Alberta's boom and bust times: How did immigrants perform economically in Edmonton and Calgary?

Sandeep Agrawal and DengDeng Yu

Abstract

Alberta is known for its boom and bust economy. This paper aims to document and understand how immigrants perform during boom and bust times in Alberta when compared against the Canadian-born and with other parts of the country. For this, we used the National Household Survey of 2011—a boom time in Alberta—and the recently released Public Utility Microdata Files of 2016—a bust time in the province. The findings suggest that both Canadian-born and immigrants who reside in Alberta likely perform better than their counterparts in the Toronto, Montreal, and Vancouver CMAs (the top immigrant-receiving metropolitan areas), as well as in the rest of the country. Interestingly, the 2016 bust time did not deter the likelihood of these immigrants' earning potentials.

Introduction

Alberta is known nationally and internationally for its economic prosperity, and thus often attracts migrants from other provinces as well as from outside the country (Statistics Canada, 2016). The energy sector has been Alberta's driving economic force, which accounts for a little over one-quarter of the province's Gross Domestic Product (Government of Alberta, 2019). According to Statistics Canada (2013), in 2011, Alberta was home to the highest percentage of individuals in Canada grossing more than $190,000. In fact, one in every 50 Albertans was in this category and most of them lived in Calgary. Toronto was next in line in this category, closely followed by Edmonton. These incomes were, of course, primarily driven by a high crude oil price, which was $107 US per barrel, on average, in 2011. By 2015, the price had dropped markedly to $49 US per barrel, followed by an even lower drop, to $29 US per barrel, towards the beginning of 2016.

A boom and bust cycle is a process of rapid economic expansion and abrupt contraction that occurs repeatedly. During the boom time, the economy grows and jobs are plentiful, bringing in more people from other parts of the country or abroad. In the subsequent bust time, the economy shrinks, people lose their jobs, and some then decide to leave the province. A number of factors precipitate either the boom or the bust aspects of the cycle, which vary in duration and severity.

In Alberta, the cycle is mostly driven by global oil prices, but other factors such as a Western Canadian crude oil price differential, access to the world market, private investments, global events, and national and provincial government policies also contribute to it. These factors may or may not affect the economy immediately, making it challenging to define or predict the precise timing of a boom or bust in the economy. We have chosen 2011 as a boom time in Alberta because of the high oil prices, which coincided with high earnings and, of course, the availability of relevant data for that year. Conversely, we have selected 2016 as the bust time, which coincided with a shrinking economy, low oil prices, low earnings, and high unemployment that all began in 2015. The availability of data for that year is also a factor in this choice.

Despite a steady flow of immigrants settling in Alberta in the last decade or so (Agrawal & Kurtz, 2018), we do not have a systematic understanding of how immigrants actually perform in the province's economy when it booms or busts. Anecdotal accounts show that immigrants did well during the boom times and worse during the bust times in Alberta, but no documented evidence exists to support this. Further, we do not know whether *all* immigrants benefited from the province's growing economy during the boom time or suffered further during the bust time.

We hypothesize that immigrants did well during the boom time, but performed worse during the bust time. This paper attempts to prove this hypothesis. To do this, we describe key determinants of economic success *and* failure of immigrant groups and then focus on the labour market outcome of immigrants. We discuss the economic health of immigrants in Edmonton and Calgary, and conduct three analyses: a comparison of the two cities, within the province of Alberta as a whole, and a comparison of the two cities with the rest of the country, as well as the top immigrant-receiving cities—Toronto, Montreal and Vancouver (TMV). The study uses seven key personal factors that affect incomes to gauge the economic performance of immigrant groups: age at the time of landing, language proficiency, occupation, education levels, place of birth, year of immigration, and gender.

It is a well-established fact that most immigrants face some economic penalties upon entry and earn less income than the Canadian-born (Agrawal, 2013; Agrawal & Lovell, 2010; Aydemir & Skuterud, 2005; Baker & Benjamin, 1994; Picot, Hou, & Coulombe, 2008). Several systematic barriers hinder an immigrant's economic success, including the following (Agrawal & Lovell, 2010; Chui & Tran, 2005; Green & Worswick, 2002; Pendakur & Pendakur 1998, 2002; Reitz and Banerjee, 2007; Sweetman, 2004; Swidinsky& Swidinsky 2002):

- recognition of foreign credentials and degrees
- length of experience abroad and within Canada
- differences in quality of education
- nature of occupations—especially regulated vs non-regulated professionals
- varying strength of social networks
- knowledge of the Canadian labour market
- racism and discrimination

Other factors such as age, knowledge of an official language (Agrawal, 2013; Aydemir & Skuterud, 2005), visible minority status (Palameta, 2004) and prior work experience or higher education attained prior to arrival (Green & Worswick 2002; Schaafsma & Sweetman 2001) have also received attention. Often two or more factors work together to determine immigrants' success or failure in the Canadian labour market. For instance, well-educated younger immigrants with the ability to speak one of the two official languages (but particularly English) perform better in the Canadian economy (Agrawal, 2013; Agrawal & Lovell, 2010; Schaafsma & Sweetman 2001).

A key assertion of the paper is that immigrants in Calgary and Edmonton appear to have done far better than their counterparts in the rest of the country during both the recent boom or bust times—as opposed to the economic plight of immigrants suggested in the academic literature. In fact, during the boom or bust time, many immigrant groups performed at the same level or even better than that of the Canadian-born. It is, however, important to add a caveat that the datasets we used for the study suffer from some inherent limitations. For instance, the 2011 data contains

fewer observations sampled in the two cities, with only a few variables available from which to sketch a full picture of immigrants' performance. The methodology Statistcs Canada used to collect the 2016 data was different from that of the 2011 data. Also, the datasets represent only two points in time, limiting comparisons with, for example, the 2011 "boom time" or the 2016 "bust time" in Alberta. The severity of the economic downturn might have been felt well after 2016, when new investment stalled.

We begin below with a review of the relevant literature. This is followed by a discussion of the study's methodology. We then analyze immigrants' economic performance through the seven personal factors noted above. The paper concludes with some assertions, along with some comments on the limitations of the study.

Immigrant economic integration in Calgary and Edmonton

For this paper, we reviewed the literature on immigrants' employment status and their experiences in finding employment. Of the two dozen sources we found, almost all qualitative in nature, a majority focused on Calgary, with some others focused entirely on Edmonton. A few compared Edmonton and Calgary or either of the two cities with other similar-sized cities, such as Winnipeg.

The literature on Calgary focused on skilled, professional immigrants and the challenges they face in finding employment commensurate to their education and skills. The Edmonton studies examined immigrants with more diverse labour profiles, encompassing Temporary Foreign Workers (TFWs), Chinese immigrants, and internationally-trained health professionals. As well, a small number also touched on the experiences of international students, immigrant groups like the Vietnamese and Filipinos, and those in economically precarious jobs like cab-driving and janitorial work. They thus helped us tease out several cultural and psychological factors that lead to barriers in obtaining employment. However, the studies are marked by issues of lack of generalizability because of small sample sizes, and deficiencies in direct correlations between various human capital endowments and earning potentials.

In contrast, our research stands out in two ways:

1. It uses large datasets, specifically, the National Household Survey (NHS) collected as a part of Census 2011. We used 2011 data because this is the most recent data available to us that encompasses the boom time in Alberta. The recently released 2016 data, which represent the bust time, is used for comparison purposes.
2. It relies on the human capital and other assets acquired by immigrants, and through a quantitative method, systematically analyzes their effects on immigrants' earning potentials.

The review of the literature reveals that despite Calgary and Edmonton's robust economy, newcomers of all types—professional to non-professional immigrants and refugees, TFWs, and international students —suffer higher unemployment rates and poverty, and are relegated to unstable, temporary jobs. The literature documents a host of factors contributing to this: discrimination (Higginbottom, 2010), racism (Tungohan, 2017), labour trafficking (McCrae, 2016), poor foreign credential recognition (Bhandari, Horvath, & To, 2006; Guo, 2010), language proficiency issues (Dalley, 2008; Guo, 2010; Maganaka & Plaizier, 2015), immigration and refugee category (Derwing, Krahn, Foote, & Diepenbroek, 2005; Krahn, Derwing, & Abu-Laban, 2003; Maganaka & Plaizier, 2015); visible minority status (Guo, 2010; Montgomery, 1986); and citizenship (Foster & Barnetson, 2011; Higginsbottom, 2010; McCrae, 2016; Nunes

& Arthur, 2013; Tungohan, 2017), among others. These barriers are not new, and a booming economy does not appear to offset them.

We did not find any studies related to the boom and bust cycle in Alberta or any robust comparison with other parts of Canada. Thus, we still do not know the full extent of problems Calgary- and Edmonton-based immigrants and refugees face with employment and earnings. A comprehensive, longitudinal, and comparative study of the employment and incomes of these immigrant groups is necessary to reveal this crucial factor. Further, complete documentation of immigrants' employment profiles will reveal in which sectors of the economy immigrants are largely employed. All of this will, in turn, also help us understand immigrants' labour market outcomes. This is particularly important when certain sectors of the economy falter, a consequence of these cities' boom and bust economy.

Interestingly, we also observed that the existing literature is heavily biased towards those who *have not been so successful* in the Canadian job market. Hence, it will be beneficial also to document the opposite outcome—by providing evidence of economic successes among immigrants. Many questions remain:

- How do immigrants and Canadian-born perform in Alberta's economy?
- What are immigrants' labour market outcomes when compared against Canadian-born?
- Do factors like age, language proficiency, occupation, gender education, place of birth, and year of immigration account for the earning differences?
- How do immigrants who settle in Alberta compare against their counterparts in other parts of the country?

These questions are at the heart of this research. While answering the above questions, however, this study does not consider immigrant *access to* the labour market and their treatment within it. Therefore, we have not considered discrimination, credential recognition and assessment of foreign qualifications, access to specific occupations, labour market niches, union representation, other means of employment advancement, and "glass ceiling" effects regarding promotions. Social and cultural capital and institutional factors are also outside the scope of this study.

Key determinants

During the 1990s, mounting evidence emerged that immigrants were not doing well in the Canadian labour market. Picot and Sweetman (2005) attributed this to a combination of several factors: age at immigration; the changing composition of source countries; mother tongue or language used at home; visible minority status; and a general decline in labour market outcomes for all new labour market entrants. Others, however, focus on particular aspects as key determinants of immigrants' economic success. For instance, Aydemir and Skuterud (2005) argue that the knowledge of an official Canadian language governs earnings to a large extent. As well, more recent immigrant cohorts receive a much lower rate of return in the labour market from work experience gained in their home countries than do those who arrived in past years (Green & Worswick 2002; Schaafsma & Sweetman 2001). We have reviewed the relevant literature through the seven determinants previously noted since they are indicators of economic success, and aid in better understanding this phenomenon.

Age at arrival and knowledge of a Canadian official language

Agrawal (2013) looked at the factor of age at the time of arrival and found that those in age groups 15–24 years, 25–34 years, and 35–44 years are more likely to fall into higher income brackets. The 25–34 age group has the highest earning potential among all immigrant groups. Similarly, Schaafsma and Sweetman (2001) argued that immigrants who arrive in Canada between the ages of 21 and 30 years and who list English as their mother tongue earn much more compared to other immigrants. Aydemir and Skuterud (2005) argue that the knowledge of a Canadian official language governs earnings to a large extent.

Occupation

The industry sector where an immigrant finds employment is another indicator of economic success. We know that regardless of the level of education, skills, and years of experience, some industry sectors do not pay as much as others. Agrawal and Lovell (2010) found that high-income immigrants are in professional and scientific fields, technical services, manufacturing, and the health and social services sectors. Concomitantly, most of the low-income immigrants concentrate in manufacturing, transportation, and storage sectors, and in the accommodation and food industries.

Picot (2008) and Picot, Lu, and Hou (2009) identified different factors responsible for the immigrant earnings decline between 2000 and 2005. One factor they point to is the disproportionate number of immigrants in information technology and engineering occupations at this time, which coincided with a downturn in these two sectors of the Canadian economy.

Education

Education, as noted, is also considered a key determinant of economic success, but the level of education, schooling in the host country, and professional designations affect outcomes in different ways. Agrawal (2013) found that immigrants who arrived in Canada with higher levels of education are more likely to have a higher earning potential than those with just a few years of university or college education. Both Picot (2008) and Agrawal (2013) pointed out that having high levels of education or obtaining education generally has a positive impact and is a successful indicator of earning potential, although Agrawal (2013) contended this is not the case for Bangladeshis or Pakistanis.

Birthplace

Place of birth is also a contributing factor for economic success. It is important to recognize the various immigrant or ethno-racial groups, as scholars and government officials tend to assume that immigrants belonging to any specific ethno-racial group are homogeneous and their economic performances are similar. In fact, this is not always the case (Agrawal, 2013; Ghosh, 2007; Lo & Wang 2004; Qadeer, Agrawal, & Lovell, 2010). For instance, Agrawal's (2013) study argued that Bangladeshi and Pakistanis are heavily penalized because of their countries of birth—unfortunately, none of their human capital assets, such as higher education on arrival, pursuing an education in Canada, or knowledge of an official language, assist them with increasing their earning potential. Indians were more successful than many other immigrant groups within the Canadian labour market, but they do not do as well as Filipino immigrants. When compared to other groups with the same human capital assets, Filipinos had a continuous strong labour market outcome.

Immigration year

The year of landing in Canada is also an important factor in and indicator of economic success. Palameta (2004) found that recent immigrants who had been in Canada for less than 7 years—most of whom were a visible minority—were significantly more likely to be low-income than the rest of the population. Agrawal's (2013) study found that all immigrants who arrived from 1980 to 1984 moved up the economic ladder, while those who arrived between 1991 and 1996 continued to struggle due the recession in Canada. These individuals never fully recovered from this unfortunate timing.

Gender

It is a known fact that compared with men, wome—especially immigrant women—are less likely to attain higher-income levels. Furthermore, immigrant women have a higher incidence of low incomes (Statistics Canada, 2015). Also, interestingly, they tend to be more educated but less likely to be in the labour force (Statistics Canada, 2015).

Methodology

This study relies on data from the 2011 NHS (only released in 2014) as well as the 2016 Public Use Microdata Files (PUMF), which was released very recently in 2019. NHS or PUMF is a comprehensive social, demographic, and economic database about Canada and its people, covering a sample of 2.7% of Canadian households, which provides thorough data on social and economic factors. Microdata files give users access to individual-level data, and researchers can group and manipulate them to suit their particular data requirements.

The 2011 NHS has about 887,012 observations representing 32,852,323 Canadians in 2011. Out of these totals, 95,344 observations were in Alberta, out of which 30,954 observations were in Edmonton, and 32,714 observations were in Calgary. Each record of observation has a weighting factor. To obtain estimates that describe the population, the data require that a weighting factor be used in any estimation calculations. For example, to estimate the number of persons whose place of birth is China, it is necessary to give a total weight for all records having this characteristic.

In Canada, the Census has, for decades, been divided into two parts, a short-form for 100% of the population, with just a few basic questions, and a much more detailed long-form, given to a sample of Canadians. Both have been mandatory. However, in a highly controversial decision, the then Conservative government downgraded the long-form of the 2011 census by making it voluntary. In an effort to be clear about the new methodology, Statistics Canada renamed the long-form part of the 2011 census the National Household Survey, or NHS.

Issues remain in using the 2011 NHS data. According to Smith (2015), the 2011 NHS achieved a national response rate of 68.6% and a weighted response rate of 77.2%. This was significantly lower than the 2006 census long form, which achieved a response rate of 93.8%, or the 2016 census, which received a response rate of 98.4%. Among adults in the two metropolitan areas considered in this study, Edmonton and Calgary, the response rates were 74.6% and 76.4%, respectively. Statistics Canada took a number of measures to offset the lower response rate and the risks associated with sampling error and non-response bias.

The 2016 PUMF on individuals contains 930,421 records, representing 2.7% of the Canadian population. Among these records, 107,460 observations were in Alberta, out of which 35,034 observations were in Edmonton, and 37,052 observations were in Calgary. The methodology used for the 2016 Census differs from the one used for the voluntary 2011 NHS, which may affect the comparability of the 2016 results to 2011. The collection response rate for the 2016 Census long form was 97.8%, much higher than that of the 2011 NHS.

We employed an ordinal logistic regression model (Logit Model) to compare the likelihood of differing impacts from six explanatory variables—that is, the predictors—on variations within individual income (TOTINC), the dependent variable. These variables are as follows:

- **GEO**—*Provincial or territorial Census Metropolitan Area (CMA) of current residences (PR and CMA).* The places of interest for us in this study are Canada, Alberta, and the Edmonton and Calgary CMAs.
- **AGE**—*Age at arrival (AGEIMM).* It refers to the age at which an immigrant first obtained landed immigrant or permanent resident status. We re-categorized 13 categories in PUMF into 5 groups: 0–19, 20–34, 35–49, 50–60, and 60+ years.
- **FOL**—*First official language spoken (FOL).* This variable contains four categories: English only, French only, both English and French, and neither English nor French. **NOC**—*Major occupation groups (NOC11 and NOC16).* Many were included here, and we decided to combine several of them to create 12 categories.
- **HDG**—*Education levels (HDGREE).* This variable refers to the highest level of education that a person has successfully completed. We used three categories here, as follows: 1. No education, which means the individual did not attend school; 2. Up to post-secondary, which includes trade certificates or a college degree; and 3. A university degree, anything from a Bachelor's degree to a doctoral degree. The unfortunate limitation of the dataset is that it does not indicate where the immigrant received their education—whether from inside or outside of Canada.
- **POB**—*Place of birth (POB)*. Seven locations are identified—Canada, China, India, Pakistan, the Philippines, Northern Africa, and Eastern Africa. It is noteworthy that these countries were clearly identified in the database, which were the regions we were most interested in. Others were described as large regions in the world.
- **YOI**—*Year of immigration (YRIMM).* This was already divided into six categories of immigrants who arrived in Canada in the following cohorts (of five-year intervals): 1980–1984; 1985–1990; 1991–1995; 1996–2000; 2001–2005; 2006–2011.
- **SEX-** *Gender (SEX).* This variable consists of two categories—male and female.

As noted, other variables that inform earnings are the education obtained in Canada (vs. that obtained internationally), and immigration categories.[1] However, as not all of these are available in PUMF, we relied on only the above seven variables. The specific immigrant groups we included in the study are the largest foreign-born visible minority populations in the country.

---

[1] Immigrants to Canada come through several immigrant classes and programs such as skilled-worker, family, business, provincial nominee, and so on. The provincial nominee program is a class of immigrants through which each province and territory targets immigrants based on their skills, education, and work experience who can contribute to the economy of that province or territory, and must be willing live there.

Furthermore, the Canadian-born nationally were used as a benchmark against whom immigrants' incomes were assessed.

The dependent variable, Total Income, *TOTINC,* refers to before-tax income from all sources during the calendar year 2010 or 2015, including employment income, income from government programs, pension, investment, and any other sources. We focused on those in the highest income bracket and those in the low-income bracket. We had to make our own determination about what constitutes the high-income level: unfortunately, the existing literature does not help us as various such thresholds appear in the literature. For instance, Agrawal (2013) pegged the high family income threshold at $80,000 or more, in 2004 dollar values, which constituted about 5% of Canadians. According to Statistics Canada (2019), the top 5% of Canadians earned a total income of $108,300 in 2011 and $120,000 in 2016, which we have used in this study. Choosing the low-income bracket was relatively simpler. We used Statistics Canada's low income cut-off (LICO[2]), necessary for an individual to take care of the basic necessities of life in a community over 500,000—that is, just over $23,000 in 2011 and $24,949 in 2016. These numbers accounted and adjusted for the Consumer Price Index (CPI)[3]. CPI could vary on a regional basis in a given year, but the variation is small enough to have no or negligible effect on our results.

The basic logistic model showing the functions of probabilities that result in a linear combination of parameters, as well as some interactions, is as follows:

$$\ln\left(\frac{\pi(x_j)}{1 - \pi(x_j)}\right) = \alpha + (\beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n) + (\gamma_{mn} X_m X_n) + \xi,$$

$\pi(x_j)$ is the probability of being at or below category j in income.

The quantity to the left of the equal sign, called a logit, is the log of the odds that an event occurs. The X_n is an explanatory variable; α, β_n, and ξ represent the intercept, coefficients of the explanatory variables, and error term, respectively. For example, X_1 is landing year, and β_1 is coefficient of landing year; X_2 is place of birth, and β_2 is the coefficient of place of birth. Several interaction effects were also estimated with the help of the model. The purpose of this was to account for the interactive effects of explanatory variables, but most importantly, focus on the interactions of geography such as the entire country, the province of Alberta, Edmonton CMA, Calgary CMA, or TMV CMAs and the rest of the variables. γ_{mn} is the coefficient of the interactive effect $X_m X_n$

---

[2] The low income cut-offs (LICOs) are income thresholds below which a family (or an individual) will likely devote a larger share of its income on the necessities of food, shelter, and clothing than the average family (or an individual). LICO could vary year to year and is affected by which community the family (or individual) lives in.

[3] The Consumer Price Index (CPI) is a measure of the rate of price change for goods and services bought by Canadian consumers. It is the most widely used indicator of price changes in Canada.

In the output from the statistical package R, the coefficients of all levels of every explanatory variable are interpreted in the following way: with one unit increase in the predictor (a category within an explanatory variable), the response variable level (a category in the dependent variable) is expected to change by its respective regression coefficient in an ordered log-odds scale, while the other variables in the model are held constant.

As an example, a regression coefficient of 0.57 for Canadian-born means that if an individual was working in Alberta in 2011, their odds of being in a higher income category would have been increased by 0.57 relative to the other variables that are held constant. The odds ratios of the predictors are calculated by exponentiating the estimate. So, the odds ratio of the individual who worked in Alberta in 2011 is $e^{0.57} = 1.77$, which represents the difference in the likelihood of impact on income levels between a Canadian-born worker in Alberta and one elsewhere in the country. Simply put, this individual's family income is 1.77 times more likely to be in the higher-income group (i.e., higher than $108,300).

Findings

Descriptive Statistics

When we compare the six demographic groups nationally across and within occupations, we find that the Canadian-born dominated the natural resource and agriculture sector (4% in 2011 and 3.8% in 2016) in Alberta, although proportionately, they were fewer when compared against other sectors. In Edmonton and Calgary, this percentage was about 2.2% and 2% respectively in 2011. The percentage drops slightly in 2016: 2.1% in Edmonton and 1.8% in Calgary. Two factors are important here, however: first, this sector as categorized as including *both* oil and gas, and agriculture; and second, the oil and gas subsector was largely responsible for spawning jobs in other sectors of the provincial economy.

High-income earners

Across Canada in 2011, the proportion of African- (6.9%) and Indian-born (5.6%) immigrants in the highest income category outpaced any other immigrant category, while the Canadian-born were at 6.7%. Edmonton and Calgary tell a slightly different story. First, the proportion of high-income earners was much higher in both cities. Chinese (9.4%) and Indians (9.4%) along with the Canadian-born (10.5%) in Edmonton were in high-income categories (see Figures 1 and 2). These figures in Calgary were 7.3%, 9.8%, and 13% for Chinese, Indian, and the Canadian-born respectively (see Figures 3 and 4). Second, these numbers looked much rosier in 2016. 13.9% of the Canadian-born, 7.4% of Indian immigrants, and 8.6% of Chinese immigrants earned high income in Edmonton. Calgary was much more generous. 17.2% of the Canadian-born, followed by Africans (13.4%) and Chinese (10.7%) were in a high income bracket. Nationally, the high-income brackets in 2016 included the Canadian-born (7.8%), Africans (7.1%), and Indians (5.9%), closely followed by Chinese and Pakistanis.

Low-income earners

In 2011, 31.3% of the Canadian-born nationwide earned less than $30,000. A significant proportion of almost all the other immigrant groups, such as Pakistani, Chinese, African, Indian, and Filipino immigrants (43.6%, 39.7%, 34.1%, 33.6%, and 31.9% respectively) were in this bracket. In both Edmonton and Calgary, these income categories were mostly composed of Pakistanis and Africans. 2016 shows a slightly improved situation nationally (27.6% in 2016 vs 31.3% in 2011). However, a significant proportion of Pakistanis (45.2%) still remained in low-

income brackets. 2016 witnessed smaller proportions of Canadian-born and immigrant groups in low-income categories in Calgary and Edmonton. In both cities, a higher proportion of immigration groups (between 44% and 29.9%) than Canadian-born (slightly above 22%) were in low-income groups. Pakistanis stood out the most, at 44% in Calgary. Of note, a majority of Pakistani women earned less than the respective LICO thresholds in 2011 and 2016. In Calgary, this number was about 60% in 2016.

Clearly, while economic conditions improved between 2011 and 2016, a large section of the population remained close to poverty levels. Immigrant groups did not achieve parity with the Canadian-born and paid an economic penalty for being a visible minority due to a number of other factors outside the scope of the study, such as discrimination and racism in the labour market.

	<22,999	23,000-29,999	30,000-49,999	50,000-69,999	70,000-108,299	108,300-129,999	130,000-174,99	175,000-249,999	> 249,999	Total
Canada	27.5	6.5	20.4	17.8	17.2	3.9	3.5	1.2	1.9	100.0
China	26.4	9.5	26.0	11.1	17.6	3.7	3.1	1.0	1.6	100.0
India	29.0	9.6	29.3	14.7	8.1	2.7	4.0	0.7	2.0	100.0
Pakistan	41.5	13.5	19.5	10.5	7.5	4.5	3.0	0.0	0.0	100.0
Philippines	25.4	9.2	31.4	17.5	12.1	2.6	1.1	0.4	0.4	100.0
Africa	34.1	7.6	24.7	14.5	12.2	2.5	1.8	1.2	1.5	100.0
Others	24.3	8.2	22.3	17.8	16.8	3.3	3.9	1.2	2.2	100.0
Total	27.3	6.9	21.3	17.5	16.7	3.7	3.5	1.2	1.9	100.0

Figure 1: Individual incomes across places of birth in Edmonton (in percent) in 2011. Columns may not add up to exactly 100% because of rounding errors. Note: N.E.AF is an abbreviation of Northern and Eastern Africans. (Data source: NHS 2011)

	<24,948	24,949-29,999	30,000-49,999	50,000-69,999	70,000-119,999	120,000-129,999	130,000-174,99	175,000-249,999	> 249,999	Total
Canada	22.7	4.3	18.2	17.1	23.8	2.7	6.3	2.1	2.8	100.0
China	28.8	6.5	20.9	18.5	16.8	2.4	3.1	1.4	1.7	100.0
India	26.7	9.0	25.2	16.7	15.1	1.1	4.2	0.8	1.3	100.0
Pakistan	29.9	5.2	26.8	13.4	19.6	1.0	4.1	0.0	0.0	100.0
Philippines	23.1	6.6	31.1	20.8	14.4	1.2	2.1	0.4	0.4	100.0
Africa	27.0	5.7	24.8	19.7	16.0	2.0	2.7	0.8	1.3	100.0
Others	22.8	4.8	21.0	18.0	22.3	2.6	4.9	1.5	2.2	100.0
Total	23.1	4.7	19.6	17.4	22.6	2.5	5.7	1.9	2.5	100.0

Figure 2: Incomes across places of birth in Edmonton (in percent) in 2016. Columns may not add up to exactly 100% because of rounding errors. (Data source: PUMF)

	<22,999	23,000-29,999	30,000-49,999	50,000-69,999	70,000-108,299	108,300-129,999	130,000-174,99	175,000-249,999	> 249,999	Total
Canada	27.1	6.1	20.4	16.5	16.8	3.9	4.3	1.8	3.0	100.0
China	28.4	11.5	26.7	10.8	15.3	3.5	2.2	0.9	0.7	100.0
India	31.7	10.0	29.0	11.3	8.2	3.0	3.5	1.5	1.8	100.0
Pakistan	41.5	5.0	25.9	11.5	5.0	3.1	5.0	0.0	2.9	100.0
Philippines	24.5	9.3	34.4	14.6	12.6	2.2	1.6	0.4	0.3	100.0
Africa	31.6	9.9	24.8	11.9	11.1	3.5	3.3	2.2	1.7	100.0
Others	25.0	7.6	22.6	17.2	15.4	3.3	4.7	1.7	2.7	100.0
Total	27.1	6.7	21.7	16.1	16.0	3.7	4.2	1.7	2.8	100.0

Figure 3: Incomes across places of birth in Calgary (in percent) in 2011. Columns may not add up to exactly 100% because of rounding errors. (Data source: NHS 2011)

	<24,948	24,949-29,999	30,000-49,999	50,000-69,999	70,000-119,999	120,000-129,999	130,000-174,99	175,000-249,999	> 249,999	Total
Canada	22.2	4.3	17.4	16.3	22.8	2.6	6.8	3.6	4.2	100.0
China	29.5	6.5	20.3	15.1	17.9	1.8	4.4	3.0	1.5	100.0
India	28.2	8.2	25.8	15.6	13.5	1.7	3.7	1.7	1.5	100.0
Pakistan	44.6	3.6	19.1	12.4	12.0	0.4	4.4	2.0	1.6	100.0
Philippines	23.5	6.8	33.7	20.5	11.8	0.7	1.8	0.8	0.5	100.0
Africa	24.5	7.4	22.1	17.9	14.7	2.1	4.6	2.8	3.9	100.0
Others	21.0	4.7	22.3	16.6	20.1	2.8	6.1	2.9	3.6	100.0
Total	22.8	4.8	19.5	16.5	21.0	2.4	6.2	3.2	3.7	100.0

Figure 4: Individual incomes across places of birth in Calgary (in percent) in 2016. Columns may not add up to exactly 100% because of rounding errors. (Data source: PUMF)

Occupations

In 2011, across Alberta, the high-income group ($100,000+) dominated the following occupational sectors (from most to least): management, transportation, maintenance and equipment operation, and science. Among all the sectors, comparatively, a large percentage of those in management, followed by business and finance, earned over $250K. Edmonton followed the provincial trend for sectors of high income. Calgary shows a slightly different trend. For instance, science dominates, followed by management, and business and finance sectors; however, those in management and science earned considerably more, with 20% or more of them in >$250K income category. as opposed to the rest of the province. In Edmonton, transportation, maintenance and equipment operation did not lead to high income (see Figures 5 and 6).

In 2016, across Alberta, the top occupational sectors remained the same as those in 2011. Their order, however, changed to science, transportation maintenance, and management. In Edmonton, the sectors such as management, transportation and maintenance, and science dominated the top-earning sectors. In Calgary, occupations in science outpaced by far every other sector. Business, and finance and management were the next two with a high proportion of high-income earners.

	1 manufac. proce. utilities	2 health	3 transport mainten. equipment	4 education community services	5 construct.	6 sci.	7 business finance insurance	8 wholesale retail customer	9 sales support	10 art culture sport	11 natural resources agriculture	12 manage	Total
<25k	1.5	4.1	5.2	8.9	8.5	2.3	6.7	12.7	42.2	4.7	2.6	0.8	100.0
25k-30k	2.2	5.1	7.8	9.3	9.5	2.7	9.7	12.2	36.2	2.7	1.9	0.7	100.0
30k-50k	3.5	7.5	8.1	9.0	12.0	3.8	14.2	8.9	27.3	2.0	1.8	1.8	100.0
50k-70k	2.7	8.8	10.5	8.7	12.9	6.9	18.2	7.0	18.1	1.7	1.2	3.3	100.0
70k-120k	2.5	9.6	12.9	14.7	15.1	11.4	12.0	5.2	7.7	1.0	1.5	6.4	100.0
120k-130k	1.8	9.2	12.7	14.1	16.0	14.5	7.8	4.7	4.9	1.0	1.4	11.7	100.0
130k-175k	4.3	5.3	16.8	7.4	15.4	15.0	9.5	6.7	4.0	0.8	2.2	12.5	100.0
175k-250k	11.1	3.9	13.6	4.7	10.6	17.3	6.7	8.9	3.9	0.3	5.0	13.9	100.0
>250k	1.7	14.3	13.9	8.1	2.7	10.6	13.0	7.7	4.1	0.4	1.0	22.6	100.0
Total	2.7	7.3	9.8	10.2	12.0	7.0	11.8	8.5	22.2	2.2	1.9	4.4	100.0

Figure 5: Shows individual incomes across occupation in Edmonton (in percent) in 2016. Columns may not add up to exactly 100% because of rounding errors. (Data source: PUMF)

	1 manufac. proce. utilities	2 health	3 transport mainten. equipment	4 education community services	5 construct.	6 sci.	7 business finance insurance	8 wholesale retail customer	9 sales support	10 art culture sport	11 natural resources agriculture	12 manage	Total
<25k	1.3	3.5	5.7	8.4	8.0	3.2	6.7	13.3	41.3	5.0	2.1	1.2	100.0
25k-30k	2.4	4.7	6.8	8.9	7.2	3.9	9.3	10.1	39.7	3.2	1.9	1.8	100.0
30k-50k	3.4	6.9	6.7	8.7	9.9	5.8	13.6	8.5	29.4	3.2	1.5	2.2	100.0
50k-70k	2.3	7.1	9.6	7.8	11.2	9.4	19.1	6.9	19.8	2.4	0.8	3.5	100.0
70k-120k	1.7	8.9	9.7	13.1	9.6	16.7	17.5	5.3	8.4	1.8	1.1	6.4	100.0
120k-130k	0.4	8.4	9.4	12.2	5.1	20.4	15.3	5.1	8.3	1.6	1.6	12.2	100.0
130k-175k	1.2	4.9	8.1	8.8	5.8	25.5	16.2	6.7	5.6	1.2	1.3	14.7	100.0
175k-250k	2.2	3.3	8.5	6.7	3.0	27.1	16.8	5.8	6.6	0.9	1.6	17.4	100.0
>250k	1.3	6.8	9.2	9.3	1.2	25.5	13.7	4.0	5.0	0.8	1.3	21.9	100.0
Total	2.0	6.3	7.9	9.5	8.6	11.0	13.9	8.3	23.0	2.9	1.4	5.3	100.0

Figure 6: Shows individual incomes across occupation in Calgary (in percent) in 2011. Columns may not add up to exactly 100% because of rounding errors. (Data source: PUMF)

Between 2011 and 2016, the top-earning sectors remained the same. However, a few differences among occupational sectors stand out between Edmonton and Calgary. Barring science, those in Edmonton earned higher wages in the transportation, maintenance and equipment sector, which mostly includes oil and gas-related jobs (Figure 4). Their counterparts in Calgary, on the other hand, did significantly better in the science, managerial, and business, finance and insurance sectors (Figure 5). Many of these occupational sectors in the Calgary context are fueled by the oil and gas industrial sector. Many occupational sectors in Calgary, such as science and management, showed a higher proportion of earners in the >$250K income category.

Inferential Statistics

This section looks at the likelihood of various immigrant groups earning higher incomes in 2011 and 2016. The analysis compares Edmonton (YEG) and Calgary (YYC) against other CMAs, such as Toronto (YYZ), Montreal (YUL) and Vancouver (YVR), as well as against national (CA) averages, and deciphers differences between two specific points in time: 2011 and 2016. We focus on income ratios to determine the earning potential in 2011 ($108,300+) and in 2016 ($120,000) in Edmonton and Calgary. We also analyze those who remained in the low-income brackets in 2011 (i.e., $23,000 or less) and in 2016 (i.e., $24,949 or less). Figures 7, 8, 9, and 10 compare the likelihood of earnings of Canadian-born and select immigrant groups in Alberta, Calgary, Edmonton, and the rest of the country—while holding other variables constant.

PoB x GEO	AB vs Na CA	YEG vs Na CA	YYC vs Na CA	YYZ vs Na CA	YVR vs Na CA	YUL vs Na CA
Canada	2.03***	1.68***	1.8***	1.19***	1.06***	0.98***
China	2.05***	2.12***	1.7***	1.08***	0.5***	0.99
India	2.89***	2.14***	2.48***	0.66***	0.61***	0.72***
Pakistan	3.74***	1.95***	3.16***	0.59***	0.28***	0.52***
The Philippines	2.39***	1.97***	2.08***	1.19***	0.43***	0.51***
Africa	2.01***	0.97	1.93***	1.13***	1.13***	0.54***
Other	1.82***	1.6***	1.84***	0.94***	0.95***	0.83***

Figure 7: A summary of interactions between geographical locations and places of birth for the model, with odds of achieving more than $108,300 in 2011 (*** means the significance level < 0.001)

PoB x GEO	AB vs Na CA	YEG vs Na CA	YYC vs Na CA	YYZ vs Na CA	YVR vs Na CA	YUL vs Na CA
Canada	1.25***	1.22***	1.16***	0.88***	0.97***	0.92***
China	1.88***	1.82***	1.8***	0.92***	0.85***	0.78***
India	1.39***	1.39***	1.32***	0.86***	1.02	0.91***
Pakistan	1.31***	1.17	1.3***	0.84***	1.51***	1.22***
The Philippines	1.73***	1.65***	1.7***	0.92***	0.98	0.52***
Africa	1.62***	1.31***	1.48***	1.11***	1.62***	0.63***
Other	1.45***	1.42***	1.38***	1.04***	0.84***	0.84***

Figure 8: A summary of interactions between geographical locations and places of birth for the model, with odds of achieving more than $23,000 in 2011 (*** means the significance level < 0.001)

PoB x GEO	AB vs Na CA	YEG vs Na CA	YYC vs Na CA	YYZ vs Na CA	YVR vs Na CA	YUL vs Na CA
Canada	2.29***	1.86***	2.08***	1.11***	0.9***	0.98***
China	2.16***	1.77***	2.12***	1.05	0.63***	0.34***
India	2.16***	1.52***	2.12***	0.59***	0.92***	1
Pakistan	1.73***	0.86	1.8***	0.7***	0.94	0.74
The Philippines	2.83***	2.75***	2.25***	0.7***	0.71***	0.42***
Africa	2.27***	1.31***	2.27***	0.76***	1.72***	0.48***
Other	2.25***	1.75***	2.44***	0.88***	0.9***	0.86***

Figure 9: A summary of interactions between geographical locations and places of birth for the model, with odds of achieving more than $120,000 in 2016 (*** means the significance level < 0.001)

PoB x GEO	AB vs Na CA	YEG vs Na CA	YYC vs Na CA	YYZ vs Na CA	YVR vs Na CA	YUL vs Na CA
Canada	1.35***	1.32***	1.3***	0.75***	0.96***	0.9***
China	1.9***	1.8***	1.73***	0.94***	0.81***	0.83***
India	1.62***	1.62***	1.49***	0.7***	1.19***	0.72***
Pakistan	1.38***	2.25***	1.09***	0.82***	1.49***	0.92
The Philippines	1.93***	1.67***	1.55***	0.74***	0.84***	0.54***
Africa	1.95***	1.86***	1.8***	0.83***	1.31***	0.75***
Other	1.73***	1.58***	1.72***	0.84***	0.93***	0.96***

Figure 10: A summary of interactions between geographical locations and places of birth for the model, with odds of achieving more than $24,949 in 2016 (*** means the significance level < 0.001)

Logistic regression coefficients table.

Occupation		Age of Immigration		Highest Degree		Place of Birth		Year of Immigration		First Official Language Spoken		Gender		Occupation x Geographic location	
manufacturing, processing and utilities	0.00	0-19 years	0.00	No education	0.00	Canada	0.00	Canada born or before 1979	0.00	English only	0.00	Male	0.00	manufacturing, processing and utilities	0.55
health	0.47	20-34 years	0.52	Up to postsecondary	0.81	China	-0.17	1980-1984	-0.49	French only	-0.04*	Female	-1.16	health	0.04*
transport, maintenance and equipment operation trade	0.31	35-49 years	0.98	Up to PhD	1.76	India	0.17	1985-1990	-0.86	Both English and French	0.06*			transport, maintenance and equipment operation trade	0.11
education, community, government services	0.22	50-59 years	1.26			Pakistan	0.07*	1991-1995	-1.31	Neither English nor French	-0.80			education, community, government services	-0.27
construction	-0.69	60+ years	1.74			Philippines	-0.46	1996-2000	-1.27					construction	0.78
natural and applied sciences	0.89					Northern & Eastern Africa	-0.00*	2001-2005	-1.34					natural and applied sciences	-0.54
business, finance, insurance and administrative	0.61					Others	0.18	2006-2011	-2.10					business, finance, insurance and administrative	-0.62
wholesale trade, retail and customer service	-0.13													wholesale trade, retail and customer service	0.24
sales and service, office support	-0.96													sales and service, office support	-0.12
art, culture, recreation and sport	-1.12													art, culture, recreation and sport	0.03*
natural resources, agriculture and related production	0.03*													natural resources, agriculture and related production	0.60
management occupations	1.59													management occupations	-0.05

Note: This is a pairwise comparison between Edmonton and Calgary with GEO = 1 as Edmonton and GEO = 0 as Calgary. All coefficients are with p-value < 0.05 except the ones with * on it.

Figure 11: Logistic regression coefficients of the model, with occupation and geographic location interaction—year 2011, income greater than or equal to $108,300.

Logistic regression coefficients table.

Occupation		Age of immigration		Highest Degree		Place of Birth		Year of Immigration		First Official Language Spoken		Gender		Occupation x Geographic location	
manufacturing, processing and utilities	0.00	0-19 years	0.00	No education	0.00	Canada	0.00	Canada born or before 1979	0.00	English only	0.00	Male	0.00	manufacturing, processing and utilities	0.70
health	0.36	20-34 years	0.13	Up to postsecondary	1.12	China	-0.05*	1980-1984	-0.07	French only	-0.07	Female	-1.14	health	-0.01*
transport, maintenance and equipment operation trade	0.25	35-49 years	0.61	Up to PhD	1.97	India	-0.06	1985-1990	-0.70	Both English and French	-0.76			transport, maintenance and equipment operation trade	0.14
education, community, government services	0.09	50-59 years	0.50			Pakistan	-0.58	1991-1995	-0.58	Neither English nor French	-2.47			education, community, government services	-0.37
construction	-0.68	60+ years	2.31			Philippines	-0.56	1996-2000	-0.85					construction	0.65
natural and applied sciences	0.94					Northern & Eastern Africa	0.14	2001-2005	-1.11					natural and applied sciences	-0.37
business, finance, insurance and administrative	0.49					Others	0.27	2006-2011	-1.58					business, finance, insurance and administrative	-0.54
wholesale trade, retail and customer service	-0.04*							2011-2016	-2.11					wholesale trade, retail and customer service	0.00*
sales and service, office support	-0.78													sales and service, office support	-0.51
art, culture, recreation and sport	-0.89													art, culture, recreation and sport	-0.39
natural resources, agriculture and related production	0.11													natural resources, agriculture and related production	0.05*
management occupations	1.69													management occupations	-0.24

Note: This is a pairwise comparison between Edmonton and Calgary with GEO = 1 as Edmonton and GEO = 0 as Calgary. All coefficients are with p-value < 0.05 except for the ones with * on it.

Figure 12: Logistic regression coefficients of the model with occupation and geographic location interaction—year 2016, income greater than or equal to $120,000.

Alberta vs Canada

Our regression models tell us that every immigrant group, as well as the Canadian-born, were likely to earn more in Alberta than the rest of the country to a varying degree, especially at their respective higher income levels ($108,300+ and $120,000+ respectively) in both 2011 and 2016, the boom and bust times. However, the Canadian-born were likely to outperform the immigrant groups. Chinese, Indians, Pakistanis, Filipinos, and Africans were also likely to perform better than their respective counterparts in other parts of the country. At the low-income levels, both Canadian-born and immigrant groups were likely to earn above the LICO thresholds of 2011 and 2016. It is abundantly clear that the boom and bust times (of the last two iterations) did not negatively affect the earning potentials.

Occupational sectors, education and language proficiency

Other variables such as occupation, age at immigration, and year of landing likely have an impact on high-income earners. Those in manufacturing, construction, transportation, science, and the natural resources sectors are likely to have earned higher incomes in Alberta when compared against the rest of the country. Interestingly, those without education or no proficiency in English or French had a higher likelihood (3 and 2.01 in 2011 respectively) of moving into high-income levels in Alberta, even though prior studies purport that higher education or language proficiency usually results in higher earning potentials. This could be attributed to the nature of the Alberta economy, which is largely resource-based with sectors such as transportation and manufacturing; it thus requires both educated and less-educated workers. The outlook in these sectors did not change in 2016. It is also possible that the situation has changed since the data were collected.

Arrival year and age at immigration

Another interesting finding is that the cohort of immigrants who came recently—that is, between 2006 and 2011 (2.27) or between 2011 and 2016—had a high likelihood (2.01) of advancing to higher income levels. It is possible that the outcomes for these cohorts can be accounted for by two factors:

1. These immigrants are likely a mix of immigration categories, such as provincial nominees, Canadian experience class, and other high-skilled economic immigrants, who generally tend to do better than other immigrants who arrive via other immigrant categories, and

2. They arrived during a time when the Alberta economy was booming (IRCC, 2017).

As per IRCC (2017), the provincial nominees in Alberta had the highest earnings among all the nominees in the country.

Age at immigration also did not seem to be a factor affecting the earning potential negatively. Both Canadian-born and immigrants in 2011 and 2016, irrespective of their age at arrival, had high earning potential relative to the rest of the country. These two findings are contrary to other national studies (Agrawal, 2013) that show that immigrants who landed in Canada 10 years ago or earlier are likely to do well, along with those who came at a young age, that is, 35 years or younger, in other parts of the country.

Gender
Income variations based on gender was apparent both in 2011 and 2016. Interestingly, the likelihood of a woman to getting paid more than her counterpart in other parts of the country was much higher in Calgary, both at lower and higher income brackets.

Edmonton
Both Canadian-born and immigrants living in Edmonton were likely to earn higher incomes than the rest of the country in both 2011 and 2016. Those employed in the industrial sectors of manufacturing, transportation, or the natural resource sector in particular, were likely to outperform those in the rest of the employment sectors. This situation was true in 2011, and continued to be so in 2016 as well—although in this latter year, a slight decline (relative to 2011) was noticeable in each of the three sectors, with the steepest decline in the natural resource sector. Still, the workers in each of these occupational sectors performed far better than the rest of the country. In the same years, barring the Canadian-born, most immigrant groups' economic performance was worse against the national average in other immigrant-rich metropolitan areas, such as Toronto, Montreal, and Vancouver.

Calgary
The economic success story of Edmonton and Alberta extended to Calgary as well and applied to both Canadian-born and immigrants. The only difference was in the occupational sectors. Science and business dominate the high-income sectors, although both are fueled by the natural resource sector in Calgary. All immigrant groups did well except Pakistanis, whose earning potential decreased slightly between 2011 and 2016, though it was still much better than their counterparts in the rest of the country and in other three metropolitan areas.

Clearly, the natural resource sector in Alberta translates into high-paying science and business-related occupations in Calgary, as well as transportation and manufacturing jobs, and other jobs directly related to the oil and gas sector. Many field workers, operators, and tradespeople like journeyman welders, gas fitters, and mechanics working in the oil and gas fields live in Edmonton; Calgary is home to many oil and gas headquarters that employ managers and other professionals. This concentration of head offices in Calgary has created an ecosystem that attracts energy services, engineering, geoscience, and environmental firms, as well as legal, financial, human resources, and IT services. Even at lower-income levels, a higher likelihood existed in the study years for both Canadian-born and immigrants to earn above the LICO for those years when compared against the country as a whole.

Toronto, Montreal, and Vancouver (TMV)
Other CMAs may not have experienced the economic ups and downs that occurred in Calgary and Edmonton between 2011 and 2016. Our analyses show that immigrants nevertheless tend to do worse in TMV. Also, age, education, year of arrival, gender, and language proficiency severely affect their earnings, while these factors did not have much impact in Edmonton and

15

Calgary. In TMV, immigrants are more likely to earn less than the LICO (i.e., $23,000 for 2011 or $24,949 for 2016).

This study demonstrates that Calgary, Edmonton, and Alberta as a whole provided economic opportunities to immigrants, even if not equally, although we did find that they had significantly higher earning potential compared to the national average. Obviously, Alberta's booming economic climate was a major contributing factor to their success.

Conclusion

It is abundantly clear that both in boom and bust times, Edmonton and Calgary provided much better economic opportunities to immigrants and Canadian-born than their counterparts in the other parts of the country even with differences in earnings among immigrants. This may not appear to be a surprising finding, as media reports indicated the good fortune they enjoyed in Alberta, as did anecdotes from immigrants themselves. However, it stands in contrast with the prevailing literature on Calgary and Edmonton that has portrayed immigrants as poor—people who stood at the margins of the economic prosperity in the province and in these two large cities.

This is not to say that poverty does not exist. A case in point is that 28.2% of the Canadian-born in Alberta earned less than $23,000 annually, while 19.4% made less than $15,000, well below the Canadian poverty levels even during the boom time of 2011. These proportions for the poor were either at par or slightly below those in the rest of the country (31.3% and 21.1% respectively) in 2011. This proportion, however, was much higher among immigrants, especially, among Pakistani and African immigrants in Alberta (40.6% and 31.3% respectively), eclipsing all, even during the boom time.

Income variations existed based on place of birth across Alberta and in Edmonton and Calgary. For instance, more African and Pakistani immigrants tended to be in lower income brackets in both boom and bust times. This is also confirmed by Statistics Canada (2007) and scholars like Banerjee, Reitz & Oreopoulos (2018) and Loxley, Sackey & Khan (2015). Prevailing religious or racial discrimination could be a reason for this variation. Still, there was a higher likelihood of an African or Pakistani immigrant faring better in Alberta than their counterparts in the rest of the country.

Another interesting finding of this study is that having higher education does not necessarily translate into higher income, which is antithetical to the prevailing belief and the findings of previous studies (Picot, 2008; Agrawal, 2013; Hira-Friesen, 2017). Anecdotally, we know that the blue-collar workers in the oil and gas industry have high earnings. So, perhaps it is the nature of this economy and occupations within it that determine the type and characteristics of workers who are needed as well as their corresponding earning potential.

Also interesting is the relatively little effect of age at arrival in the country and the year of arrival in the Alberta context. In fact, the recent cohorts to Alberta have performed as well as previous cohorts. As indicated before, this could be attributed to the highly skilled class of immigrants coming to Alberta, combined with a long spell of a good economy. We noticed that contrary to the literature, those who have no or little proficiency in a Canadian official language were still likely to earn as much as those who did have proficiency in one or both of the two languages.

Alberta's economy is unique in the sense that despite being undiversified, it seems inclusive of immigrants in spreading the wealth. When it is humming, it creates jobs across the primary,

secondary, and tertiary sectors.[4] This capacity accommodates Albertans of both high and low education, those who arrived in the province awhile back or recently, or those with and without proficiency in an official language—paying them all well. Heavy reliance on natural resources and their fluctuating prices, however, cause a boom and bust cycle. The boom times, of course, create wealth, which appears to spread widely. Concomitantly, the bust periods lead to tough economic times, generating high unemployment, housing foreclosures, and bankruptcies. Newly arriving immigrants to Alberta inadvertently could get caught in one of these cycles, especially the bust time, which can then shape their career path and affect future earning potential, irrespective of the human capital assets they arrived with.

Future research should include multiple boom-bust cycles in Alberta and also compare against provincial economies such as Saskatchewan and Newfoundland to help generalize the findings of this research. Among the currently available immigration programs, provincial nominee, Canadian experience class, and express entry programs seem most appropriate to such economies as the programs allow the province or territory to choose immigrants who can contribute specifically to their individual economies. In this vein, studying the efficacy of provincial nominee program (and emerging streams within it) in boom-bust economies will be beneficial.

References

Agrawal, S. & Kurtz, N. (2018). Ethnic spatial segmentation in immigrant destinations—Edmonton and Calgary. *Journal of International Migration and Integration*. doi: 10.1007/s12134-018-0604-y

Agrawal, S. (2013). Economic disparities among South Asian immigrants in Canada. *South Asian Diaspora, 5*(1), 1–28.

Agrawal, S. (2016). Twice migrants in Canada: Who are they and how do they perform economically? *Journal of International Migration and Integration, 17*(3), 669–686.

Agrawal, S., & Lovell, A. (2010). High-income Indian immigrants in Canada. *South Asian Diaspora*, *2*(2), 143–163.

Aydemir, A., & Skuterud, M. (2005). Explaining the deteriorating entry earnings of Canada's immigrant cohorts: 1966–2000.*Canadian Journal of Economics*, *38*(2), 641–672.

Baker, M., & Benjamin, D. (1994). The performance of immigrants in the Canadian labour market. *Journal of Labor Economics*, *12*(3), 369–405.

Banerjee, R, Reitz, J. G. & Oreopoulos, P. (2018) Do large employers treat racial minorities Mmre fairly? An analysis of Canadian field experiment data. *Canadian Public Policy,* 44 (1), p. 1–12. doi: 10.3138/cpp.2017-033.

Beck, M. (2017). A lost decade for pay may be a taste of things to come. *Economic Outlook, 41(*3), 5–12.

Bhandari, B. S., Horvath, S., & To, R. (2006). Choices and voices of immigrant men: Reflections on social integration. *Canadian Ethnic Studies, 38*, 140–148.

Chawla, R.K., & Uppal, S. (2012). Household debt in Canada. *Perspectives on Labour and Incom,. 24*(2), Summer. (Statistics Canada Catalogue no. 75-001-X). Ottawa, ON: Statistics Canada.

---

[4] Developed by Fisher (1939), Clark (1940) and Fourastie (1954), the three-sector model of economics broadly divides the economies into three sectors of activity: extraction of raw materials (primary), manufacturing (secondary), and services (tertiary).

Chui, T., & Tran, K., 2005. Longitudinal survey of immigrants to Canada: Progress and challenges of new immigrants in the workforce. Statistics Canada, Catalogue No. 89-615-XIE, Ottawa. Available from: http://www.statcan.gc.ca/pub/89-615-x/89-615-x2005001-eng.htm

Clark, C. (1940). *Condition of Economic Progress*. London, England: Macmillan.

Cohen, P. (2017, May 5). Jobless rate at 10-year low as hiring grows and wages rise. *New York Times.* Retrieved from https://www.nytimes.com/2017/05/05/business/economy/jobs-report-unemployment.html

Dalley, P. (2008). Immigration and work in minority communities: The case of francophone Alberta*. Canadian Issues / Thèmes Canadiens*, Spring, 50–54.

Derwing, T. M., Krahn, H., Foote, J. & Diepenbroek, L. (2005). *The attraction and retention of immigrants to Edmonton: A report submitted to the City of Edmonton.* Edmonton, AB: The Prairie Centre of Excellence for Research on Immigration and Integration.

Edwards, J. (2017, May 21st). The "gig economy" has broken a fundamental link in capitalism that was good for workers. *Business Insider.* Retrieved from https://www.businessinsider.com/low-unemployment-wage-increases-gig-economy-2017-5?r=UK

Fisher, A. GB. (1939). Production, primary, secondary and tertiary. *Economic Record, 15*(1), 24–38

Foster, J., & Barnetson, B. (2011). Justice for janitors in Alberta: The impact of temporary foreign workers on an organizing campaign. *Journal of Workplace Rights*, *16*(1), 3–29.

Fourastié, J. (1954). *Die große Hoffnung des 20. Jahrhunderts. [The Great Hope of the 20th Century*]. Köln-Deutz.

Ghosh, S. (2007). Transnational ties and intra-immigrant group settlement experiences: A case study of Indian Bengalis and Bangladeshis in Toronto. *GeoJournal, 68*(2–3), 223–242.

Government of Alberta. 2019. Gross Domestic Product. https://economicdashboard.alberta.ca/GrossDomesticProduct#type

Green, D., & Worswick, C. (2002). *Earnings of immigrant men in Canada: The roles of labour market entry effects and returns to foreign experience.* Paper prepared for Citizenship and Immigration Canada. Vancouver: University of British Columbia, Department of Economics.

Green, D., & Worswick, C. (2004). *Earnings of immigrant men in Canada: The roles of labour market entry effects and returns to foreign experience.* Vancouver, BC: University of British Columbia Press.

Green, D., & Worswick, C. (2006). *Immigrant earnings profiles in the presence of human capital investment: Measuring cohort and macro effects.* Paper presented at the conference on Immigration: Impacts, Integration, and Intergenerational Issues, University College, London, March 29–31.

Guo, S. (2010). *Understanding immigrants' downward social mobility: A comparative study of economic and social integration of recent Chinese immigrants in Calgary and Edmonton.* Edmonton, AB: Prairie Metropolis Centre, University of Alberta.

Haan, M. (2005). The decline of the immigrant homeownership advantage: Life-cycle, declining fortunes and changing housing careers in Montreal, Toronto and Vancouver, 1981–2001. *Analytical Studies—Research Paper Series.* (Statistics Canada Catalogue no. 11F0019 No. 238). Ottawa, ON: Statistics Canada.

Higginbottom, G. M. A. (2010). *Experience and transitioning of internationally educated nurses (IENS) into the Alberta healthcare system.* Edmonton, AB: Prairie Metropolis Centre, University of Alberta.

Hira-Friesen, P. (2017). Th e Eff ect of Labour Market Characteristics on Canadian Immigrant Employment in Precarious Work, 2006-2012. *Canadian Journal of Urban Research*. Volume 26, Issue 1, 1-15.

Hodges, D., & Mark Brown. (2015, Jan 27). Are you in the middle class? *Maclean's*. Retrieved from https://www.macleans.ca/economy/money-economy/are-you-in-the-middle-class/

Krahn, H., Derwing T. M., & Abu-Laban, B. (2003). *The retention of newcomers in second- and third-tier cities in Canada*. Prairie Centre for Excellence for Research on Immigration and Integration. Retrieved from https://sites.ualberta.ca/~pcerii/WorkingPapers/WP01-03.pdf

Immigration, Refugees and Citizenship Canada (IRCC). 2017. Evaluation of the Provincial Nominee Program. Retrieved from: https://www.canada.ca/en/immigration-refugees-citizenship/corporate/reports-statistics/evaluations/provincial-nominee-program-2015.html

Lo, L., & Wang, L. (2004). A political economy approach to understanding the economic incorporation of Chinese sub-ethnic groups. *Journal of International Migration and Integration*, *5* (1), 107–140.

Loxley, J., Sackey, H., & Khan, S. African immigrants in Canada: A profile of human capital, income and remittance behaviour. *Canadian Journal of Development Studies, 36*(1), 3–23.

Maganaka, A., & Plaizier, H. (2015). Language skills, profiles, and prospects among international newcomers to Edmonton, Alberta. *Canadian Ethnic Studies Journal*, *47*(1), 133–156.

Martin, W. (2017, Aug 16). Britain's unemployment rate falls to another record low—but real wage growth is still dropping. *Business Insider.* Retrieved from https://www.businessinsider.com/uk-unemployment-wage-growth-brexit-july-2017-8

McCrae, K. (2016). *Holding Tight to a double-edged sword. Labour trafficking in Edmonton.* ACT Alberta. Retrieved from http://www.actalberta.org/wp-content/uploads/2017/03/Double-Edged-Sword.pdf

Montgomery, R. (1986). The economic adaptation of Vietnamese refugees in Alberta: 1979–84. *International Migration*, *24*(4), 749–762.

Nunes, S., & Arthur, N. (2013). International students' experiences of integrating into the workforce. *Journal of Employment Counseling*, *50*(1), 34–45.

Palameta, B. (2004). Low income among immigrants and visible minorities. *Perspectives on labour and income*, *16*(2), Summer. (Statistics Canada Catalogue no. 75-001-XIE). Ottawa, ON: Statistics Canada.

Pendakur, K., & Pendakur, R. (1998). The colour of money: Earnings differentials among ethnic groups in Canada. *Canadian Journal of Economics*, *31*(3), 518–548.

Pendakur, K., & Pendakur, R. (2002). Colour my world: Has the minority–majority earnings gap changed over time? *Canadian Public Policy*, *28*(4), 489–512.

Picot, G. (2008). Immigrant economic and social outcomes in Canada: Research and data development at Statistics Canada. *Analytical Studies Branch Research Paper Series.* (Statistics Canada Catalogue no. 11F0019M, No. 319). Ottawa, ON: Statistics Canada.

Picot, G., & Hou, F. (2003). The rise in low-income rates among immigrants in Canada. *Analytical Studies Branch Research Paper Series.* (Statistics Canada Catalogue No. 11F0019MIE, No. 198). Ottawa, ON: Statistics Canada.

Picot, G., Lu, Y., & Hou, F. (2009). Immigrant low-income rates: The role of market income and government transfers. *Perspectives on Labour and Income*, *10*(12), December. (Statistics Canada Catalogue no. 75-001-X.) Ottawa, ON: Statistics Canada.

Picot, G., Hou, F., & Coulombe, S. (2008). Poverty dynamics among recent immigrants to Canada. *International Migration Review*, *42*(2), 393–424.

Picot, G., & Sweetman, A. (2005). The deteriorating economic welfare of immigrants and possible causes: Update 2005. *Analytical Studies Branch Research Paper Series*. (Statistics Canada Catalogue no. 11F0019MIE2005262). Ottawa, ON: Statistics Canada.

Qadeer, M., Agrawal, S., & Lovell, A. (2010). Evolution of ethnic enclaves in the Toronto Metropolitan Area 2001–2006. *Journal of international migration and integration*, *11*(3), 315–339.

Reitz, J. G., & Banerjee, R. (2007). Diversity, inequality, and the cohesion of Canadian society: Research findings and policy implications. In K. Banting, T. J. Courchene, & F. L. Seidle (Eds.), *Belonging? Diversity, recognition and shared citizenship in Canada* (pp. 489–545). Montreal, QC: Institute for Research on Public Policy.

Schaafsma, J., & Sweetman, A. (2001). Immigrant earnings: Age at immigration matters. *Canadian Journal of Economics*, *34*(4), 1066–1098.

Sweetman, Arthur. (2004). Immigrant Source Country Educational Quality and Canadian Labour Market Outcomes. Ottawa, ON: *Business and Labour Market Analysis*, Statistics Canada.

Statistics Canada. (2007). The African Community in Canada. Retrieved from http://www.statcan.gc.ca/pub/89-621-x/89-621-x2007010-eng.htm

Statistics Canada. (2013). 2011 National Household Survey: Income of Canadians. Retrieved from http://www.statcan.gc.ca/daily-quotidien/130911/dq130911a-eng.htm

Swidinsky, R., & Swidinsky, M. (2002). The relative earnings of visible minorities in Canada: New evidence from the 1996 census. *Industrial relations*, *57*(4), 630–659.

Tungohan, E. (2017). From encountering confederate flags to finding refuge in spaces of solidarity: Filipino temporary foreign workers' experiences of the public in Alberta. *Space & Polity, 21*(1), 11–26.