



THE FUTURE OF **ALBERTA'S LABOUR MARKET**

The Role of Immigration,
Migration, and Developing
Existing Human Capital



Richard E. Mueller

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The Future of Alberta's Labour Market: The Role of Immigration, Migration, and Developing Existing Human Capital

Richard E. Mueller
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Phone: 780.492.8558
Fax: 780.492.8738
Email: parkland@ualberta.ca
parklandinstitute.ca

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About the Authors

Richard E. Mueller is professor in the Department of Economics at the University of Lethbridge, academic director of the Lethbridge Branch of the Prairie Regional Research Data Centre, and associate director of the Educational Policy Research Initiative at the University of Ottawa. Dr. Mueller holds a BA (Honours) and an MA from the University of Calgary, and a PhD from the University of Texas at Austin. He taught at the University of Maine before joining the University of Lethbridge in 2000, and was seconded to Statistics Canada from 2009 through 2011.



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Executive Summary

In the midst of Alberta's currently economic doldrums and still-stubbornly-high levels of unemployment, it's easy to forget that less than a decade ago there was significant concern among employers about labour shortages in parts of the province and in certain industries, leading to heated debate about the merits of using foreign and out-of-province workers to satiate a labour market desperate to fill positions.

While current job growth may be slow, and the gig economy, artificial intelligence, and automation may be threatening to the future of stable and well-compensated employment in Alberta, there will likely be a time when the province again returns to prosperity and the Alberta labour market will need new sources of labour. However, the new complexion of the labour market means the response to any future labour shortages will have to be different than in the past.

Increased labour supply can come by increasing the number of people in the economy and/or by increasing the way that we utilize the existing population in the labour market. In academic speak, these are referred to as the *extensive* and the *intensive* margins of labour supply.

Growing the population to increase labour supply

Increasing Alberta's labour supply at the extensive margin involves increasing the population, which can be accomplished in three ways: higher birth rates, increased numbers of migrants arriving from other Canadian provinces, and increased immigration.

Although Alberta has high natural increases in population, its fertility rate of 1.62 is still well below the replacement rate of 2.1 and has been trending down for a decade, a trend which is unlikely to change.

Interprovincial migration, which has historically been important, is also in decline. While Alberta has higher-than-average interprovincial migration rates, it has still experienced the same downward trend in in-migration seen across Canada. In the 1970s, Alberta attracted four to five percent of its population annually, compared to about two percent more recently, and less than one percent since 2006, including years of negative net migration since 2015.

Given these trends, immigration is becoming an increasingly important source of labour force growth throughout Canada, and Alberta is no exception. Immigrants are not a homogenous group, and there are a variety of immigration programs targeted at specific groups of potential newcomers. The economic and labour market outcomes of newcomers admitted under these programs are different, with factors such as language ability, domestic work experience, and the ability of employers to recognize credentials being important to the success of immigrants in the Canadian labour market.

Two programs, the Provincial Nominee Program (PNP) and the Canadian Experience Class (CEC), have seen an increase in both the number and proportion of immigrants admitted in recent years, and the evidence to date shows they are performing well economically. The number of immigrants coming to Alberta through the controversial Temporary Foreign Worker Program (TFWP) has dropped significantly from its peak in 2013, but Alberta still accounts for a disproportionate number of workers admitted under the program. While there are significant concerns about both the treatment of workers under the program and its effect on wage suppression in some industries, there is evidence that a *limited* TFWP may be beneficial.

The final source of potential labour through immigration is foreign students. While there has been a tripling of foreign students across Canada over the last 20 years, Alberta has not experienced the same level of growth.

While recent changes to immigration programs to make them more employer-driven have, not surprisingly, resulted in better economic outcomes for those admitted, this focus should be approached with caution to ensure employers do not overuse the system in an effort to keep labour costs down, which has implications for the mobility of labour within Canada, the development of domestic human capital, and the adoption of capital-intensive technologies.

While the provincial government can influence immigration policy to attract immigrants through the PNP, ultimately the decision to admit these individuals lies with the federal government, meaning the policy options available to the province to attract more immigrants to Alberta are limited.

Getting the most from the Alberta population

Given the limited policy levers available to Alberta to increase the labour supply, this leaves Alberta with the more direct option of better utilizing the existing and potential talent of its current population.

Unfortunately, there is very limited room to increase the overall labour supply in Alberta at the intensive margins. Even with the recent economic slowdown Alberta still had the highest labour force participation rate in the country. Despite this fact, there is some potential to increase the participation rates of women, Indigenous Albertans, and older workers.

Better addressing credential recognition, both in regulated occupations and the skilled trades, is another way Alberta could better utilize the talent of its current population. Credential recognition is a potential issue for anyone entering any province, whether from another province or from abroad. New immigrants frequently have problems getting their credentials recognized and are often overqualified for the work that they perform. In the skilled trades, there are potential benefits in harmonizing apprenticeship training to increase mobility across provinces, and allowing workers credentialed in specific competencies to qualify for different trades.

Increasing the productivity of the existing labour force may also mitigate the need to attract new entrants to the labour market. Alberta, whose working-age population is somewhat less educated than in other parts of Canada, would benefit by bringing education attainment levels up to the national average. Alberta employers, in conjunction with the province, should also consider improved on-the-job-training—which is poor in Canada by international standards—as a means of enhancing the skills of the existing workforce in this rapidly changing labour market.

1. Introduction

Prior to the beginning of the most recent decline in energy prices in mid-2014, the unemployment rate in Alberta was the lowest in Canada, oscillating in the 4–5 percent range and about 2–3 percentage points less than the national average. While workers were enjoying the higher wages and benefits of the tight labour market, there was significant concern among employers about labour shortages in parts of the province and especially in certain occupations and industries. Plenty of ink was used to explain the virtues (or lack thereof) of using foreign and out-of-province workers to satiate a labour market so desperate to fill positions.¹

The situation today is markedly different. The provincial unemployment rate as of May 2019 was 6.7 percent, 1.3 percentage points higher than the national average of 5.4 percent. This is an improvement from the peak unemployment rate of 9.1 percent in November 2016, but still far off from the boom days when the Alberta labour market was the envy of the country.²

For the purposes of the following analysis, we will assume that the issues of labour supply and mobility are only going to get more important as the Alberta economy continues to recover and the unemployment rate trends down, and talk again will return to how to best identify and fill labour shortages. While current job growth may be slow, and the gig economy and automation may be threatening to the future of stable and well-compensated employment in Alberta, we will take a realistic and optimistic view that these can be (at least somewhat) overcome, but doing so will require the province to look beyond its traditional sources of labour and to implement policies to address this new labour market reality.

The current pause in economic activity in the province allows the opportunity to assess the labour supply situation and to search for solutions before the labour market again becomes overheated. Furthermore, with a new provincial government in place it is an opportune time to think about the future of the provincial economy in general, and its labour market in particular.

The extensive and intensive margins of labour supply

A standard treatment of labour supply discusses its growth at both the extensive and intensive margins. Digging the stereotypical hole, for example, could be accomplished by several workers yielding shovels or by a single backhoe with an experienced operator. The former is the extensive labour supply, while the latter is the intensive. Both approaches result in the same outcome, but are achieved differently, and the implications for increasing labour supply are different in each case.

1 For some examples of these in the academic literature see Laporte, et al. (2014) and Foster and Barnetson (2017). For examples from the press at the time see Curry (2014) and MacGregor (2014).

2 Figures are from Statistics Canada Table 14-10-0287-01 (formerly CANSIM Table 282-0087, accessed June 10, 2019).

Extensive growth is the result of increasing the number of individuals who may potentially enter the labour force. In other words, the overall population has to increase. This can be accomplished through a combination of domestic births, interprovincial migration, and immigration.

The intensive margin increases the productivity of those already in Alberta. In general, this means increasing the intensity of labour force and/or increasing the productivity of existing workers. Similarly, underrepresented groups such as Indigenous peoples may be engaged more effectively. Productivity could also be enhanced by increasing the breadth and depth of skills that Albertans possess.

The following sections analyze the potential of first the extensive and then the intensive approaches as a means to ensure sufficient labour supply as the province continues to emerge from the recession, followed by conclusions emerging from this analysis.

2. Growing the Population to Increase Labour Supply

Increasing labour supply at the extensive margin involves increasing the population, and there are but three sources to achieve this: higher birth rates, increased numbers of migrants arriving from other Canadian provinces, and increased immigration.

Birth rates are below replacement levels

After peaking in 2008 at 1.68, the total Canada-wide fertility rate per female in 2017 was 1.49, the same as it was in 2000. While slightly higher in Alberta with a rate 1.62 in 2017—down from its peak of 1.92 also in 2008³—these figures are still well below the oft-cited replacement rate of 2.1, which last occurred in Canada in 1971 (Milan 2014).

Barring a radical change in the fertility patterns, increasing the labour supply via natural increases is a nonstarter and Alberta therefore needs to look outside of its borders to increase labour supply at the extensive margin.

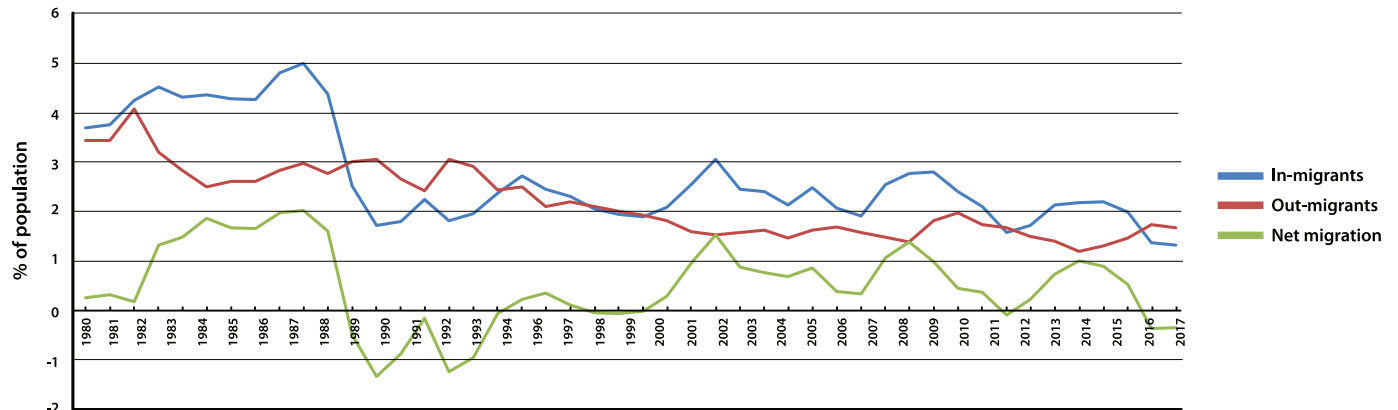
Interprovincial migration is on the decline

For Alberta, as for all regions in Canada, the ability to satisfy high labour demand is no longer likely to occur through interprovincial migration, as data at the national level reflects a downward trend. In 1971, about 1.8 percent of the Canadian population moved between provinces annually. Interprovincial migration hit a peak of 1.95 percent two years later, and has since steadily declined, reaching 0.79 percent in 2016.⁴

For a time, the extremely high earnings and benefits given in Alberta resulted in-migration from other provinces, reversing the general nationwide trend. But as illustrated in Figure 1, while Alberta has higher-than-average interprovincial migration rates, it has still experienced the same downward trend in in-migration. In the 1970s, Alberta attracted four to five percent of its population annually, compared to about two percent more recently. Out-migration has also trended downwards over this period. As a result of these two forces, net migration to Alberta has been less than one percent of the population since 2006, and has been negative since 2015.

³ Rates are calculated from Statistics Canada Table 13-10-0418-01 (formerly CANSIM Table 102-4505, accessed 30 October 2018).

⁴ These numbers are calculated from Statistics Canada Tables 17-10-0005-01 and 17-10-0015-01 (formerly CANSIM Tables 0051-0001 and 051-0012, respectively, accessed 30 October 2018) by dividing the number of migrants from July 1 through June 30 with the population figures from July 1 of the previous year. For example, the figure for the year 2017 is calculated by dividing the total flow of immigrants between July 1, 2016 and June 30, 2017 and dividing by the total population as of July 1, 2016.

Figure 1: In-migration, Out-migration, and Net Migration as a % of Population, Alberta, 1972–2017

Source: Author's calculations from Statistics Canada Tables 17-10-0005-01 and 17-10-0015-01 (formerly CANSIM Tables 051-0001 and 051-0012, respectively)

Contributing factors to this slide in Alberta have been more Canadians migrating within their own province (Meredith 2014b) or living in one province and working in another, i.e., interprovincial employees, which accounted for between three and six percent of the provincial workforce before the most recent downturn (Morissette and Qiu 2015; Laporte et al. 2014). The Fort McMurray fires of May 2016 also contributed to this exodus. Even if the proportion of interprovincial workers were to return to previous levels, this would still represent a relatively small proportion of the Alberta labour force.

Why this decline in interprovincial migration? While Bernard, et al. (2008) show that individuals in slack local labour markets are inclined to migrate to another province, Bernard (2011) refines this argument by saying that changes in regional economic conditions have a negligible impact on residents migrating, except when their own income is affected, in which case the probability increases. Indeed, the fact that there has been a convergence in labour market conditions between provinces has been cited as the reason for this decline (Cross 2015; Meredith 2014b; Carey 2014). Other important factors contributing to this decline are the aging population (Cross 2015), increased homeownership (Carey 2014), and the regional differences in the incentives of the employment insurance program (Carey 2014; OECD 2014).

Credential recognition and differences in occupational regulations are also impeding the flow of workers between provinces. Burleton, et al. (2013) note that governments are attempting to remove barriers to interprovincial migration through initiatives such as the Red Seal program. In 2009 provincial and territorial governments agreed to update the labour mobility chapter of the Agreement on Internal Trade—replaced in 2017 by the Canadian Free Trade Agreement—to ensure that professional certificates and licenses are recognized across jurisdictions. Still, progress to harmonize occupational regulations and licensing requirements has been slow (Meredith 2014b). Carey (2014) notes the Canadian government has taken

a variety of steps to reduce the regulatory barriers, and that the recognition of Red Seal trades was an early movement in this direction. The New West Partnership Trade Agreement, an accord between the governments of British Columbia, Alberta and Saskatchewan which has been fully implemented since July 1, 2013, creates Canada's largest, barrier-free, interprovincial market, and is also designed to facilitate labour mobility. Research on the effects of these programs, however, is lacking.

Another factor obstructing interprovincial migration may be the Temporary Foreign Worker Program (TFWP). Gross (2015) says that the program is hindering the reduction of interprovincial unemployment gaps by limiting employers' incentives to domestic workers to migrate and fill job vacancies. This may be especially so if the wages of temporary foreign workers (TFWs) have been set too low, which was in fact allowed by the federal government in some cases until "bad press" on the program (largely because of below-market wages and several reported cases of abuse of workers) forced the imposition of new rules to ensure equal wages for both foreign and domestic workers and better working conditions in some cases.⁵

In sum, interprovincial migration has been decreasing over the past few years for a variety of reasons, and this trend is not likely to change. As such, interprovincial migration cannot be counted on as an important component of labour supply growth in Alberta.

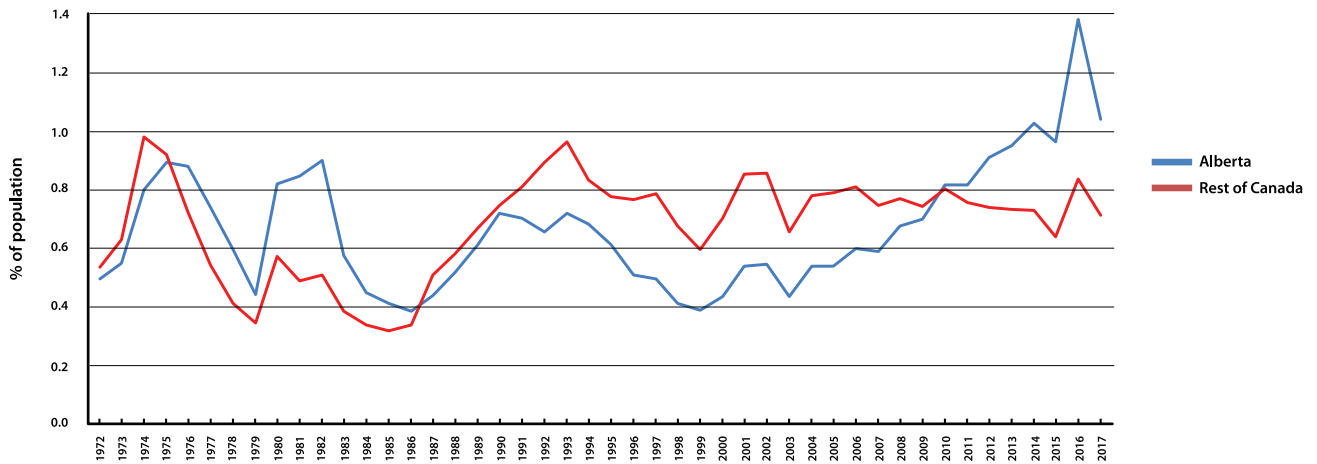
Immigration shows promise as a stable source of labour

Immigration is becoming an increasingly important source of labour force growth throughout Canada. Several studies (e.g., Kustec 2012; Worswick 2013b) have noted that it will continue to play an increasingly important role in expanding the labour market, but cannot do so by itself (Picot and Sweetman 2012). Kustec (2012) agrees but adds that immigration programs (both temporary and permanent) can prove to be an invaluable tool for dealing with shortages in specific occupations and regions.

These changes in the structure of the labour force have also been felt in Alberta. Barnetson and Foster (2014) note that the composition of migration to Alberta has changed over the last 40 years. From 1975 to 1982, and then beginning again in 1998 (see Figure 1), Alberta saw significant in-migration caused by the oil-driven economic boom, with the majority of workers coming from other parts of Canada. By the 2000s, however, the net interprovincial migration of Canadian workers was declining, with much of this decline offset by growth in permanent immigrants and TFWs.

Figure 2 shows this trend by charting permanent immigration to Alberta and the rest of Canada (which is all of Canada less Alberta) as a percentage of population. From the early-1970s to the beginning of the 21st century, immigration was volatile. This changed following the recession of the early 2000s as immigration to Alberta as a percentage of the population increased by about 2.5 times, hitting a maximum of over one percent of the population in 2014 and again in 2016 and 2017.⁶

Figure 2: International Migrants to Alberta and the Rest of Canada as a % of Population, 1972–2017



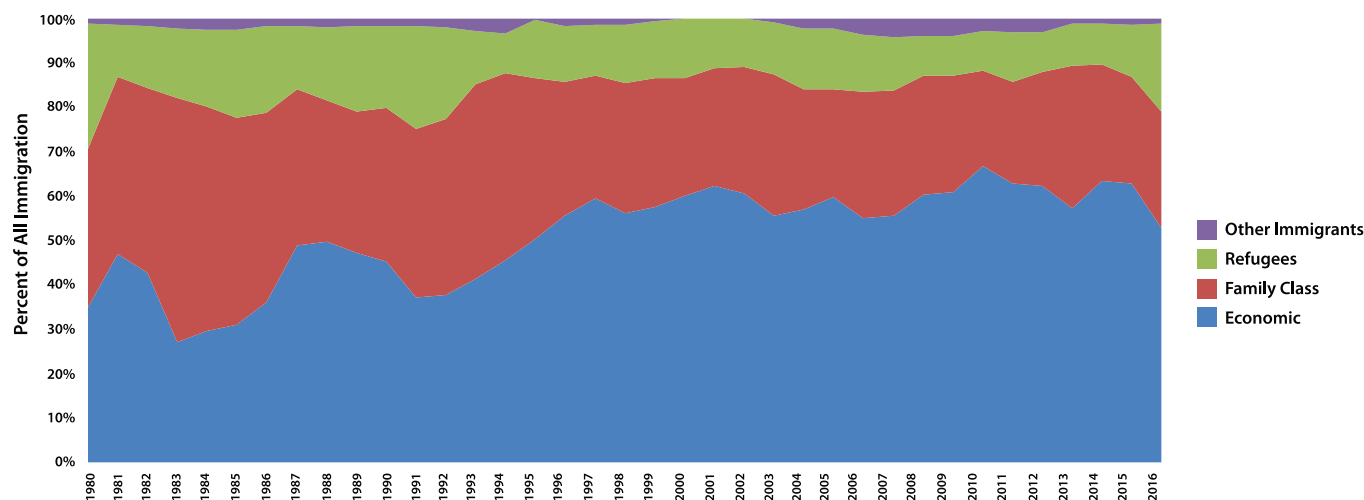
Source: Author's calculations from Statistics Canada Tables 17-10-0005-01 and 17-10-0014-01 (formerly CANSIM Tables 051-0001 and 051-0011, respectively).

Canada has three main avenues leading to permanent resident status: the economic class, the family class, and refugees. In broad terms, the economic class is comprised of those (along with their spouses and dependents) who are admitted to Canada based on their ability to contribute to the Canadian economy by meeting labour market needs or their potential to build or invest in a business. Immigrants in this group include those who generally have high levels of formal education or a skilled trade, as well as those who have Canadian work experience (i.e., the Canadian Experience Class) or were initially admitted as caregivers after having served in this capacity for a period of time. The economic class also includes individuals nominated by the provinces, which set their own criteria, but ultimately the federal government makes the final selection decision. The family class includes family members sponsored by a Canadian citizen or permanent resident. Refugees are those who were admitted as permanent residents because of “a well-founded fear of persecution,” are affected by a civil war or armed conflict, or have suffered a serious violation of their human rights. Some refugees are in Canada when they apply for refugee status, while other are referred to Canada as refugees by the United Nations Refugee Agency or other agencies. Some refugees are government-sponsored, others are privately sponsored, while a small number receive assistance from both.⁷

⁷ For more explanation of these categories, see <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=323293&CVD=323294&CLV=0&MLV=4&D=1> (accessed April 27, 2019).

The economic class (both principal applicants and spouses and dependents) accounted for 62.7 percent of all permanent immigrants in 2015, up from about 35 percent in 1980 (see Figure 3) and then decreasing in 2016, the result of the large numbers of Syrian refugees admitted in that year.⁸ Family class and refugees, by contrast, have seen a declining trend over this period.

Figure 3: Immigration Categories, Permanent Residents, Canada, 1980–2016

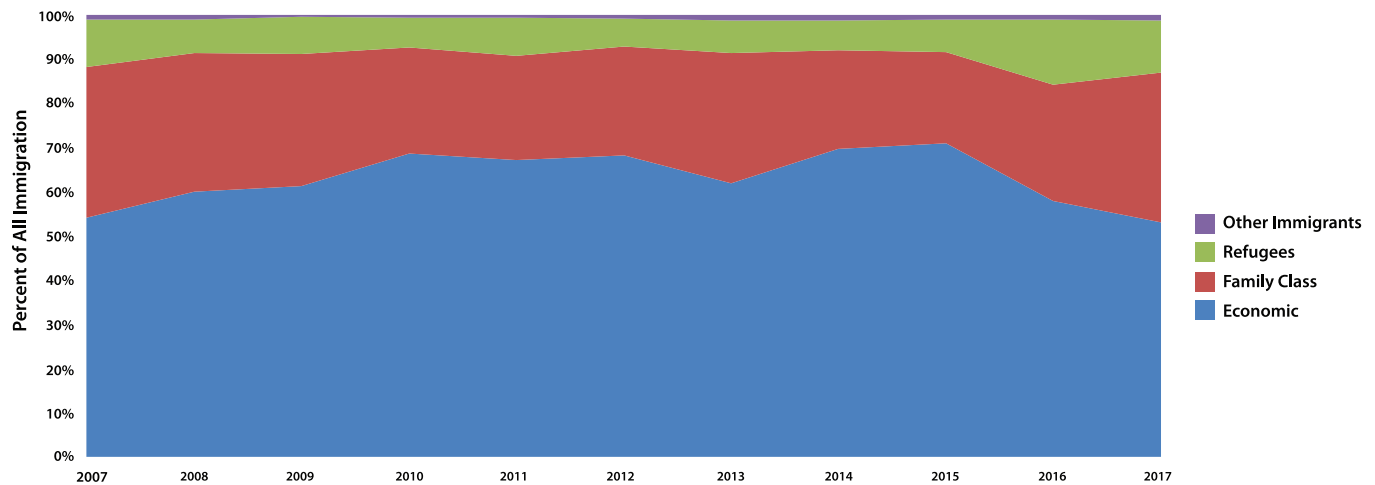


Source: Author's calculations from IRCC (2016b, 2017a)

In Alberta, a larger proportion of permanent residents arrived in the economic class before the oil-price drop. In 2014, for example, 69.7 percent of permanent residents were in the economic class, with 21.1 percent and 6.7 percent arriving as family class and refugees, respectively (Figure 4).⁹ Not surprisingly, the proportion in the economic classes has since fallen to 53.1 percent in 2017, owing again to the Syrian refugees but also to a drop of about one-third in the number of economic class immigrants from about 33,000 in 2015 to 22,000 two years later.

⁸ These figures include both principal applicants and spouses and dependents. The actual total number in the economic class fell from 170,375 in 2015 to 155,994 in 2016.

⁹ The “other” category accounted for 1.5% of permanent immigration to Alberta in 2014.

Figure 4: Immigration Categories, Permanent Residents, Alberta, 2007–2017

Source: Author's calculations from IRCC (2017b, 2018)

This focus on economic class immigrants is important to the current analysis because those in this category (at least the principal applicants) have been admitted based on their labour market characteristics—factors such as age, education, language ability, and secured employment—each of which are then awarded “points,” with a certain number of points needed to be granted permanent resident status.¹⁰ This group of immigrants is expected to be successful in the labour market, more so than the other two major classes which are admitted for different reasons. Given the economic downturn in Alberta, it is not surprising that there has been a large drop in economic class immigrants arriving in Alberta.

The work of Hou (2013) reflects much of the recent work conducted on the labour market assimilation of immigrants. Specifically, he addresses the earnings of recent immigrants relative to the Canadian-born since the 1980s. He finds that in the 1980s there was a larger unadjusted earnings gap that was mainly due to a significant shift in the source regions of new immigrants. This compositional shift was largely offset by increasing education among immigrants in the 1990s. In the early 2000s it was the IT bust—along with a large concentration of immigrants in IT occupations—that was the primary explanation for an increase in this earnings gap.

More specifically, in terms of the labour market performance of immigrants admitted under the economic class—those expected to perform well—the evidence does show that this segment of immigrants to Canada does tend to outperform those in other admission categories (Sweetman and Warman 2013; Mueller and Truong 2019; Warman et al. 2019).

¹⁰ The points system was introduced in the 1960s and has undergone several changes, largely in response to new research which points to immigrant characteristics which are rewarded in the labour market. The importance of these characteristics is emphasized in the new Express Entry System (see page 18).

Not only are the wages of recent cohorts lagging, but the labour force participation rate of immigrants is typically about five percentage points less than for those born in Canada (Cross 2015). And even when immigrants are working, they may be doing so in jobs for which they are overqualified. Both of these measures do tend to improve with time spent in Canada but there are still many problems with credential recognition which prohibit immigrants from working to their full potential.

That immigrants have not been performing as well as they have in the past has resulted in policy changes over the years to better “match” immigrants to the needs of the labour market. While policy which awards more points for favourable labour market characteristics was designed to do this, these points simply reflect positive labour supply characteristics and the admission of these individuals, even if highly skilled in their home countries, is no guarantee that these will be rewarded in Canada. Newer immigration programs have been implemented to overcome this issue.

Provincial Nominee Program and Canadian Experience Class

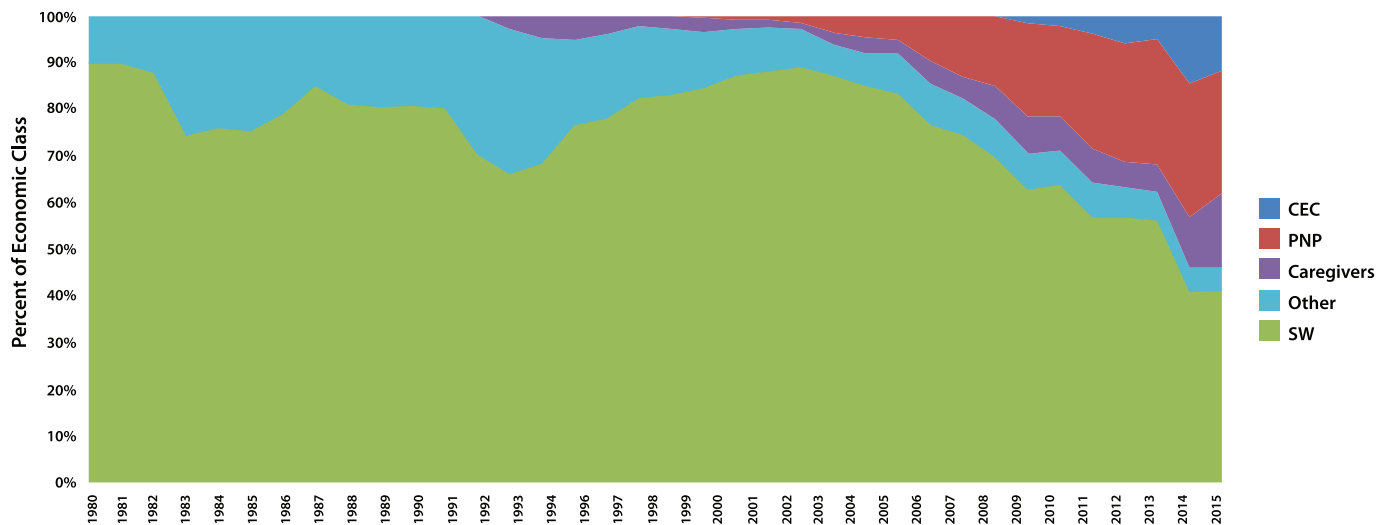
The Provincial Nominee Program (PNP)—which has been in existence since the late-1990s—makes provinces an important player in what was until then mainly a federal immigration program. Under the PNP, provinces nominate individuals who then go through the usual Immigration, Refugees and Citizenship Canada (IRCC, formerly CIC) screening process for permanent residency, with the final decision made by the federal government.

The Canada Experience Class (CEC)—implemented in 2008—allows those who have been in Canada legally, have one year of full-time (or equivalent) work experience in Canada within the past three years, and meet language requirements, to apply for permanent residency from within Canada. However, since the CEC is limited to those with high skills, the only way for lower-skilled foreign workers to currently apply for permanent residence status is through the PNP (Vineberg 2010). Indeed, the PNP by design is tailored to provincial labour market needs. For example, the Alberta PNP allows the nomination of low-skilled and semi-skilled workers in certain occupations.

Both the absolute number and the proportion of immigrants admitted under the PNP and the CEC has been increasing, and this has been at the expense of other skilled workers. In 2015 a total of 44,625 individuals (20,928 principal applicants accompanied by 23,597 spouses and dependents), or 16.4 percent of total permanent residents, were admitted as provincial nominees, a large increase considering the program admitted its first individuals in 1996 (see Figure 5). The number admitted under the CEC has also increased from nil in 2008 to 20,056 in 2015 (11,247 principal applicants and 8,809 spouses and dependents).

As a percentage of the economic class (Figure 5), PNPs comprised 26.1 percent of all admissions in 2015, increasing from 5.2 percent in 2005. Baglay (2012) notes that provincial nominees are displacing those in the Federal Skilled Worker Program (FSWP), as the latter's targets have been decreasing. Similarly, those admitted under the CEC program has increased to 11.8 percent of those in the economic class in 2015, further squeezing out those in the skilled worker (SW) class. Indeed, Figure 5 shows that the proportion of SWs has more than halved from an 89 percent share in 2002 to just 42 percent in 2015.

Figure 5: Immigration Categories Within the Economic Class, Canada, 1980–2015



Source: Author's calculations from IRCC (2016b).

For Alberta, calculations using IRCC (2016a) data show that 26.3 percent of permanent residents admitted to Alberta in 2014 were under the PNP, compared to 18.3 percent for all of Canada.¹¹ Alberta accounted for 23.5 percent of all PNP admittances to Canada, compared to only 16.3 percent of all immigrants. Similarly, those in the CEC were 15.7 percent of all permanent residents to Alberta, compared to 9.1 percent for all of Canada. In that year, Alberta took in 28.1 percent of all permanent residents who arrived under the CEC. Bonikowska, Hou and Picot (2015) also show that changes in immigration programs (especially the PNP) played an important role in increasing the number of immigrants coming to Alberta, especially those locating outside of Calgary and Edmonton. More recently, data for 2017 (IRCC 2018) show that both the PNP and the CEC have seen their numbers decrease in Alberta following the recent recession.

¹¹ The astute reader will notice that that the numbers in this paragraph larger than those in the preceding paragraph since these figures are the percentage of *permanent residents* admitted under the PNP and CEC, whereas in the preceding paragraph these numbers are as a percentage of those in the *economic class* (a subcategory of permanent residents admitted).

While the number and proportion of immigrants admitted under both the CEC and PNP have increased (at least until recently in Alberta), it is important to see how the labour market experiences of these workers compare to others. The evidence to date shows that they appear to be performing well, as expected, since they are chosen largely to accommodate demand in regional labour markets. Sweetman and Warman (2014a) observe higher initial earnings and employment probabilities for those in the PNP compared to those in the skilled worker (SW) class. Even at four years after landing they are performing at least as well as SWs. Pandey and Townsend (2011) conclude that the PNP was effective at both attracting and retaining immigrants to smaller Canadian provinces (including Alberta). Flynn and Bauder (2015) show that the retention rates of PNs (principal applicants) were highest in Alberta and British Columbia over the years 2000–2008 (95.3 percent and 96.4 percent, respectively), likely due to the strong labour markets in both provinces. Pandey and Townsend (2013) find that PNs experience higher entry earnings compared to SWs, certainly as a result of most provinces requiring that PNs hold a job offer prior to landing.

Hou and Picot (2016) show that PNs who arrived in the 2000s have higher earnings than SWs, mainly because their pre-landing Canadian work experience. The Canadian work experience variable that they use captures at least three effects. First, the direct effect of Canadian work experience, as employers appear to be more willing to pay for this than foreign work experience. Second, a selection effect since employers are willing to change temporary to permanent status for their better employees. And third, many workers on temporary visas who attained permanent status were already employed in high-paying jobs.¹²

While there is only sparse evidence about the labour market outcomes of PNs in Alberta, the fact that so many have chosen Alberta, coupled with the fact that they do tend to have better outcomes in terms of employment and wages, does bode well for the province.

¹² Other work which supports these findings include CIC (2011) as well and Zhang (2012) for British Columbia and Carter, Pandey and Townsend (2010) for Manitoba.

Although there is little evidence on the labour market outcomes of those admitted under the CEC, that this group does have Canadian experience means that they are likely to perform well. Indeed, the CEC was designed to counter many of the issues discussed above regarding the poor labour market outcomes of permanent immigrants: the lack of Canadian human capital, poor language abilities, and the lack of Canadian networks and knowledge—deficiencies which make human capital less productive (Sweetman and Warman 2010a). Sweetman and Warman (2014b) find that those who were admitted permanently after being on a work or student visa performed better in terms of employment and earnings compared to those admitted as SWs but without Canadian education or experience. That fact that CECs also have more stringent language requirements, coupled with the evidence that host-country language ability is highly rewarded (Goldmann et al. 2015), also bodes well for this group.

Temporary foreign workers

While in the past most admitted temporarily were agricultural workers and others considered low-skilled workers, today they arrive with varying degrees of skill. Although often lumped together, since mid-2014 temporary foreign workers enter under the Temporary Foreign Worker Program (TFWP) or the International Mobility Program (IMP). The former, which has undergone a number of iterations, is generally for low-skilled workers who are admitted at the request of employers to fill acute labour shortages, and each must receive a positive Labour Market Impact Assessment (LMIA) before receiving a work permit. The LMIA is issued by Employment and Social Development Canada (ESDC) after demonstration by the employer that there are no qualified Canadian residents to fill job vacancies. Once issued, work permits are job-specific, meaning permit holders are unable to move between employers without a new permit.

The IMP, by contrast, is generally for high-skilled workers and is the result of various international agreements (e.g., NAFTA). Workers admitted under the IMP do not require a LMIA, nor are their work permits generally attached to a single employer. These permits are not based on employer demand, rather individuals are admitted because they are deemed to be in the national cultural and economic interest (Government of Canada 2014). As of December 31, 2016, 51,170 unique individuals held valid work permits under the TFWP and an additional 288,325 held these permit under the IMP (IRCC 2017c). A nontrivial number (some 41,632) holders of TFW and IMP work permits transitioned to permanent resident status in the economic class in 2016 (IRCC 2017a).

Alberta has been a large recipient of both types of workers. Table 1 shows that as of December 31, 2013 (at its peak), there were 40,786 TFW permit holders in Alberta, more than a third of the Canadian total. By contrast, the number of IMP permit holders in Alberta peaked at the end of 2014 with 39,389 permit holders, only about 16 percent of the total in Canada, but still a disproportionately large share relative to the population. Not surprisingly, these numbers have decreased dramatically between their peaks at the end of 2016: about a 75 percent decrease in the case of TFW work permits and a 30 percent drop in the case of IMP work permits.

Table 1: Temporary Foreign Worker Program (TFWP) and International Mobility Program (IMP) work permit holders with a valid permit on December 31, Canada and Alberta, 2007–2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TFWP - Canada	80,052	113,239	115,938	95,813	87,734	91,875	107,921	95,538	60,097	51,170
TFWP - Alberta	20,383	35,512	38,283	30,072	28,075	29,697	40,786	35,556	18,027	10,768
Alberta %	25.5	31.4	33.0	31.4	32.0	32.3	37.8	37.2	30.0	21.0
IMP - Canada	92,927	115,729	139,928	158,993	186,670	207,904	235,157	255,248	249,472	288,325
IMP - Alberta	14,746	18,966	21,301	22,422	25,595	29,806	36,860	39,839	32,117	28,371
Alberta %	15.9	16.4	15.2	14.1	13.7	14.3	15.7	15.6	12.9	9.8

Source: IRCC (2017c) and author's calculations.

Despite controversy surrounding the treatment of some workers under this program, evidence to date suggests that these programs have been successful in terms of the employment and wages of the foreign workers relative to the experiences of recently landed permanent residents (Warman 2009, 2010; Thomas 2010). This is not surprising since these workers are recruited to fill specific job vacancies. In the longer term, they are also likely to continue perform well in the labour market as they benefit from the Canadian experience they have acquired. Hou and Bonikowska (2015) caution, however, that temporary foreign workers who are recruited to work in low-wage jobs may have difficulty moving into high-paying jobs after becoming permanent residents.

Worswick (2013a) notes (and as shown above on page 15) many former TFWs have obtained permanent resident status, and that the two-step immigrant process—whereby individuals come to Canada and demonstrate their ability to work in the Canadian labour market before applying for permanent residence status—is an effective method of selection for a share of landed immigrants. He notes that a *limited* TFW program is therefore likely to be beneficial to Canada, but cautions that dramatically increasing the numbers of TFWs coupled with a weakening Canadian economy is cause for concern. The complaint against TFWs is that they may stifle wage changes, which act as an important signal in the allocation of labour resources (Finnie

et al. 2018). While TFWs are a small percentage of the labour force (even in Alberta), they do tend to be concentrated in just a few regions and occupations (Thomas 2010; Gross 2014). Gross (2015) notes that this has resulted in unemployment of some domestic workers in Alberta and British Columbia. While Beine, et al. (2016) warn that TFWs can reduce internal mobility and decrease incentives for existing Canadians to invest in certain skills.

Like the CEC and the PNP, the TFWP provides a market-based solution to attracting international migrants who—if successful, qualify for admission, and wish to do so—may remain in Canada permanently. It is noteworthy that most of the literature on TFWs comes from the period when the program was expanding rapidly, and often focused on places like Alberta where the thirst for these workers was seemingly unquenchable. Whether they are continuing to perform well in the current contracting Alberta economy remains to be seen. Recent data does show that the number of non-permanent residents in Alberta has decreased from a peak of 110,483 in the fourth quarter of 2014 to 75,681 in the second quarter of 2018.¹³

Foreign students

Foreign students are an important source of potential labour in both Canada and Alberta. Lu and Hou (2015) show that the number of foreign students admitted to Canada was about 31,000 per year between 1990 and 1994, more than tripling to about 96,000 per year between 2010 and 2013. Students admitted in the latter period were more likely to be 18–24 (compared to less than 18) and studying at the bachelor level or above. Between 20 percent and 27 percent of these students became permanent residents in the 10 years following their first study permit, depending on the arrival cohort. Those who came most recently (2005–2009), however, were less likely to transition than those who arrived between 1990 and 1994, with those from countries with a lower GDP per capita and/or a higher level of education more likely to transition. The Canadian government hopes to double the number of international students by 2022 (Lu and Hou 2015).

IRCC (2017c) data show that Alberta has not experienced the same growth in foreign students. Between 2007 and 2016, the number of individuals with a valid student permit increased by 130 percent from 179,146 to 412,101 for all of Canada, but only increased by 80 percent for Alberta (from 13,071 to 23,494). Stated differently, as of December 31, 2016, Alberta had only about 5.7 percent of all international students with valid permits, despite having a share of the Canadian population more than twice as large. The reasons for this are unclear and may point to the lack of effort to recruit international students and, relatedly, that the Alberta population is still young and thus institutions may not need to look for alternative sources of students to fill spaces.

¹³ Calculated from Statistics Canada Table 17-10-0023-01 (formerly CANSIM Table 0051-0020, accessed 1 November 2018).

Landed immigrants who first arrive as international students have some advantages over other immigrants: they enter at a younger age, their credentials are easily understood by Canadian employers, they tend to be better at one or both official languages, and they are likely to have better knowledge of the Canadian labour market and social networks (Lu and Hou 2015). The fact that international students are able to work while studying in Canada also increases their Canadian human capital. Hou and Bonikowska (2015) note that host-country education doesn't necessarily give immigrants an advantage, although it is most likely to do so when accompanied by skilled work experience in the host country.

Thus, similar to temporary foreign workers, foreign students are likely to perform well in the labour market. Unlike TFWs, however, Alberta has not attracted a large number of these students. This situation may change if the provincial government continues to freeze post-secondary education tuition for domestic students, meaning that foreign students may be an increasingly attractive revenue source for the province's post-secondary education institutions. Similarly, the number of PSE spots available for foreign students may increase as the population of young Albertans who normally fill these spots declines in the future.

In sum, it is important to underline the key role of employers in the immigration selection process. The labour success of TFWs, CECs, PNs and foreign students is largely as a result of employers selecting these immigrants. As Hou and Bonikowska (2015:9) note:

By comparison, in the supply-driven system, permanent residency [through the former points system] is offered at admission to applicants whose human capital characteristics are considered to offer high potential for labour market success but who have not been directly screened and tested by employers.

Clearly, Canadian experience is valued by employers. This is not to imply that employers should have an unlimited role in the immigration process, as they may overuse the system in an effort to keep costs down. This would undoubtedly have implications for, inter alia, the mobility of labour within Canada, the development of domestic human capital, and the adoption of capital-intensive technologies.

The importance of Canadian experience in determining labour market success is being put into policy. In January 2015 the "Express Entry System" was introduced under the FSWP, the CEC, and the Federal Skilled Trades Program (launched in 2013). Provinces are also permitted to recruit candidates from this system under the PNP. Candidates who meet certain criteria regarding their education, experience, language abilities, etc. can submit their profiles to the express-entry pool. Arranged employment now

counts as 50 percent of the total points awarded, compared to 10 percent under the former system. The best candidates in this pool who are offered a job by a Canadian employer, nominated by a provincial government, or selected by the Canadian government without a job offer, are invited to apply for permanent residency. Approved applicants receive permanent resident status within six months. Canadian employers must still normally receive a LMIA before hiring most types of immigrants. This system is different from the former points system in that it is not an “up-and-over” system whereby potential immigrants simply need to meet a certain point threshold to be admitted; rather individuals are competing against the others in the pool over the year-long period in which their applications are active. If not invited to apply for permanent residency in this period, they must reapply the following year.

Beine et al. (2016) note that the new system is very much employer-demand driven. While this is a positive development in the sense that integration of the new permanent residents will certainly be easier as a result of the arranged employment, the authors do warn that filling job vacancies with permanent immigration instead of TFWs to satisfy acute labour shortages creates “an intertemporal labour mismatch,” since current labour market needs may not be the same as future needs. Furthermore, by focusing on the short-term, those with skills that may be beneficial to the country in the longer-term would likely be rejected because of the large percentage of points given to pre-arranged employment.

3. Getting the Most from the Alberta Population

There are limited policy levers to increase the Alberta labour supply through natural increases, interprovincial migration, or immigration. The Alberta government cannot force the population to have more children, nor can it mandate that individuals from other jurisdictions move to the province (although various incentives might help in either case, the effects are likely to be minimal). Similarly, the provincial government can influence immigration policy to attract immigrants through the PNP, but ultimately the decision to admit these individuals lies with the federal government.

This leaves Alberta with the more direct (and arguably promising) option of better utilizing the existing and potential talent of its current population. Or, in more technical terms, increasing the labour supply at the intensive margin. However, there is very little room to increase the overall labour supply in Alberta. Even with the recent economic slowdown, as of September 2018 Alberta still had the highest overall labour force participation rate (LFPR) in the country: 72.2 percent versus 65.4 percent for all of Canada, continuing a pattern which goes back as far as 1976. And this Alberta rate in the most recent data is 3.2 percentage points above the 69.0 percent in Saskatchewan, the second highest rate in the country.¹⁴ Alberta is the region with the lowest median age in the country (with the exception of the Northwest Territories and Nunavut) and this young population could distort LFPRs. This does not seem to be the case however, since the LFPR pattern previously shown also generally holds if the data are disaggregated into distinct age groups.

Increasing the participation of women

Despite the high overall rates, there may still be room to increase female LFPR. Uppal (2016) shows that Alberta had the highest proportion of dual-earner families in 1976, but by 2015 it had the lowest proportion of dual-earner couples (64 percent compared to the national average of 69 percent). According to Cross (2015), the relatively high family incomes in Alberta may have undermined the rates among women, as participation rates are lower than average when the spouse earns more than the \$75,000 year. Cross further opines that if mothers in Alberta with children had the same LFPR as Quebec, Alberta's labour force would increase by 32,000. The recent economic downturn in Alberta means that there will be more dual-earner families, as both the employment rates and incomes decrease among the primary income earner. Furthermore, a driver of the high female LFPRs in Quebec has been the subsidized childcare in that province (Arsenault et al. 2018). What effect the less comprehensive and more recent Alberta program introduced by the NDP government will have on female LFPR is unclear at this point, but there does not appear to be any uptick in this metric to date.¹⁵

¹⁴ Data are from Statistics Canada Table 14-10-0287-01 (formerly CANSIM Table 287-0087, accessed 28 April 2019). This result also holds for both males and females when the data are disaggregated. In September 2018, the male participation rate in Alberta stood at 78.2 percent, 8.7 percent higher than the national average and 4 percentage points higher than the rate in Saskatchewan, the province with the next highest rate. For females in this same month, the participation rate in Alberta was 66.2 percent, almost five percentage points higher than the national average and 2.6 percentage points higher than the rate for females in Saskatchewan.

¹⁵ Recent data, for example, do not show any noticeable increase in the female LFPR (again, see Statistics Canada Table 14-10-0287-01, formerly CANSIM 282-0087). However, more research in this area is certainly warranted to disentangle the various influences on the female LFPR.

Indigenous Canadians as an untapped labour resource

Indigenous Canadians remain a large and underrepresented group in the Alberta labour market. This is important for Alberta, which has a large working-age population of off-reserve Indigenous Canadians; as a proportion of the working-age population (i.e., those aged 15 and over), Alberta at 4.9 percent ranks third behind Manitoba (11.6 percent) and Saskatchewan (9.7 percent). Furthermore, this share has been increasing since 2007, when these figures were 4.0 percent, 9.7 percent and 8.3 percent, respectively.¹⁶

While numbers from 2015 show that the Indigenous population in Alberta has the second-highest labour force participation rate in the country among those in the 24–54 age group—79.0 percent compared to 81.9 percent in Atlantic Canada and a national average of 75.9 percent—this figure is still nine percentage points less than the 88.0 percent among the province's non-Indigenous population. Similarly, the employment rate for this group at 69.6 percent lags that for the non-Indigenous Alberta population by 13.8 percentage points. Conversely, the unemployment rate for the Indigenous population is more than double that for the non-Indigenous population: 11.9 percent and 5.2 percent, respectively.¹⁷

The Indigenous population is younger on average than the non-Indigenous population in Alberta: 25 versus 37 years. Furthermore, this population lags behind the rest of Albertans aged 25–64, having only 48.4 percent post-secondary attainment rates compared to 62.8 percent of the non-Indigenous population.¹⁸ Munro (2014) shows that the literary, numeracy, and problem-solving skills of Indigenous Canadians are also lower than those of non-Indigenous Canadians.

Taken together this suggests that increasing the productive abilities of this group could be an important labour source for Alberta.

Older Canadians as an untapped labour resource

Labour supply could also be enhanced by individuals spending a longer time in the labour force. Cross (2015) argues that older people are underutilized in Canada, although LFPRs for older Albertans are the highest in the country. Still, as the aging population continues to live longer and healthier lives, their labour could continue to be an important source of workers. Working in Alberta's favour is the fact that in 2014 only 11 percent of Alberta's population was aged 65 or older—the lowest in the country—compared to a national average of 16 percent. (Martel 2015).

¹⁶ These figures are for 2017 and calculated from Labour Force Survey data from Statistics Canada Table 14-10-0364-01 (formerly CANSIM Table 282-0226, accessed 1 November 2018).

¹⁷ Figures are from Moyser (2017). Note that these are higher than the figures presented on the previous page since only those prime-working-age individuals are included here (i.e., ages 25–54), whereas the previous figures were for the entire population aged 15 years and older, where participation rates are lower because young people are more likely to be attending school while older people are more likely to be retired (and therefore not in the labour force in both cases).

¹⁸ This is the self-identified Indigenous population. Figures are from Alberta Advanced Education (2014) and based on the 2011 National Household Survey.

Recognizing credentials

The recognition of credentials is a part of the broader issue of skills mismatch which can occur when the number of people and jobs are equal but with skills are not appropriately matched. This phenomenon includes over- and under-education and over- and under-qualification. Several recent studies (Plesca and Summerfield 2014; Uppal and LaRochelle-Côté 2014; Meredith 2014a; Burleton et al. 2013; Drummond 2014) suggest that, while there are isolated cases of job mismatches, these are not prevalent in Canada. Of course, until recently Alberta has been on the front line of these mismatches.

Credential recognition is a potential issue for anyone entering any province, whether from another province or from abroad. New immigrants are having a problem getting their credentials recognized and are often overqualified for the work that they perform. This represents a misallocation of human resources and is one reason why the earnings of recent immigrants are lagging. According to Burleton, et al. (2013), about 80 percent of newcomers to Canada had high-skilled jobs before arrival, but only about 40 percent had these jobs six months after landing, increasing to about 55 percent after four years. Similarly, Uppal and LaRochelle-Côté (2014) note that some 43 percent of female and 35 percent of male of those with degrees obtained outside of Canada or the US were in occupations that required a high school education or less. While sometimes this outcome is chalked up to foreign qualifications being substandard, often the problem is the result of a lack of appropriate information regarding these qualifications or the inability of foreigners to work in regulated professions.

This problem appears to be greater still amongst those in regulated occupations, and it is likely becoming more problematic (Sweetman, McDonald and Hawthorne 2015). Contemporaneously, there has been an increase in the immigration of skilled individuals from developing countries and the confluence of these two factors has resulted in a significant number of immigrants being employed outside of their areas of training. It also seems to be more acute for those within regulated professions. Zietsma (2010), for example, looks at 15 regulated occupations and finds that there are proportionately more immigrants trained for these occupations than native-born Canadians and that immigrants in a regulated field with a degree from outside of Canada had higher unemployment rates and lower participation and employment rates compared to those who studied in Canada.

Limiting their analysis to international medical graduates (IMGs), McDonald, Warman and Worswick (2015) compare occupational outcomes in the US and Canada. They find that IMGs are less likely to be employed as physicians in Canada, where the points system assesses immigrants. In the US it is employer nominations that provide the more important entry path. The difference between the two countries is especially large for those with credentials from non-English speaking countries. In Canada, IMGs from non-English language countries are more likely to be employed in low-skill occupations or not working than are those with medical degrees earned in Canada.

Owusu and Sweetman (2015) find that place of training, and not place of birth, seems to drive the gaps in these regulated occupations. Girard and Smith (2013) also report the immigrants are less likely than the Canadian-born to work in regulated occupations, with those educated in Asia, Latin America and the Caribbean the least likely—not surprising considering that education obtained in these areas is likely less familiar to most licensing bodies and employers. And the difficulty of dealing with foreign credentials has likely increased along with the diversity of source countries. This could be especially problematic in the case of Alberta since the province is second only to Quebec in both the number and the proportion of occupations that are regulated. Furthermore, many of these regulated occupations are unique to Alberta and so training opportunities outside of the province may not exist.

Matching employees in regulated professions seems to be more of a problem in Alberta. Zietsma (2010) finds that Alberta had a match rate of only 31 percent for the foreign-educated compared to 62 percent amongst the Canadian-born, the fifth-lowest among the provinces. She finds that the highest match rates were those educated in Europe, the US, Australia, New Zealand, Israel, and South Africa (i.e., those with similar education systems and languages of instruction). Her data, however, were for 2006, before the demand-driven immigration programs such as the TFWP and the PNP were expanded, and also before the federal government established the Foreign Credential Recognition Program in 2003.

The problem with credential recognition also applies to the skilled trades. The Red Seal program makes certification transferable across provinces, but only when individuals obtain it. The OECD (2014) opines that harmonizing apprenticeship training may increase mobility across provinces. Brydon and Dachis (2013) say that provincial regulations limit how many apprentices firms may hire, and that provinces with the strictest regulations have fewer young people entering, while enriching those few who do find work. Lane and Griffiths (2015) argue that a further barrier to mobility is the difficulty of people working in one trade to transfer into a related trade even when

they have gained many of the required skills (e.g., plumber to pipefitter). They recommend a model in which people are credentialed in specific competencies which could then be used to qualify for different trades. Other factors—such as stereotypes about the inferiority of employment in the trades—are also important, but less amenable to policy levers. For Alberta this could all be important given the importance of the trades to the economy.

The federal government has continued to work on this this credential recognition problem. Since 2013 applicants under the FSWP must supply assessments of their education credentials and evidence of proficiency in English or French. As noted in the previous section, the federal government in 2015 also introduced the “Express Entry System” based on an expression-of-interest model which will establish a pool of qualified potential immigrants from which governments and employers may consider based on labour market and other needs. The OECD (2014) recommends dedicated programs for immigrants to complement their foreign credentials and become qualified to local standards.

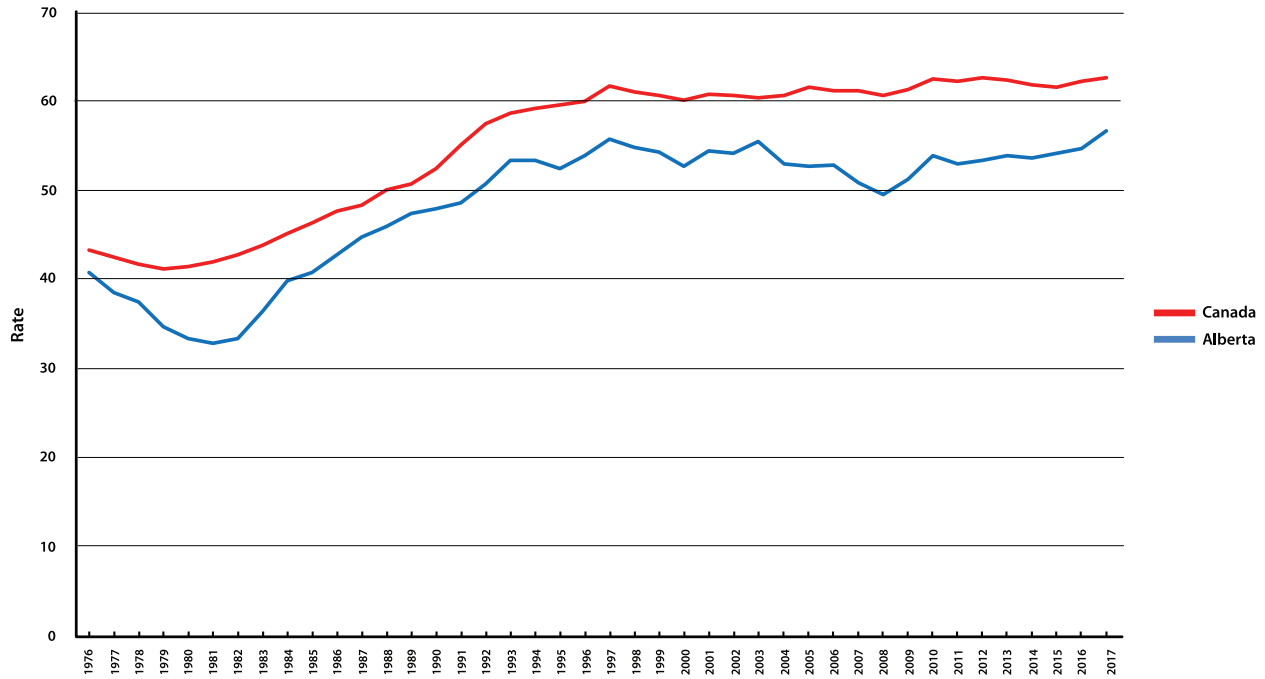
Bringing education up to national levels

Increasing the productivity of the existing labour force may mitigate the need to attract new entrants to the labour market. While Canada still outperforms the rest of the OECD in the educational attainment of adults, the country’s ranking is slipping as other countries catch up. Parkin (2015) analyzes the statistics contained in the OECD’s *Education at a Glance* and notes that Canada falls to third place when considering only younger adults (between the ages of 25 and 34), falls further to 18th spot when considering only university degrees, and to 21st spot when considering only university degrees among 25–34 year olds. If we removed immigrants from the young adult mix, Canada would rank even lower, probably somewhere between 23rd and 26th place. Thus, there is considerable room to grow the university attainment rates among those born in Canada.

For Alberta, the statistics tend to be below the national average. The 2011 high school graduation rate was the lowest among the provinces (69 percent compared to a national average of 85 percent) and far behind the second-lowest province of Newfoundland and Labrador (75 percent). This Alberta figure is even lower for young males (67 percent) than young females (72 percent) (Statistics Canada, 2015). According to Alberta Advanced Education (2014), the post-secondary education participation rate of 18–34 year olds was 18 percent in 2013, compared to a national average of 24 percent. These figures are reflected in Figure 6, which shows that school enrolment rates in Alberta (at all levels of education) are well below those for Canada. In 2017, for example, only 56.7 percent of Albertans between

the ages of 15 and 24 were enrolled in school (at any level), compared to the overall Canadian rate of 62.6 percent. These differences are in line with the 4–7 percentage point differential seen historically and tend to be the obverse of the employment rate, which is normally higher in Alberta.

Figure 6: School Enrolment Rates, Ages 15–24, Both Sexes, 1976–2017, Canada and Alberta

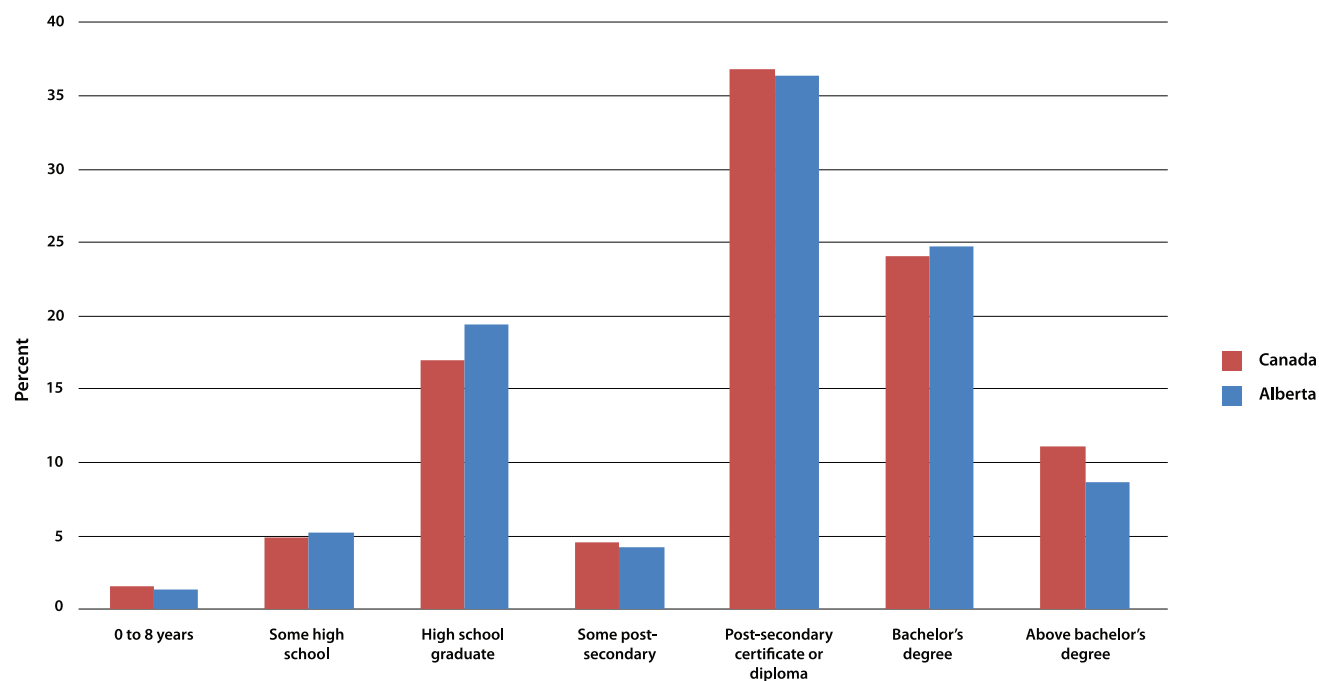


Source: Author's calculations from Statistics Canada Table 12-10-0081-01 (formerly CANSIM Table 282-0095).

While the robust Alberta economy has contributed to low PSE enrolment rates, one is left to wonder if young Albertans have sacrificed their futures by working rather than completing a post-secondary education at a young age when the lifetime payoff to education is highest. Morissette et al. (2014) find that increased wages in the energy sector do in fact result in lower full-time university enrolment rates amongst young men (at least temporarily). Similarly, Neill and Burdzy (2010) find that the boom-and-bust oil cycles in Alberta in recent years have had significant effects on post-secondary education participation, with differing effects by gender (affecting males more) and level of study (affecting university more). They also find that this result holds in the longer-term as educational attainment of those over age 25 is depressed following a period of higher oil prices. The exception is for apprenticeships where enrolments tend to be pro-cyclical. Also, programs of short duration, such as certificates and master's degrees, tend to see enrolments increase as the economy weakens (AAE 2014).

The result of these factors is that the Alberta working-age population is somewhat less educated than in other parts of Canada (Figure 7). While Albertans of prime working age are more likely to have graduated from high school compared to the Canadian average (19.5 percent vs. 17.0 percent) and slightly more likely to have a bachelor’s degree (24.7 percent vs. 24.1 percent), they are less likely to have advanced degrees (8.7 percent vs. 11.1 percent). Given what has previously been mentioned about low rates of enrolment in education, that Alberta does not lag even further behind is almost certainly owing to the arrival of many educated people from outside of the province (both internationally and interprovincially).

Figure 7: Percent of Population Aged 25–54 by Highest Level of Educational Attainment, Canada and Alberta, September 2018



Source: Author's calculations from Statistics Canada Table 14-10-0019-01 (formerly CANSIM Table 282-0003).

Canada also has a seemingly poor record when it comes to certifying individuals in the skilled trades. The OECD (2014) notes that the expansion in the number of trades covered by the Red Seal programme and high demand for tradespeople has doubled the number of apprenticeship registrations and completions between 2000 and 2011, but the average completion rate remained at about 50 percent. They opine that this could be due to the significant costs and lack of income during in-class training. Given the high proportion of skilled tradespersons in Alberta, completion of programs is of even higher importance than for other parts of Canada.

Employer training may be another option to increase the stock of human capital. Burleton et al. (2013) show that Canadian firms are spending less on employee training in 2010 than they did in 1993—a 38 percent drop in real terms—despite the fact that there has been considerable economic growth and increasing demand for skills.

4. Summary and Conclusions

While Alberta is recovering from one of its frequent economic downturns—such is the fate of an energy-dependent economy—there will likely be a time when the province again returns to prosperity. Whether this growth will be generated from the energy sector is not certain, but it has been assumed that the Alberta labour market will need new sources of labour. These new sources of labour, however, will likely be different from the interprovincial and international migration sources that the Alberta economy has traditionally relied on to fill labour shortages. The advent of the gig economy, automation, artificial intelligence and other technologies will continue to alter the complexion of the labour market and so the response to any future labour shortages will also have to change.

Increased labour supply can come by increasing the number of people in the economy and/or by increasing the way that we utilize the existing population in the labour market. In academic speak, these are referred to as the extensive and the intensive margins of labour supply.

The potential for increasing labour supply the extensive margin is limited. Although Alberta has high natural increases in population, it is still well below the replacement rate. Interprovincial migration, which has historically been important, is also in decline.

Immigration holds more promise. The fact that Alberta has attracted more than its share of immigration from the Canada Experience Class and the Provincial Nominee Program is encouraging since these individuals have a combination of domestic experience, Canadian education, and proficiency in English—factors which have been shown to ensure greater success in the labour market. Similarly, Alberta has attracted many temporary workers who also gain this human capital and many have become permanent residents. However, a caveat is in order here, as the success of many immigrants was noted during a time of economic expansion in the province. How these individuals have been faring in the labour market since the economic slowdown of mid-2014 is not known, but certainly should be investigated.

At the intensive margin, we saw that increasing labour participation rates in Alberta is also very unlikely to happen. The province already has the highest rates in the country, even in the past few years as the economy was thrown into recession. Having said this, there are some underrepresented groups—most notably, Indigenous peoples and older Albertans—that could be potential sources of labour.

Recognition of education and experience from outside of the province is also problematic, especially within regulated occupations. While credential

recognition is most widely thought to affect immigrants, interprovincial migrants often face similar challenges. Addressing this could reverse the current waste of talent.

Alberta has lower levels of educational attainment relative to other jurisdictions in the country. No doubt this has been due to the nature of the lucrative employment in the resource sector. Resource companies were competing with provincial colleges, universities, and some trade programs for young Albertans, and they often succeeded in doing so to the detriment of school enrolments and graduations across the province.

The policy implications of this research are far from straightforward. Increasing fertility rates are not likely to happen, nor would policy to encourage more children likely be palatable to most Albertans. Similarly, increasing interprovincial migration is likely a nonstarter. If the nation's highest wages were not enough to attract sufficient labour during the boom periods in Alberta, it is doubtful that any government policy could offer incentives attractive enough to entice labour to move to the province. This leaves immigration as the only realistic way to increase the total supply of labour (at the extensive margin).

Immigrants are not a homogenous group. There are a variety of immigration programs targeted at specific groups of potential newcomers and the economic and labour market outcomes of newcomers admitted under these programs are different. The research presented above largely points to the importance of factors such as language ability and domestic work experience, as well as the ability of employers to recognize credentials in the success of immigrants in the Canadian labour market. Those becoming permanent residents under the Provincial Nominee Program and the Canadian Experience Class have largely been successful because they possess these attributes.

While each of these immigration programs is relatively new and research on the success of immigrants admitted under these programs is therefore limited, they still do seem promising. Individuals in the program have had the opportunity to reveal their abilities to Alberta employers, essentially providing a way for employees and employers to pre-screen each other, similar to how cooperative education programs work for post-secondary students and their employers.

Similarly, the Express Entry System, while still new and hence largely unexamined, also brings employers into the picture. By virtue of applying for permanent residency, individuals have expressed a desire to remain in the province, making the probability of not leaving much higher.

Temporary foreign workers are also often able to segue relatively easily into permanent residency status because of their experience in Canada, but it would not be desirable to return to a program where temporary workers are subject to abuse from employers, earn below market wages, and displace Canadian citizens and permanent residents. A well-managed temporary foreign worker program can fill temporary labour shortages while not reducing employment standards and depressing wages such that the incentives to obtain the appropriate education and ultimately fill these positions from domestic sources are distorted. In other words, such policies must be tailored to the long-term well-being of the Alberta labour market and not simply to the short-term benefit of employers.

In order to better utilize the existing population in the province, attention should be paid to attracting marginalized groups to the labour market. For example, many Indigenous people remain outside or on the fringes of the labour market in Alberta. Policies to entice this group to participate in the labour market in larger numbers would be worthwhile.

Recognizing out-of-province credentials would help enhance labour supply at both the extensive and intensive margins. In the former case by signalling to potential interprovincial and international migrants that the skills and education that they have acquired will be utilized appropriately in Alberta and that they will be able to work in occupations commensurate with their skills. And in the latter case in terms of those already in Alberta who could then acquire employment matching their hitherto underutilized education and experience.

Finally, Alberta's low rates of attendance and educational attainment do seem to be improving, largely the result of a slowing economy, meaning that high-paying employment is no longer a substitute for attending college or university or working in an apprenticeship program. While obtaining an education may not be a foolproof strategy for avoiding the potential negative effects of the gig economy or increasing automation, it certainly positions Albertans more favourably in dealing with these developments. Of course, it is up to the Alberta government to ensure that the province's post-secondary education institutions are able to provide spaces to all qualified individuals who wish to pursue a higher education. In the same vein, Alberta employers, in conjunction with the province, should consider improved on-the-job-training—which to date is poor in Canada by international standards—as a means of enhancing the skills of the existing workforce in this rapidly changing labour market.

The boom-bust cycle of Alberta's traditional energy economy is unlikely to ever return, at least with same intensity as we have seen in the past. This is especially true as pressure mounts from both domestic and international

sources to leave some (or even all) of the province's carbon resources in the ground. The pursuit of alternative energy sources—wind and solar in particular, where Alberta also enjoys a comparative advantage—also offer the promise of new employment, in much the same way the provincial labour market has historically been driven by the growth in fossil fuel extraction.

The conclusions provided here apply regardless of which energy resource will dominate Alberta's future. The Alberta government will be faced with the challenge of preparing the provincial labour market for the future and ensuring that the labour needed is available both quantitatively and qualitatively.

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1-12 Humanities Centre
University of Alberta
Edmonton, Alberta
T6G 2E5
Phone: 780.492.8558
Email: parkland@ualberta.ca
Website: www.parklandinstitute.ca

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