) \text{Ln } Y_{ij} = \beta_0 + \beta_1 \text{age}_{ij} + \beta_2 \text{agesqr}_{ij} + \beta_3 \text{yreduc}_{ij} + \beta_4 \text{DFemale}_{ij} + \beta_5 \text{DChinese}_{ij} + \beta_6 \text{DIndian}_{ij} \\ + \beta_7 \text{DMarried}_{ij} + \beta_8 \text{DProvince}_{ij} + \beta_9 \text{DChildren}_{ij} + e_{ij}$$

for the second group.

In the second strategy, I take the number of weeks worked by an individual in the year 2000 as the dependent variable. I use Tobit analysis<sup>5</sup> to give us the effect on the individuals who work less than 52 weeks in a year. I employ the same explanatory variables for both samples: only immigrants from China and India; and Chinese and Indian immigrants plus the Canadian-born individuals. I have used the dependent variable as number of weeks worked as this would show the relationship between the weeks worked and the ethnicity of the individual. It is expected that the coefficient of the Chinese dummy variable will have a negative coefficient implying that the Chinese work fewer weeks per year. Therefore, the function for only immigrants is described as:

$$(3) \text{Weeks}_{ij} = \beta_0 + \beta_1 \text{age}_{ij} + \beta_2 \text{agesqr}_{ij} + \beta_3 \text{yreduc}_{ij} + \beta_4 \text{DFemale}_{ij} + \beta_5 \text{DChinese}_{ij} + \beta_6 \text{DMarried}_{ij} \\ + \beta_7 \text{Yrimmig}_{ij} + \beta_8 \text{DProvince}_{ij} + \beta_9 \text{DChildren}_{ij} + \beta_{10} \text{DLang}_{ij} + v_{ij}$$

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<sup>5</sup> Given the large percentage of observations at 52 weeks

This is for the first set of individuals. However, for the immigrants and Canadian born individuals, the function changes to:

$$(4) \text{Weeks}_{ij} = \beta_0 + \beta_1 \text{age}_{ij} + \beta_2 \text{agesqr}_{ij} + \beta_3 \text{yreduc}_{ij} + \beta_4 \text{female}_{ij} + \beta_5 D_{\text{Chinese}}_{ij} + \beta_6 D_{\text{Indian}}_{ij} + \beta_7 \text{Married}_{ij} + \beta_8 \text{Province}_{ij} + \beta_9 D_{\text{children}}_{ij} + v_{ij}$$

As previously stated, the Chinese earn less than the Indian immigrants; one reason that could help to account for this could be that the Chinese work fewer weeks. Therefore, this strategy is applied in order to find out whether ethnicity would have any relationship with the number of weeks worked.

## Chapter 6: Results

The results for both strategies and both groups are presented in Tables 3-14. I also run OLS regression on the unconditional Mincer equation for the only immigrant sample as  $\ln \text{wages} = \alpha + \beta \text{Chinese}_i$ . The coefficient for the Chinese dummy is -0.093. This shows that Chinese earn 8.9 percent less than the Indians on average. However, this is statistically insignificant.

Table 3 shows the regression coefficients of the control variable where the dependent variable is the natural logarithm of wages earned in the year 2000 for immigrants of both genders. The first observation is that while the coefficient of the Chinese dummy variable is negative, this variable is not statistically significant. This shows that the Chinese earn 14.4 percent lower than the Indians. Controlling for age and education Column (2) shows the effect of the sex of the individual on the earnings. The negative and statistically significant coefficient shows that women earn 43.2 percent less than men. Although, there is no major change in the magnitude of the coefficients as other control variables added but remains statistically significant. The coefficient for the Chinese dummy is highest in the column (5) where years since immigration and the marital status of the individual are controlled. The coefficient of the married dummy variable is positive and shows that a married individual earns 27.1 percent more than an individual who is not married<sup>6</sup>. Since the coefficient of the children dummy is negative, it implies that an individual with children earns about 18.5 percent lower than an individual without any children. Both these variables are statistically insignificant. As we see, the

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<sup>6</sup> Individual is either separate, divorced or single



years of education variable is positive and shows that the earnings of an individual would increase by 4.4 percent as the education level increases. Similarly, the earnings would increase by 8.2 percent as the years since immigration rises. This implies that the greater the experience in the labour market, the higher level of earnings of the individual.

As the knowledge of the official language of the individual is controlled for, the coefficient for the Chinese variable reduces though by a very small amount, which is consistent with the hypothesis that language is part of the explanation for lower Chinese wages. Column (8) shows that the Chinese earn 15.1 percent of what Indians earn when the “language” dummy is added. The knowledge of the official language variable is assigned the value 1 for individuals who cannot speak in any of the official language and 0 for others. We see that this coefficient is positive, though not statistically significant. Although, this is not the expected result, as previous studies have shown that there is a positive relationship between knowledge of the official language and level of earnings. However, this might be because of the sample size being small.

Looking at only females in Table 4, we see that there are no statistically significant values except the age variable. However, we observe the same sign for the Chinese individual with children and no knowledge of the official language and hence the negative relationship between the level of earnings and being Chinese. The coefficient of the “years since immigration” is very small for females. The coefficient of the “children” dummy remains negative and influences the level of the earnings by 27.9 percent. Also, the “years of education variable” would cause an increase in 5.1 percent in the earnings.

It is also observed that the married individual earns about 5.2 percent higher than the individuals who are not married. Both these variables have positive coefficients. However, these variables are statistically insignificant. The sample size for this regression is very small, which may be the reason for not obtaining statistically significant values.

In the case of male immigrants, the “years since immigration variable” is statistically significant for all columns and has a positive coefficient (Table 5). This coefficient does not change much and remains positive throughout. Thus it implies that, other things equal, when more years are spent at the destination, this would increase the level of earnings by 2.8 percent. This is consistent with the hypothesis that an individual who has spent more time in the labour market of Canada would have a higher level of earnings. Again, the years of education variable and married dummy have positive coefficients and are not statistically significant. For males, the education level causes a 4.7 increase in the earnings but the for a married individual earnings increase by 55.4 percent.

In the analysis of only males (Table 5), the Chinese earn 23.0 percent lower relative to the Indian immigrants, controlling for age and education. Again, however the estimate is not statistically significant, the coefficient of the knowledge of the official language variable has a positive coefficient.

This study, where the dependent variable is the natural logarithm of the yearly wages, suggests that the Chinese immigrants earn lower level of earnings in comparison

to Indian immigrants. However, this variable doesn't have coefficients that are statistically significant, though regression coefficients do have the expected signs. Comparing the results of male and female immigrants, I observe that only age variable is statistically significant for both and for males, years since immigration is also statistically significant. An explanation for this can be that the size of the sample is small when separated by the gender of the individuals.

The same strategy is also applied to the second sample where the Canadian born individuals are included in the analysis. Table 6 shows the regression estimates for both genders. The coefficients for the Indian and Chinese dummy variables are negative and statistically significant for both columns (4) and (5). There is a numerically larger negative association with (log) wages for Indians than Chinese immigrants, though standard errors overlap. The coefficient for both Chinese and Indian individual reduces in column (6) as all the variables are included.

The female dummy has a negative coefficient and implies that a female earns 37.1 percent less than a male individual. Also, as the years of education increases, the level of earnings increases by 7.1 percent on average for this sample. Consistent with the result of the previous sample (only immigrants), a married individual earns about 18.5 percent higher than an unmarried individual and individuals with children would earn about 24.1 percent lower earnings than individuals without children.

Tables 7 and 8 give us regression estimates of log wages for females and males respectively. As we see, a Chinese born woman is estimated to have a smaller wage penalty, however, earns more than an Indian woman controlling age and education. This is consistent with the observation in the Table 3. However, these values are not statistically significant. As we see, the Chinese men earn 24.4 percent lower than Canadian, but it is only 18.6 percent for Indian men.

For females, the earning levels increases by about 9.6 percent as the years of education increases and for males, the earnings would increase by 5.0 percent. In case of the married dummy, the coefficient is positive and significant for males and causes about 45.2 percent increase in the earning levels. However, for females, the coefficient is negative and insignificant. The coefficient of children is significant for males and females both but the effect on earnings for females with children is 29.6 percent but for males its only 18.9 percent.

The second strategy has the dependent variable as the weeks worked by an individual in the year 2000, given weeks worked are less than 52 weeks in a year. The control variables used are the same as for the strategy 1. Table 9 shows the regression coefficients for immigrants for strategy 2 for both genders. The main observation here is that in column (3) the Chinese dummy variable has a negative coefficient. This shows that, for those working less than 52 weeks, the Chinese work fewer weeks than Indians, (about 5 weeks) though this value is also statistically insignificant. This can be one of the reasons as to why the Chinese have lower earnings than Indians. We also see that there is no major change in the value of the coefficient as other control variables are added.

Column (8) shows the effect of the knowledge of the official language. Inclusion of this control variable does not change the observation and there is a negative relationship in the absence of knowledge of the official language and the weeks worked in a year by an individual<sup>2</sup>. The coefficient of the Chinese variable reduces by 11.81 percent as the language variable is introduced. Therefore, language does reduce the number of weeks worked. This is however, true only for the Chinese and Indians. When looking at each gender individually, there is a greater difference between the Chinese and the Indian men than between women. Overall, the Chinese work fewer weeks in a year relative to Indians. This difference is bigger in the case of men than women. However, this is not statistically significant for women.

The years of education variable in Table 9 has a positive coefficient only in column (7) and column (2). These coefficients are statistically insignificant and thus, imply that the education level does not affect the number of weeks worked. Both the coefficients of married and children dummies are positive. However, both these variables are statistically insignificant implying, that the marital status and the number of children does not affect the number of weeks worked by an immigrant. These results are not as expected, and the reason for this can be attributed to the size of the sample.

This strategy is also applied to the second group where Canadian born individuals are also included in the estimation. Table 12 summarises the regression coefficients for the second group when applied to the second strategy. This result is the same as the one observed for the immigrants only group. Among those working less than

52 weeks, the Chinese tend to work fewer weeks than the Indians<sup>7</sup>. This is statistically significant when looked at both genders together. Tables 13 and 14 show the results by females and males respectively. The result is consistent as Chinese tend to work fewer number of weeks for irrespective of their gender. These results are statistically significant for Chinese but not for Indians. This implies that the Chinese work fewer weeks in comparison to Indians and the Canadian born. It is also deduced from the results, in case of males, a married individual with children works more number of weeks than those with children. This does not hold true for females.

For the same group, the years of education has a positive coefficient for both genders. The number of weeks worked increases by about 53.6 percent for males and by 49.7 percent for females as the years of education is increased. The coefficient for married dummy is positive for both females and males. However, it is statistically insignificant for females and has the magnitude of 6.042 for males. This implies a married male individual works more than an unmarried male individual. Children dummy is negative for both females and males, however, significant only for females with a magnitude of -4.589. This means that a female with children will work fewer weeks than a female without children.

I hypothesized that the earnings differential between the Chinese and Indian immigrants can be attributed to the differences in the language ability. So I would expect the Chinese variable will have a negative coefficient and will be statistically significant and the coefficient would decrease as the language variable is controlled. Although signs

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<sup>7</sup> This coefficient is not statistically significant.

are as expected, I could not reject the null hypothesis of no difference when controlling for age, education, marital status etc.

## Chapter 7: Conclusion

This study analyses the effect of knowledge of the official language on the earnings of Chinese and Indian immigrants using data from the Public Use Microdata Files (PUMF) of the Census of Canada, 2001. The average earnings of Chinese immigrants are 80 percent of average earnings of a Canadian born, and the average earnings of Indian immigrants was 90 percent of the average earnings of a Canadian in 2000. This paper estimates a Mincer equation, which is expanded to control for variables that influence the level of earnings of immigrants, to examine the effect of the language ability on the level of earnings. Along with the earning levels of the immigrants, the number of weeks worked is also examined using the same control variables.

There can be a number of reasons accounted for the difference in the level of earnings of two immigrant groups. This study was focussed on variation in the knowledge of the official language and the number of weeks worked by each group. Even though the coefficients are insignificant for knowledge of the official language, they have the signs that we expected. The coefficients of earnings of Indian and Chinese immigrants do reduce as the language ability variable is added. The cause for the insignificant values can be because of data limitation. This study only uses the 2.7 percent sample of the Census population. Future research could repeat this analysis with the full census Microdata sample and with more recent data.



Furthermore, the addition of more control variables like language spoken at work place, linguistic difference between the mother tongue and the destination language, the occupations in each immigrant group etc. could be added in order to conduct a deeper analysis. Also, Table 1 shows that the percentage of Chinese women that have no knowledge of the official language is higher than the Indian women. But the Chinese women earn slightly more than the Indian women. This goes against the hypothesis that the language ability has a positive relationship with the level of earnings. Hence, further research needs to be conducted in order to know the reason behind this difference of earnings for women.

The result that the language ability will affect the level of earnings of immigrants should be considered in a country's immigration policy. An immigration policy that accepts the immigrants on the basis of the language ability would be more effective in increasing the economic situation of immigrants in the destination country (Chiswick and Miller, 2002). This study when extended to the data of the full Census microdata could have major implications for the immigration policies for immigrants from China and India who are major contributors of immigrant population of Canada.

## References

- Aydemir, A. & Skuterud, M. (2008) The Immigrant Wage Differential within and across Establishments, *Industrial & Labour Relations Review*, Vol. 61, No. 3, article 4.
- Bleakley, H. & Chin A. (2004), "Language Skills and Earnings: Evidence from Childhood Immigrants" , *Review of Economics and Statistics* 86 (May 2004), 481-496
- Borjas, G. J. (1991), *Immigration Policy, National Origin, and Immigrant Skills: A Comparison of Canada and the United States*, NBER Working Papers 3691, National Bureau of Economic Research, Inc.
- Canada Immigration Program, (2004), Library of Parliament, October, Political and Social Affairs Division, Parliamentary Information and Research Centre.
- Casey T. & Dustmann C. (2005), Intergenerational transmission of language capital and economic outcomes," CReAM Discussion Paper Series 0506, Centre for Research and Analysis of Migration (CReAM), Department of Economics, University College London.
- Chiswick, Barry R. and Paul W. Miller (1998). "English Language Fluency Among Immigrants in the United States", *Research in Labor Economics*, Vol.17,(forthcoming, 1998).
- Chiswick, B. R., & Miller, P. W. (2005), Immigrant Earnings: Language Skills, Linguistic Concentrations and the Business Cycle. In B. R. Chiswick (Ed.), *The Economics of Immigration: Selected Papers of Barry R. Chiswick* (pp. 71-97).
- Chiswick, Barry R. & Miller, P. W. (2002), *The Complementarity of Language and Other Human Capital: Immigrant Earnings in Canada*, IZA Discussion Papers 451, Institute for the Study of Labour (IZA).
- Dempsey, C. (2006), *Immigrant income and the family*, Research and Evaluation Branch, Ottawa, Citizenship and Immigration Canada.
- Ferrer A., Green D. A. & Riddell W. C. (2006), The Effect of Literacy on Immigrant Earnings *The Journal of Human Resources*, Vol. 41, No. 2, pp. 380-410
- Government of India, India, *A Reference Annual* (2010), Research, Reference and Training Division, Publications Division, Ministry of Information and Broadcasting.
- Green, D., & Worswick, C. (2004). Immigrant earnings profiles in the presence of human capital investment: measuring cohort and macro effects, Institute for Fiscal Studies, IFS Working Papers: W04/13

Hou, Feng, (2004), Recent Immigration and the Formation of Visible Minority Neighbourhoods in Canada's Large Cities, Analytical Studies Branch Research Paper Series 2004221e, Statistics Canada.

Individuals File User Documentation (2001), Census Public Use Microdata File 2001, Statistics Canada

Lindsay, C. (2001), The Chinese Community, Profiles of Ethnic Communities in Canada, Social and Aboriginal Statistics Division, Ottawa, Statistics Canada Catalogue no. 89621-XIE — No. 001, ISSN: 1719-7376, ISBN: 0-662-43444-7

Mincer J. (1974) Schooling Experience and Earnings, NBER Books, National Bureau of Economic Research, Inc.,

Picot, G. & Sweetman A. (2005). The Deteriorating Economic Welfare of Immigrants and Possible Causes: Update 2005, Statistics Canada, Analytical Studies Branch, Analytical Studies Branch Research Paper Series

Yurtsever C. (2005) Mincer Equation Function and an Empirical Test, Universidade Do Minho, Journal of Economic Literature,

## Appendix A: Descriptive Statistics and Regression Estimates

**Table 1: Descriptive Statistics I (Only immigrants)**

	Chinese				Indian			
	Male		Female		Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Age	45.44	11.15	41.67	11.68	42.30	12.16	36.88	12.13
Years of Education	13.68	4.42	13.78	3.82	13.70	4.01	13.12	3.45
Annual Income (Dollars)	31083	23202	21734	21945	38210	30539	19806	15405
Married <sup>#</sup>	86.67	-	84.21	-	83.48	-	81.25	-
Weeks Worked	42.60	14.72	38.50	15.09	46.08	11.65	38.88	16.27
Year Since Immigration	14.46	12.32	11.51	10.33	14.21	10.61	12.81	9.65
Language <sup>#</sup>	12.00	-	22.37	-	6.09	-	6.25	-
Children <sup>#</sup>	80.00	-	75.00	-	93.04	-	85.42	-
Observations	75	-	76	-	115	-	96	-

Notes: <sup>#</sup>This shows the percentage value of the variables. Married shows the percentage of married individuals. The Language observation shows the percentage of individuals who do not have the knowledge of the official language. Children variable shows the percentage of individuals who have children.

Source: 2001 Census of Population of Canada, PUMF Individual File, 2.7 percent sample of population

**Table 2: Descriptive Statistics II (Immigrants and Natives)**

	Chinese		Indian		Canadian	
	Male	Female	Male	Female	Male	Female
Age	40 (13.18)	38 (12.58)	37 (13.47)	34 (12.34)	37 (12.79)	38 (12.46)
Years of Education	14.56 (4.12)	14.60 (3.70)	14.44 (3.99)	14.07 (3.40)	13.20 (3.31)	13.60 (3.04)
Annual Income	31627 (24462)	23848 (22665)	32465 (30508)	18748 (16050)	33925 (26245)	23150 (18548)
Married <sup>#</sup>	70.59	72.73	68.15	70.11	39.52	39.25
Weeks Worked	42.00 (15.20)	39.56 (14.81)	42.00 (14.90)	38.00 (16.48)	43.20 (13.96)	42.57 (14.61)
Children <sup>#</sup>	76.47	72.73	89.63	85.06	64.47	64.18
Observations	104	99	135	88	1579	1340

Notes:<sup>#</sup>This shows the percentage value of the variables. Married shows the percentage of married individuals. The Children variable shows the percentage of individuals who have children.

Source: 2001 Census of Population of Canada, PUMF Individual File, 2.7 percent sample of population

**Table 3: OLS Estimates of Log of annual wages of Immigrants, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	0.156* (0.032)	0.143* (0.031)	0.147* (0.032)	0.137* (0.032)	0.118* (0.034)	0.118* (0.03)	0.149* (0.037)	0.154* (0.038)
Age Squared	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.002* (0.000)	-0.002* (0.000)
Years of Education	0.054* (0.017)	0.048* (0.016)	0.049* (0.016)	0.047* (0.017)	0.048* (0.017)	0.051* (0.017)	0.058* (0.020)	0.056* (0.020)
Chinese	-	-	-0.155 (0.122)	-0.124 (0.121)	-0.116 (0.120)	-0.117 (0.121)	-0.136 (0.120)	-0.164 (0.124)
Female	-	-0.566* (0.120)	-0.553* (0.122)	-0.553* (0.122)	-0.559* (0.121)	-0.556* (0.124)	-0.566* (0.126)	-0.577* (0.127)
Years Since Immigration	-	-	-	0.015** (0.007)	0.016** (0.008)	0.017** (0.007)	0.018** (0.007)	0.018** (0.007)
Married	-	-	-	-	0.254 (0.189)	0.241 (0.189)	0.240 (0.187)	0.240 (0.190)
Children	-	-	-	-	-	-	-	-0.204 (0.154)
Knowledge of the Official Language	-	-	-	-	-	-	0.197 (0.221)	0.221 (0.222)
R <sup>2</sup>	0.086	0.138	0.141	0.155	0.160	0.162	0.165	0.167

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level  
(i) All regressions include a constant. (ii)The standard errors are listed in the parentheses. (iii) Dependent variable is the natural logarithm of yearly wages in 2001. (iv)Number of observations is 361

**Table 4: OLS Estimates of Log of annual wages of Female Immigrants, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	0.156* (0.050)	0.158* (0.052)	0.160 * (0.049)	0.156* (0.053)	0.165* (0.054)	0.166* (0.054)	0.170* (0.054)
Age Squared	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)
Years of Education	0.052*** (0.028)	0.053*** (0.028)	0.053*** (0.027)	0.053*** (0.028)	0.044 (0.027)	0.055*** (0.030)	0.050*** (0.030)
Chinese	-	-0.041 (0.186)	-0.047 (0.187)	-0.045 (0.188)	-0.002 (0.186)	-0.050 (0.194)	-0.098 (0.196)
Year Since Immigration	-	-	-0.002 (0.015)	-0.001 (0.015)	0.002 (0.015)	0.003 (0.015)	0.004 (0.015)
Married	-	-	-	0.060 (0.266)	0.077 (0.258)	0.051 (0.257)	0.051 (0.265)
Children	-	-	-	-	-	-	-0.327 (0.227)
Knowledge of the Official Language	-	-	-	-	-	0.296 (0.238)	0.366 (0.255)
R <sup>2</sup>	0.072	0.072	0.072	0.073	0.099	0.099	0.106

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level (i) All regressions include a constant. (ii)The standard errors are listed in the parentheses. (iii)Dependent variable is the natural logarithm of yearly wages in 2001. (iv)Number of observations is 172.

**Table 5: OLS Estimates of Log of annual wages of Male Immigrants, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	0.137* (0.043)	0.143* (0.042)	0.136* (0.042)	0.093*** (0.048)	0.089*** (0.049)	0.089*** (0.049)	0.089*** (0.049)
Age Squared	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.001 (0.005)	-0.001 (0.005)	-0.001 (0.005)	-0.001 (0.005)
Years of Education	0.045** (0.019)	0.045** (0.020)	0.037*** (0.019)	0.038** (0.019)	0.046** (0.020)	0.047** (0.027)	0.046** (0.027)
Chinese	-	-0.262*** (0.159)	-0.243 (0.154)	-0.229 (0.153)	-0.214 (0.155)	0.213 (0.148)	-0.242 (0.156)
Year Since Immigration	-	-	0.026* (0.007)	0.028* (0.007)	0.028* (0.007)	0.028* (0.007)	0.028* (0.007)
Married	-	-	-	0.454*** (0.270)	0.418 (0.278)	0.417 (0.278)	0.441 (0.274)
Children	-	-	-	-	-	-	-0.221 (0.236)
Knowledge of the Official Language	-	-	-	-	-	0.052 (0.429)	0.053 (0.428)
R <sup>2</sup>	0.074	0.088	0.149	0.164	0.187	0.191	0.188

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level  
(i) All regressions include a constant. (ii)The standard errors are listed in the parentheses. (iii) Dependent variable is the natural logarithm of yearly wages in 2001. (iv) Number of observations is 189.



**Table No 6: OLS Estimates of Log of annual wages of Immigrants and Natives, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.209* (0.010)	0.212* (0.010)	0.211* (0.010)	0.205* (0.010)	0.206* (0.010)	0.206* (0.010)
Age Squared	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)
Years of Education	0.066* (0.006)	0.070* (0.006)	0.072* (0.006)	0.072* (0.006)	0.072* (0.006)	0.069* (0.006)
Female	-	-0.461* (0.037)	-0.463* (0.037)	-0.462* (0.037)	-0.462* (0.037)	-0.463* (0.037)
Indian	-	-	-0.191** (0.087)	-0.227** (0.087)	-0.244** (0.091)	-0.196** (0.091)
Chinese	-	-	-0.169** (0.076)	-0.200** (0.076)	-0.227** (0.082)	-0.207** (0.082)
	-	-	-	0.111* (0.040)	0.105* (0.041)	0.170* (0.041)
Children	-	-	-	-	-	-0.276* (0.039)
R <sup>2</sup>	0.267	0.299	0.302	0.303	0.304	0.314

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level (i) All regressions include a constant (ii) The standard errors are listed in parentheses. (iii) Dependent variable is the natural logarithm of yearly wages of an individual in 2000. (iv) Number of Observations is 3350

**Table 7: OLS Estimates of Log of annual wages of Female Immigrants and Natives, 2001**

	(1)	(2)	(3)	(4)	(5)
Age	0.178* (0.014)	0.176 * (0.014)	0.181* (0.015)	0.185* (0.015)	0.188* (0.015)
Age Squared	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)
Years of Education	0.097* (0.010)	0.098* (0.010)	0.098* (0.010)	0.097* (0.010)	0.092* (0.010)
Indian	-	-0.230 (0.154)	-0.120 (0.156)	-0.254 (0.157)	-0.210 (0.155)
Chinese	-	-0.127 (0.111)	-0.098 (0.113)	-0.145 (0.120)	-0.132 (0.118)
Married	-	-	-0.092 (0.061)	-0.107 (0.061)	-0.043 (0.061)
Children	-	-	-	-	-0.352* (0.057)
R <sup>2</sup>	0.227	0.230	0.231	0.239	0.255

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level  
 (i) All regressions include a constant. (ii)The standard errors are listed in the parentheses. (iii)Dependent variable is the natural logarithm of yearly wages of an individual in 2001. (iv) Number of observations is 1534.

**Table 8: OLS Estimates of Log of annual wages of Male Immigrants and Natives, 2001**

	(1)	(2)	(3)	(4)	(5)
Age	0.240* (0.013)	0.240* (0.013)	0.225* (0.013)	0.226* (0.013)	0.224* (0.013)
Age Squared	-0.003* (0.000)	-0.003* (0.000)	-0.002* (0.000)	-0.002* (0.000)	-0.002* (0.000)
Years of Education	0.049* (0.007)	0.052* (0.007)	0.051* (0.007)	0.051* (0.007)	0.049* (0.007)
Indian	-	-0.162 (0.101)	-0.250** (0.101)	-0.250** (0.108)	-0.206 (0.120)
Chinese	-	-0.220** (0.102)	-0.297** (0.102)	-0.302** (0.112)	-0.280** (0.110)
Married	-	-	0.313* (0.053)	0.314* (0.055)	0.373* (0.057)
Children	-	-	-	-	-0.210* (0.052)
R <sup>2</sup>	0.341	0.343	0.354	0.354	0.359

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level  
(i) All regressions include a constant.(ii)The standard errors are listed in the parentheses. (iii) Dependent variable is the natural logarithm of yearly wages of an individual in 2001.(iv) Number of observations is 1816.

**Table 9: Tobit Estimates of Weeks Worked for Immigrants, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	3.159 *	3.327*	3.124*	3.025*	2.998*	3.066*	3.050*	2.991*
	(0.682)	(0.681)	(0.670)	(0.673)	(0.727)	(0.684)	(0.680)	(0.678)
Age Squared	-0.034*	-0.036*	-0.034*	-0.034*	-0.033*	-0.034*	-0.035	-0.0333*
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Years of Education	-0.042	0.027	-0.075	-0.093	-0.093	-0.195	0.095	-0.077
	(0.331)	(0.329)	(0.326)	(0.326)	(0.326)	(0.363)	(0.340)	(0.328)
Chinese	-	-6.421**	5.743*	-5.393**	-5.380**	-5.377**	5.349*	5.239*
		(2.529)	(2.490)	(2.501)	(2.504)	(2.571)	(2.564)	(2.535)
Female	-	-	9.099*	-9.100**	-9.108**	-9.451**	9.232*	9.038*
			(2.471)	(2.472)	(2.473)	(2.501)	(2.524)	(2.476)
Year Since Immigration	-	-	-	0.156	0.159	0.129	0.135	0.157
				(0.127)	(0.129)	(0.130)	(0.075)	(0.127)
Married	-	-	-	-	0.352	0.350	0.353	0.345
					(3.584)	(3.558)	(3.543)	(3.546)
Children	-	-	-	-	-	-	1.223	1.221
							(3.356)	(3.378)
Knowledge of the Official Language	-	-	-	-	-	-	-	-0.272
								(1.318)
R <sup>2</sup>	0.012	0.015	0.022	0.022	0.022	0.022	0.022	0.024

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level

(i) All regressions include a constant. (ii) The standard errors are listed in the parentheses. (iii) Dependent variable is the weeks worked by an individual in 2001. (iv) Number of Observations is 361.

**Table 10: Tobit Estimates of Weeks Worked for Female Immigrants, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	2.099** (0.944)	2.168** (0.948)	2.029** (0.970)	2.126** (1.034)	2.057** (0.990)	1.737** (0.848)	2.055** (0.990)
Age Squared	-0.024** (0.011)	-0.024** (0.011)	- (0.011)	- (0.012)	-0.023** (0.012)	-0.020** (0.010)	-0.023** (0.011)
Years of Education	0.063 (0.484)	0.112 (0.489)	0.121 (0.488)	0.113 (0.489)	0.107 (0.496)	0.085 (0.373)	0.098 (0.515)
Chinese	-	-2.283 (3.502)	-1.823 (3.567)	-1.869 (3.568)	-1.893 (3.598)	-1.886 (2.652)	-1.847 (3.657)
Year Since Immigration	-	-	0.132 (0.198)	0.121 (0.202)	0.131 (0.198)	0.075 (0.147)	0.131 (0.199)
Married	-	-	-	-1.301 (4.744)	-1.826 (3.511)	-1.962 (3.462)	-0.197 (3.456)
Children	-	-	-	-	-	-0.665 (4.491)	-0.682 (4.484)
Knowledge of the Official Language	-	-	-	-	-	-	-0.118 (1.687)
R <sup>2</sup>	0.005	0.005	0.006	0.006	0.006	0.006	0.010

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level

(i) All regressions include a constant. (ii) The standard errors are listed in the parentheses. (iii) Dependent variable is the weeks worked by an individual in 2001. (iv) Number of observations is 172.

**Table 11: Tobit Estimates of Weeks Worked for Male Immigrants only, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	4.192* (0.992)	4.382* (0.979)	4.348* (0.973)	4.329* (1.120)	4.280* (0.973)	4.352* (0.982)	4.537* (0.992)
Age Squared	-0.046* (0.011)	-0.047* (0.011)	-0.047* (0.011)	-0.048* (0.012)	-0.047* (0.011)	-0.048* (0.012)	-0.050* (0.011)
Years of Education	-0.332 (0.448)	-0.292 (0.438)	-0.359 (0.437)	-0.359 (0.437)	-0.372 (0.470)	-0.369 (0.235)	-0.678 (0.513)
Chinese	-	- 9.232** (3.527)	- 9.022** (3.508)	-9.016** (3.514)	-8.274** (3.593)	-8.345** (1.876)	- 8.443** (3.617)
Year Since Immigration	-	-	0.242 (0.168)	0.243 (0.170)	0.242 (0.169)	0.242 (0.169)	0.203 (0.171)
Married	-	-	-	0.189 (5.696)	0.192 (5.767)	0.195 (5.678)	0.190 (5.798)
Children	-	-	-	-	-	4.351 (5.116)	4.553 (5.220)
Knowledge of the Official Language	-	-	-	-	-	-4.597 (5.102)	-0.579 (2.087)
R <sup>2</sup>	0.020	0.028	0.030	0.030	0.030	0.031	0.042

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level  
(i) All regressions a constant. (ii) The standard errors are listed in the parentheses. (iii) Dependent variable is the weeks worked by an individual in 2001. (iv) Number of observations is 189

**Table 12: Tobit Estimates of Weeks Worked for Immigrants and Natives, 2001**

	(1)	(2)	(3)	(4)	(5)	(6)
Age	3.200* (0.189)	3.189* (0.188)	3.193* (0.188)	3.058* (0.195)	3.055* (0.195)	3.053* (0.195)
Age Squared	-0.035* (0.002)	-0.035* (0.002)	-0.035* (0.002)	-0.034* (0.002)	-0.034* (0.002)	-0.034* (0.002)
Years of Education	0.494* (0.135)	0.523* (0.135)	0.588* (0.135)	0.592* (0.135)	0.594* (0.135)	0.570* (0.135)
Female	-	-2.564* (0.854)	-2.754* (0.865)	-2.758** (0.864)	-2.758** (0.863)	-2.758** (0.863)
Indian	-	-	-4.242** (1.692)	-5.083** (1.722)	-4.921** (1.724)	-4.733** (1.726)
Chinese	-	-	-6.417* (1.756)	-7.180* (1.780)	-7.145* (1.774)	-7.037* (1.778)
Married	-	-	-	2.656** (1.021)	2.895** (1.032)	3.124** (1.040)
Children	-	-	-	-	-	-2.191** (0.970)
R <sup>2</sup>	0.022	0.025	0.027	0.028	0.028	0.028

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level (i) All regressions a constant. (ii)The standard errors are listed in the parentheses. (iii) Dependent variable is the weeks worked by an individual in 2001. (iv)Number of Observations is 3350.

**Table 13: Tobit Estimates of Weeks Worked for Female Immigrants and Native Born, 2001**

	(1)	(2)	(3)	(4)	(5)
Age	2.591* (0.290)	2.561* (0.289)	2.604* (0.304)	2.628 (0.329)*	2.638* (0.303)
Age Squared	-0.028* (0.004)	-0.028* (0.004)	-0.029* (0.004)	-0.025* (0.004)	-0.030* (0.004)
Years of Education	0.490** (0.219)	0.565** (0.219)	0.560** (0.219)	0.489** (0.219)	0.497** (0.219)
Indian	-	-7.476* (2.714)	-7.231* (2.766)	-6.619* (2.756)	-6.630* (2.759)
Chinese	-	-7.625** (2.566)	-7.406** (2.610)	-7.312** (2.601)	-7.229** (2.597)
Married	-	-	-0.689 (1.507)	-0.041 (1.512)	0.047 (1.519)
Children	-	-	-	-	-4.589** (1.476)
R <sup>2</sup>	0.014	0.015	0.016	0.017	0.018

Notes: Statistically Significant at \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level

(i) All regressions a constant. (ii)The standard errors are listed in the parentheses. (iii)Dependent variable is the weeks worked by an individual in 2001. (iv) Number of observations is 1534.



**Table 14: Tobit Estimates of Weeks Worked for Male Immigrants and Natives, 2001**

	(1)	(2)	(3)	(4)	(5)
Age	3.693* (0.245)	3.674* (0.245)	3.434* (0.249)	3.430* (0.249)	3.431* (0.249)
Age Squared	-0.040* (0.003)	-0.040* (0.003)	-0.038* (0.003)	-0.039* (0.003)	-0.039* (0.003)
Years of Education	0.507* (0.167)	0.562* (0.169)	0.538* (0.168)	0.536* (0.090)	0.536* (0.168)
Indian	-	-2.174 (2.131)	-3.814 (2.156)	-3.769 (2.163)	-3.758 (2.168)
Chinese	-	-5.320** (2.391)	-6.798* (2.405)	-6.780* (1.435)	-6.767* (2.409)
Married	-	-	5.959* (1.390)	6.012* (1.342)	6.042* (1.431)
Children	-	-	-	-	-0.311 (1.267)
R <sup>2</sup>	0.039	0.040	0.042	0.042	0.042

Notes: Statistically Significant \*99 % confidence level \*\*95 % confidence level\*\*\*90 % confidence level

(i) All regressions a constant. (ii)The standard errors are listed in the parentheses. (iii) Dependent variable is the weeks worked by an individual in 2001. (iv)Number of observations is 1816.

## **Appendix B: Description of Variables**

### *Definitions of Variables*

Data Source: 2001 Census of Canada, Public Use Microdata Files (PUMF) 2.7 percent of sample,

Population:

### *Dependent variables:*

Strategy 1: The natural logarithm of the wages received by each individual in the year 2000, using OLS regression analysis

Strategy 2: the number of weeks worked by each individual in the year 2000 (includes both part time and full time workers, using Tobit analysis

### *Explanatory Variables*

Age: This variable gives the age of the individual in the year 2000

Age Squared: This variable is the square of the age variable

Years of Education: This variable shows total sum of the years (or grades) of schooling at the elementary, high school, university and college levels. Each individual has been assigned value from 2.5 years for Less than Grade 5 or no schooling, 6.5 for 5 to 8 years of schooling, 9, 10, 11, 12, 13, for 9, 10, 11, 12, 13, years of schooling, and 15.5 for 14-17 years of schooling, and 18 for 18 years and above

Female: This is a dummy variable where Females are assigned value 1 and Males are assigned 0.

Chinese: This is a dummy variable where Chinese are assigned 1 and Indians are assigned 0 in the first group. In the second group the Chinese are assigned 1 and Indians and Canadians are assigned 0.

Indian: This is used only in the second group, where the Indians are assigned 1 and Chinese and Canadians are assigned 0.

Years of Immigration: This variable is categorised in the Census data, 2001. This is constructed as follows:

Before 1961 is give 40 years as value

1961-1970 is given 35 years as value

1971-1980 is given 25 years as value

1981-1990 is given 15 years as value

1991-1995 is given 5 years as value

1996-2001 is given 5 years as value. This is because for the year 2001 only first four months are included.

Language: This variable is assigned 1 for individuals who cannot speak English or French and assigned 0 for individuals who can speak English only, French only and both English and French

Married: This is a binary variable indicating the marital status of the individual in 2000. This is assigned the value 1 for married individuals and 0 for individuals for Separated, Divorced, Separated, but still legally married (not living with spouse), Single or Widowed. Common-law partners may have any legal marital status other than “Legally married (and not separated)”

Children: This variable is a binary number that is assigned the value 1 for married couples, common law partners, lone parent families, and multiple family households with children; and 0 without children and for non-family households.

Provinces: Binary variables are introduced for the provinces Quebec, British Columbia, Ontario, Alberta and Saskatchewan. The data does not contain the immigrants from the other provinces and territories and hence they have not been included.

## Appendix C: Other Tables

**Table 15: Age Distribution by Communities in percentages, by Sex, 2001**

	Chinese community			Indian Community			Total Canadian population		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Age group									
Under 15	20.3	18.9	19.6	24	22.4	23.2	20.2	18.6	19.4
15 to 24	16.6	14.2	15.3	15.7	16.1	15.9	14	13	13.4
25 to 44	32.4	34.4	33.4	32.4	33.9	33.1	30.4	30.6	30.5
45 to 64	21.7	22.4	22.1	21.7	20.8	21.2	24.4	24.4	24.4
65 and over	9	10	9.5	6.3	6.8	6.5	10.9	13.4	12.2
Total	100	100	100	100	100	100	100	100	100
Total population (in thousands)	529.4	565.3	1094.7	358.1	355.2	713.3	14564.3	15074.8	29639

*Source: Statistics Canada, 2001 Census of Canada*

**Table 16: Educational attainment of the both communities and overall Canadian population aged 15 and over in percentages, by sex, 2001**

	Chinese community			East Indian community			Total population			Canadian
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Total
Less than high school	27.9	32.2	30.1	25.6	31.2	28.4	31.4	31.1	31.3	
High school graduate	10.5	12.4	11.4	12.1	13.1	12.6	13.1	15.1	14.1	
Some postsecondary	12.9	11.6	12.2	11.9	12.8	12.3	10.7	11	10.8	
Trades certificate/diploma	9.7	3.8	4.4	8.2	5	6.6	14.1	7.8	10.9	
College graduate	10.2	12	10.9	10.2	11.6	10.9	12.5	17.3	15	
University certificate/diploma below bachelor's degree	3.4	4.2	3.8	3.2	3	3.1	2.1	2.9	2.5	
Bachelor's degree	20.3	18.1	19.1	17.9	16	16.9	10.6	10.6	10.6	
Post-graduate degree	10.2	5.9	7.9	10.8	7.4	9.1	5.4	4.2	4.8	
Total with university degree	30.5	23.9	27.1	28.7	23.4	26	16	14.9	15.4	
Total	100	100	100	100	100	100	100	100	100	

*Source: Statistics Canada, Census of Canada, 2001*

**Table 17: Percentage of the population employed for all communities, by age group and sex, 2001**

	Chinese community			Indian Community			Total Canadian population		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Age group									
15 to 24	34.5	40.0	37.1	51.4	51.8	51.6	56.1	55.6	55.9
25 to 44	78.6	66.7	72.3	86.4	71.4	78.8	85.6	75.2	80.3
45 to 64	72.1	56.2	63.8	78.9	55.0	67.2	74.8	60.8	67.7
65 and over	9.9	4.7	9.5	17.2	5.5	11.2	13.0	4.8	8.4
Total	59.9	51.5	55.5	71.4	57.2	64.2	67.2	56.1	61.5

*Source: Statistics Canada, Census of Canada, 2001*