



# Truth or Scare:

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Are claims of a labour shortage in Alberta based on evidence?



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## Executive Summary

Political debate in Alberta is rife with discussions of the province's labour supply. Some pundits suggest that lack of labour undermines growth, while other analysts focus on the availability of good-paying jobs. However, there has been a dearth of empirical data and evidence-based analysis of the relationship between the availability of workers and the supply of jobs. This paper begins to fill that gap.

By making use of Human Resources and Skills Development Canada's (HRSDC) labour shortage test and Statistics Canada data, the paper identifies Alberta industries and occupations facing labour shortages and those that are not. The results should give policymakers a better idea of where labour market action is required and where it is not.

Part One begins with an evaluation of the methods employed to measure labour shortages. Measurements of shortage that rely on employer surveys, such as those often reported by the Canadian Federation of Independent Business (CFIB), are invalid unless very carefully written to exclude employer bias. Measurements using economic data provide more reliable approximations. To measure industry- or occupation-specific shortages, HRSDC uses the following test: an occupation is in shortage if its employment growth rate is at least 50% above the total employment growth rate, its wage growth rate is at least 30% above the average wage growth rate, and its unemployment rate is at least 30% below the average unemployment rate or its unemployment rate is close to its historical minimum.

Using the HRSDC test and Statistics Canada numbers, the paper reports labour shortage information at the industry level over two time periods: October 2001 to October 2013, and October 2010 to October 2013. Over both the long and short-term, Alberta labour shortages have occurred most often in industries related to oil and gas, such as Support Activities for Mining and Oil and Gas Extraction, Heavy and Civil Engineering Construction, Truck Transportation, and others. Low-wage service industries, such as Retail Trade and Accommodation and Food Services, have shown no signs of shortage, instead often exhibiting near-stagnant wages. The industry data describe an economy facing narrow shortages in a few sub-industries predominantly tied to energy, rather than broad economy-wide shortages.

Part Two suggests three policy changes – one each on productivity, interprovincial migration and apprenticeships – to help alleviate Alberta's shortages. The paper focuses on policy solutions that address market failures: situations in which allowing the market to operate free of regulation produces sub-optimal outcomes for all participants – in other words, circumstances where state involvement and coordination benefits workers, employers and government. Market failures are low-hanging fruit for government to help Alberta's economy reach its potential. The conclusion touches on the politics of the labour shortage debate, and suggests cooperation, not combat, as the way forward for Alberta's workers, employers and government.

## Introduction

Since the recession showed signs of lifting, many industries have been making the claim that labour shortages are hampering recovery and threatening Alberta's economy. To remedy the ills of this alleged shortage, the federal and provincial governments have expanded the Temporary Foreign Worker program, delayed eligibility for Old Age Security, cracked down on Employment Insurance recipients, and kept the minimum wage to the lowest in Canada. In short, government has done everything they can to make sure labour's share stays down.

Labour shortage has become a catch-phrase excuse for turning back the clock on workers' rights and well-being.

But when one picks at the threadbare evidence behind industry's strident assertions, most claims of shortage unravel. The Canadian Federation of Independent Business and the Merit Contractors Association survey their own members on shortages – a dubious tactic when both surveyor and member have the same interest in keeping wages low. The Government of Alberta (GoA) produced a widely-cited 2011 *Occupational Supply and Demand Outlook* that employed archaic methods in an incorrect context. Those methods were repeated in the GoA's 2013 *Outlook*. At the same time, the province withheld information explaining why complex and outdated calculations were used in the 2011 and 2013 Outlooks, when a simple supply/demand projection ratio, employed in every other Canadian jurisdiction, predicts no shortage of labour.<sup>1</sup>

Labour shortage should be an economic term subject to rigorous objective assessment, but government and industry have turned it into a mantra without measurement, a club to hold over workers' heads. This report seeks to rescue Alberta's labour market analysis from political contortion and return it to its economic roots. This report will use labour market data – primarily employment growth, wage growth and unemployment rates – to demonstrate that Alberta is experiencing labour shortages in only a few industries, and almost all of those industries are intimately tied to runaway oil sands development. Outside of those few industries, the Alberta labour market ranges from tight to surplus.

Part One will review the methods of measuring shortages and present statistical evidence on Alberta's current labour market. Part Two will look at policy solutions to Alberta's limited labour shortages that make sense for both workers and employers. The paper will conclude with a few thoughts on the responsibilities of workers, employers and government in making the labour market work for Alberta.

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1 "Alberta Relying on Bogus Labour Shortage Figures," Alberta Federation of Labour. July 25, 2012.



# Part One:

## MEASURING LABOUR SHORTAGES IN ALBERTA



### I. How are labour shortages measured?

#### A. Employer Surveys

Researchers have two principal ways to detect and measure labour shortages: survey employers on their opinion of labour shortages, or evaluate data on employment, unemployment rates, wages, vacancies and other economic indicators (Lefebvre, et al., 2012) 11; (Haggerty & Schneberger, 2000) 464-65. Employer surveys are vulnerable to charges of bias, as an employer facing a tight labour market may claim labour shortage long before she is willing raise wages and benefits (Lefebvre, et al., 2012) 11. Bias may be especially prevalent when businesses perceive that claiming labour shortage will result in government policy that holds wages low (for example, looser rules on the recruitment of foreign workers). Even if employers avoid bias, internal recruitment challenges (such as an inability to pay the equilibrium wage) and inability to forecast employment needs may inject inaccuracy into employer survey results (Roy, et al., 1996) 25-26.

The CFIB is perhaps the most frequent source of labour shortage reports that base their findings in employer surveys. For example, *Canada's Training Ground* assessed 2008 labour shortages by asking small businesses about the difficulty of finding qualified staff and about the negative impact of shortages on business operations (Kelly, et al., 2008) 8-10. The report's results are suspect not only because of the identity of the survey respondent, but also the identity of the surveyor: businesses that respond to the survey know that by claiming difficulties in hiring, they are giving CFIB ammunition to lobby for policies that will keep wages low. Respondents have every incentive to construe problems as the result of a labour shortage.

Surveying employers can be useful when the results add detail and context to economic data, but researchers must carefully structure their surveys to minimize the opportunity for inaccuracy. CFIB's *Own Member Survey #71* illustrates what not to do: in asking a business owner for the most important issues facing her business, the *Own Member Survey* allowed a business owner to check off as many boxes as she wished. Predictably, many businesses checked off a bunch of boxes, shortage of qualified labour among them (three issues – total tax burden at 76.1%, government debt/deficit at 64% and government regulation at 64.8% – were “most important” to more western Canadian businesses than a shortage of qualified labour) (Canadian Federation of Independent Businesses, 2013). In addition, the survey did not define “shortage of qualified labour,” despite widespread employer confusion on what a labour shortage actually is (Green, et al., 1998) 165-68<sup>2</sup>. Inviting unlimited complaints on ambiguous concerns is not a useful way to measure the existence, extent and depth of a labour shortage – especially not when, as noted above, employers expect the surveyor to lobby government, survey statistics in hand. Case in point: CFIB's *Looking for Hire Ground* used the *Own Member Survey #71* to support its claims that western Canadian small businesses are facing skilled labour shortages (Ruddy, et al., 2013) 2.

CFIB is not alone in using employer surveys improperly to measure labour shortages. Merit Saskatchewan, an association of construction companies, investigated construction labour shortages

2 Green, Machin and Wilkinson 1998 actually discusses the definition of skill shortage, but the terms 'skill shortage' and 'labour shortage' are so interchangeable in the literature and in the public discourse that confusion in one means confusion in the other.

in Saskatchewan by asking companies an open-ended question on their biggest challenge. Despite the improvement over CFIB's check-as-many-boxes-as-you'd-like survey, Merit and the respondents seem confused about the definition of labour shortage: companies listed wage and benefit increases as the most prevalent responses to shortage, even though recruitment difficulty solved by an increase in wages and benefits is indicative not of a labour shortage but simply a functioning labour market. To alleviate alleged shortages, respondents asked for policies "that increase labour supply without wage inflation," suggesting an unwillingness to test the labour market with wage increases before claiming shortages (Marshall, 2012) 4. The Canada West Foundation, a Calgary-based think tank, has also claimed labour shortages backed by industry association survey evidence, though at least the Foundation admitted the limitations of its methods (Hirsch, et al., 2004) 3-4.

In Roy, Henson and Lavoie's seminal study on Canadian labour shortages, the authors conclude their section on employer surveys by writing, "It is... hard to imagine how employer-based surveys can be used as a standalone tool in extensive occupational skill shortage studies" (Roy, et al., 1996) 24. Though employer surveys have a role to play in terms of gaining a larger view of the labour market, they cannot fill the role of economic indicators play in terms of providing an in-depth perspective, nor should they be the sole evidence to decide such an important public policy question.

## B. Economic Indicators

The central economic indicators that should be used to measure a labour shortage are the employment growth rate, the wage growth rate, the unemployment rate and the vacancy rate, though additional indicators may provide color and detail (Roy, et al., 1996) 17-22; (Veneri, 1999) 17; (Shah & Burke, 2005) 66-69. Rising employment and growth are evidence of shortage, as are low unemployment rates and high vacancy rates. However, despite agreement on which way the indicators point, labour market analysts have not come to a consensus on the exact combination of indicators to use, the cutoff numbers that signal shortage, or the role of qualitative data to support the statistics. The best way to find a labour shortage is to simply use as much data as possible, quantitative and qualitative (even including, maybe, carefully constructed employer surveys), to build a conclusion (Veneri, 1999) 21.

### i. Employer Surveys of Vacancy Numbers

Statistical agencies and employer associations use employer surveys to figure out the economy's number of vacancies. Vacancy rates are often used to analyze labour markets, but as with all statistical indicators, the data must be interpreted carefully – especially as normal movement between jobs produces a non-zero vacancy rate even in the absence of a tight labour market (Roy, et al., 1996) 21. Employer surveys that ask for vacancy numbers are more reliable and useful than surveys that ask employers for their biggest problems or their opinion on the severity of labour shortages. However, such surveys administered by employer associations may still give back skewed numbers.

CFIB reports on the results of its member vacancy survey in its regular *Help Wanted* reports. CFIB's vacancy numbers are somewhat higher but overall quite close to Statistics Canada's vacancy numbers, making its *Help Wanted* reports far less alarmist than its papers based on employer opinion. But CFIB still finds ways to give employers a boost: a vacancy in CFIB's survey does not require an active search to fill a specific position but only a passive search to fill "a need" (Mallet, 2013) 1, 5. Vacancy rates are a useful statistic when investigating labour shortages, but numbers produced by employer associations should be taken with a grain of salt.

### ii. Measuring a General Labour Shortage

In a general labour shortage, the economy has too few people in its labour force to fill available positions despite a high wage: the problem is not a mismatch between the skills employers want and the skills workers have, but a mismatch between the number of vacancies and the number of unemployed persons in the economy. Under such a scenario, every person that wants a job has a job (though perhaps not the one for which she is best qualified), and therefore the economy cannot fill one vacancy without creating another vacancy somewhere else.

One way to evaluate a claim of general labour shortage is to compare the employment growth, wage growth, unemployment rate and vacancy rate in an area against the same numbers for the larger economy of which the area is a part. For example, Alberta's numbers might be compared against the numbers for the Canadian economy as a whole. However, this strategy only works if the labour market serving as the benchmark is tight or balanced, as faster employment and wage growth and lower unemployment than an area with surplus labour is not evidence of a shortage. Given that the Canadian labour market is experiencing a surplus (unemployed-to-vacancy rate of 6.5 in January 2013 and unemployment rate of 6.6% in June 2013), it does not make sense to compare the Alberta labour market to the Canadian labour market at this time (Canada, 2013) (Cansim 282-0007).

Another method might look at the unemployment rate: a rate below 4.5% is sometimes understood as indicative of a labour shortage (Institute for Public Economics, 2013) 12 (4% is also sometimes cited as the boundary (Applications Management Consulting Ltd., 2013a)). This method is far from perfect: unemployment rates vary for reasons other than labour market tightness, such as different levels of baseline frictional unemployment (unemployment from people moving between jobs). However, if a suitable standard against which to compare numbers does not exist, the 4.5% test can provide a very rough approximation of general shortage.

### iii. Measuring an Industry- or Occupation-Specific Shortage

In an industry- or occupation-specific shortage, the economy has enough workers but too few have the essential technical skills and are available and willing to work in a particular industry or occupation despite a high and increasing wage. Measuring such a shortfall is

not an exact science, but Human Resources and Skill Development Canada (HRSDC) has developed a relatively simple test to provide an initial assessment of shortage in an industry or occupation.

Under the HRSDC test, an occupation shows signs of shortage if its employment growth rate is at least 50% above the total employment growth rate, its wage growth rate is at least 30% above the average wage growth rate, and its unemployment rate is at least 30% below the average unemployment rate or its unemployment rate is close to its historic minimum<sup>3</sup> (Policy Research Directorate of Human Resources and Skills Development, 2008) 98; (Lefebvre, et al., 2012) 17. This test will only work if the numbers for the occupation are compared against a general labour market that is tight or balanced. If the general labour market is in shortage, an occupation may be in shortage even if it does not meet the cutoffs above (as employment and wages may be rising quickly in all occupations, and unemployment low across the board). If the general labour market is in surplus, faster employment and wage growth and lower unemployment in a particular occupation do not necessarily signal a shortage.

The test is particularly appropriate to detect labour shortages induced by a positive demand shock (economic growth fueled by strong and often external demand). Labour shortages in Alberta, if they exist, are likely due to the province's rapid growth, an expansion fueled by skilled workers. In such a case, labour markets should show swift employment growth (not least from national and international migration) along with wage growth and low unemployment. By contrast, a labour shortage triggered by falling supply would likely show stagnant or falling employment.

This paper will use the HRSDC test due to wide availability of detailed data on employment growth, wage growth and the unemployment rate, and the ease of running the test on a large number of industries and occupations.

## II. What does the evidence say about labour shortages in Alberta?

The evidence says that labour shortages in Alberta are limited to a few industries and occupations. As will surprise no one, the construction and energy extraction industries face significant shortages (though in the case of construction the shortages exist only in a few select sub-industries). Other industries, especially the low-wage food and retail industries, show no signs of labour shortage. Finally, industries dominated by government spending, such as education and healthcare, have seen wide variations in employment and wage growth over the past twelve years, but no long-term tendency toward a labour shortage.

The paper presents numbers on employment growth, wage growth and the unemployment rate in Alberta industries and occupations, using data from Statistics Canada's Survey of Employment, Payroll and Hours (SEPH) and Labour Force Survey (LFS).<sup>4</sup> The employment growth rate for an industry or occupation is the ordinary least squares (OLS)<sup>5</sup> slope of an employment index set at 100 for the base month. The wage growth rate for an industry or occupation is the OLS slope of an inflation-adjusted wage index set at 100 for base month. The slope of each industry or occupation is measured against the slope for the Alberta economy to calculate differences in growth rates.

The paper looks at labour shortages over two periods: October 2001 to October 2013 and October 2010 to October 2013. While the Alberta labour market has been tight since 2001 outside of a brief recession-induced relaxation, the unemployment rate has averaged below 4.5% in only four years: 2005, 2006, 2007 and 2008 (the 2013 average through November was 4.65%, though the rate fell below 4.5% in the fall) (Cansim 282-0007). Therefore, the Alberta labour market was not in a general labour shortage over either period and is an appropriate benchmark against which to measure the performance of industries and occupations.

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3 The HRSDC adapted this test from a United States Bureau of Labor Statistics test developed to detect labour shortages using widely available data. The test is designed to exclude occupations that are on the edge of shortage (Veneri, 1999) 18.

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4 The SEPH average hourly wage for each industry is an inflation-adjusted weighted average of the average wage for salaried employees and the average wage for hourly employees, weighted by the proportion of total hours worked by each type of employee (average salaried wage \* total hours of salaried employees / total hours of salaried employees and hourly employees + average hourly wage \* total hours of hourly employees / total hours of salaried employees and hourly employees). The data for the average hourly wage calculation are found in Cansim SEPH Tables 281-0029, 281-0032, 281-0035 and 281-0037. Due to limited data availability, the average hourly wage for salaried and hourly employees includes overtime earnings but the total hours worked for salaried and hourly employees does not include overtime hours.

5 Ordinary least squares estimates the linear trend line for a group of data. The method "minimizes the sum of squared distances between the observed responses in the dataset and the responses predicted by the linear approximation" (Wikipedia, n.d.).

Statistics Canada collects SEPH data on employment and wages through the Canada Revenue Agency Payroll Deduction administrative source, while the Business Payroll Survey gathers data on hours worked per week (used in this paper to calculate average hourly wages) (Canada, n.d.). LFS assembles figures on employment, wages and unemployment rates through a questionnaire conducted over the phone with a sample of the Canadian population (Canada, n.d.). When possible, the paper employs SEPH data, both for the greater accuracy of its employment and wage numbers and for its level of industrial disaggregation (Carrick, 2013); (Gordon, 2012).

The tables divide the labour market by the North American Industry Classification System (NAICS) or by the National Occupation Classification (NOC) system. The NAICS divides economic activity into industries into two-digit general categories (e.g. 23 – Construction), subdivides the general categories into more specific three-digit categories (237 – Heavy and Civil Engineering Construction), and subdivides the three-digit categories into very specific four-digit categories (e.g. 2371 – Utility System Construction). The NOC system splits occupations into lettered

general categories (e.g. D – Health Occupations), then breaks down each general category into more and more detailed segments (e.g. D2 – Technical and Related Occupations in Health, D22 – Technical Occupations in Dental Health Care, D221 – Denturists).

As in any statistical study, the data are not perfect. Most notably, the availability of employment and wage data for many industries in the Survey of Employment, Payroll and Hours sharply declines after 2008. Therefore, it is possible that additional industries not listed here are in shortage but lack the data to meet the HRSDC test (though such industries are likely small, as the larger the industry, the more likely it is to have data). In addition, the trends are somewhat sensitive to small changes in the time period under investigation, especially when the time period is only three years in length (October 2010 to October 2013). Finally, the wage numbers do not include wages for workers who receive compensation through a mechanism other than an hourly wage or a salary, and SEPH excludes self-employed people, agriculture, fishing and trapping, and religious organizations.

**TABLE A:** SEPH on Employment and Wage Growth and LFS on Unemployment Rates, North American Industry Classification System (NAICS), October 2001 to October 2013, Industries with >100 000 Employees in October 2013

	Emp. (Monthly Growth Rate %/mon, Trend)	Avg. Hourly Wage (Monthly Growth Rate %/mon, Trend)	2012 Unemp. Rate (%)	Emp. (% Diff. btw. Growth in Industry and IA)	Avg. Hourly Wage (% Diff. btw. Growth in Industry and IA)	2012 Unemp. Rate (% Diff. btw. Industry and IA)
Accommodation and Food Services	0.16	0.14	5.1	-35	-6	11
Retail Trade	0.23	0.01	3.6	-9	-94	-22
Wholesale Trade	0.18	0.12	3.1	-28	-19	-33
Manufacturing	0.03	0.1	2.3	-87	-33	-50
Construction	0.56	0.16	5	125	7	9
Mining, Quarrying, and Oil and Gas Extraction	0.41	0.27	3	65	79	-35
Professional, Scientific and Technical Services	0.32	0.11	2.2	30	-25	-52
Health Care and Social Assistance	0.27	0.1	1.5	6	-36	-67
Education Services	0.19	0.19	2.9	-23	29	-37
Public Administration	0.24	0.19	N/A	-3	27	N/A
Industrial Aggregate	0.25	0.15	4.6	0	0	0

(Source: Author's calculations using data from CANSIM SEPH Tables 281-0023, 281-0029, 281-0032, 281-0035 and 281-0037; LFS Table 282-0008)

Table A gives the long view of the Alberta labour market. Between 2001 and 2013, the Alberta labour market went through a boom, a bust, and began another boom. The long-term employment and wage growth rates give a sense of Alberta's enduring labour hot spots.

The long view reveals labour shortages in a few industries and slack in much of the rest. In only two industries – Construction and Mining, Quarrying and Oil and Gas Extraction – did employment grow at least 50% faster than total employment. Out of those two, only in Mining, Quarrying, and Oil and Gas Extraction did workers see wages rise at a rate at least 30% faster than wages for workers as a whole. At an unemployment rate of 3.0% in 2012, over 30% lower than the unemployment rate for all industries, Mining, Quarrying, and Oil and Gas Extraction (with 6.3% of Alberta employees in October 2013) stands alone as the only industry showing signs of shortage over the October 2001 to October 2013 period.

It is also worth pointing out the industries that were *not* facing a labour shortage over the October 2001 to October 2013 period. Accommodation and Food Services workers saw their wages grow at about the same pace as the economy overall, but employment rose at a rate 35% below that of total employment. Employment in Retail Trade increased at close to the same clip as the economy, but wages grew 94% slower than average. Finally, though the 2012 unemployment rate in Retail Trade was a low 3.6%,

the unemployment rate in Accommodation and Food Services was 5.1%, significantly higher than that for the economy as a whole.

Yet Accommodation and Food Services and Retail Trade are two industries about which the government and industry have made the most noise. The top shortage occupation in the GoA's *Alberta's Occupational Demand and Supply Outlook 2011-2021* is Retail Salespersons and Sales Clerks (projected shortage of 5 713 by 2021), and other occupations high on the list include Cashiers (3 054), Retail Trade Managers (2 787), Cooks (2 056), Food Counter Attendants, Kitchen Helpers and Related Occupations (1 579) and Food and Beverage Servers (1 502) (Government of Alberta, 2011). The Institute for Public Economics forecasts a 56 263 person shortage in Retail Trade and a 26 141 person shortage in Accommodation and Food Services by 2016 (Applications Management Consulting Ltd., 2013b). Occupations facing labour shortages should see rapidly increasing employment and wages as employers scramble to attract workers. Neither industry shows either of these characteristics, dispelling the claim they are experiencing a long-term labour shortage now, and casting suspicion on claims of significant labour shortages in the near future.

Table B presents the sub-industries that meet the employment and wage growth prongs of the HRSDC test (unemployment rates are not available at this level).

**TABLE B:** SEPH Industries in Shortage, NAICS, October 2001 to October 2013 <sup>6</sup>

	Emp. (% Diff. btw. Growth in Industry and IA)	Avg. Hourly Wage (% Diff. btw. Growth in Industry and IA)	Emp. Oct 2013 (thousands)
Mining, quarrying, and oil and gas extraction	65%	79%	129
Oil and gas extraction	64%	87%	54
Support activities for mining and oil and gas extraction	67%	46%	71
Heavy and civil engineering construction	140%	46%	58
Utility system construction	197%	78%	42
Specialty trade contractors	160%	32%	106
Foundation, structure, and building exterior contractors	156%	40%	21
Other specialty trade contractors	191%	39%	23
Employment services	69%	44%	27
Services to buildings and dwellings	90%	63%	25
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	339%	124%	17

(Source: Author's calculations using data from CANSIM SEPH Tables 281-0023, 281-0029, 281-0032, 281-0035 and 281-0037)

<sup>6</sup> A darkly tinted sub-industry is the parent of the lightly tinted sub-industries with the same colour. For example, dark blue Mining, Quarrying, and Oil and Gas Extraction is the parent of light blue Oil and Gas Extraction and Support Activities for Mining and Oil and Gas Extraction, and so all employees in the latter two sub-industries are also employees in Mining, Quarrying, and Oil and Gas Extraction.



Table B gives a more nuanced sense of the long-term labour shortage picture in Alberta, but the storyline is much the same: the signs of shortage exist predominantly in sub-industries with direct ties to energy: Oil and Gas Extraction, Support Activities for Mining and Oil and Gas Extraction, Heavy and Civil Engineering Construction, Utility System Construction (which includes pipeline construction)

and Specialty Trade Contractors, among others. Total employment in shortage sub-industries comes to about 363 000, about 18% of Alberta's employment.

Table C measures employment and wage growth from October 2010 (the tail end of Alberta's recession experience) to October 2013.

**TABLE C:** SEPH on Employment and Wage Growth and LFS on Unemployment Rates, North American Industry Classification System (NAICS), October 2010 to October 2013, Industries with >100 000 Employees in October 2013

	Emp. (Monthly Growth Rate %/mon, Trend)	Avg. Hourly Wage (Monthly Growth Rate %/mon, Trend)	2012 Unemp. Rate (%)	Emp. (% Diff. btw. Growth in Industry and Industrial Aggregate)	Avg. Hourly Wage (% Diff. btw. Growth in Industry and Industrial Aggregate)	2012 Unemp. Rate (% Diff. btw. Industry and Industrial Aggregate)
Accommodation and Food Services	0.61	0.01	5.1	62	-85	11
Retail Trade	0.13	0.06	3.6	-66	-31	-22
Wholesale Trade	0.59	-0.04	3.1	58	...	-33
Manufacturing	0.30	-0.05	2.3	-20	...	-50
Construction	0.97	0.17	5	158	108	9
Mining, Quarrying, and Oil and Gas Extraction	0.40	0.17	3	6	105	-35
Professional, Scientific and Technical Services	0.37	0.15	2.2	-1	89	-52
Health Care and Social Assistance	0.28	-0.34	1.5	-27	...	-67
Education Services	0.07	0.06	2.9	-82	-31	-37
Public Administration	0.13	0.23	N/A	-64	179	N/A
Industrial Aggregate	0.38	0.08	4.6	0	0	0

(Source: Author's calculations using data from CANSIM SEPH Tables 281-0023, 281-0029, 281-0032, 281-0035 and 281-0037; LFS Table 282-0008)

Accommodation and Food Services, Wholesale Trade and Construction show employment growth rates at least 50% faster than total employment. Of these three industries, only Construction saw wages rise 30% faster than average over the October 2010 to October 2013 period. Accommodation and Food Services wages stagnated over the period, while average hourly income in Wholesale

Trade actually fell. Employment and wages in Retail Trade crawled slowly upwards, little different from the October 2001 to October 2013 period. The lack of a jump in either employment or wages heaps further doubt on predictions of a massive Retail Trade shortage within a few years.

**TABLE D:** SEPH Industries in Shortage, NAICS, October 2010 to October 2013<sup>7,8</sup>

	Emp. (% Diff. btw. Growth in Industry and IA)	Avg. Hourly Wage (% Diff. btw. Growth in Industry and IA)	Emp. Oct 2013 (thousands)
Construction	158%	108%	209
Construction of buildings	193%	161%	44
Non-residential building construction	314%	256%	25
Heavy and civil engineering construction	299%	400%	58
Utility system construction	381%	401%	42
Highway, street and bridge construction	135%	266%	12
Other wood product manufacturing	509%	412%	7
Truck transportation	75%	72%	34
Architectural, engineering and related services	128%	176%	56
Administrative and support, waste management and remediation services	77%	225%	94
Administrative and support services	67%	292%	86
Employment services	142%	1027%	27
Offices of other health practitioners	54%	79%	7
Child day-care services	113%	45%	10
Accommodation services	109%	134%	33
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	200%	893%	17

(Source: Author's calculations using data from CANSIM SEPH Tables 281-0023, 281-0029, 281-0032, 281-0035 and 281-0037)

Looking more closely at the October 2010 to October 2013 period, we find signs of shortage in some familiar sub-industries and a few unfamiliar sub-industries. Heavy and Civil Engineering Construction, Utility System Construction and Commercial and Industrial Machinery and Equipment Repair all showed up as shortage sub-industries over the October 2001 to October 2013 period. Other sub-industries, such as Trucking Transportation and Architectural, Engineering and Related Services, are new to this period but closely linked to the energy and construction sectors.

The numbers for Accommodation Services explain that while Accommodation and Food Services as a whole is not facing a shortage, one part of the industry (comprising about 21% of employment in Accommodation and Food Services) is under shortage conditions. While wages in Accommodation Services rose 134% faster than average between October 2010 and October 2013, wages in Food Services and Drinking Places (about 79% of employment in Accommodation and Food Services) fell over the same period.

#### IV. What's the point?

The point is that Alberta is not facing a general labour shortage and is experiencing specific labour shortages in only a few sub-industries, most related to energy extraction. The long-term labour market pressures in Alberta stem almost exclusively from the energy sector. Mining, Quarrying, and Oil and Gas Extraction was the only industry showing signs of shortage from 2001 to 2013, and most of the 2001-2013 shortage sub-industries tie closely to energy.<sup>9</sup> The persistence and concentration of employment and wage growth from 2001 to 2013 reveals clearly that energy is driving Alberta's labour market numbers.

What is a surprise is energy's limited pull on non-energy industries. Manufacturing and Professional, Scientific and Technical Services saw wages increase a third and a quarter below average, and workers in Retail Trade scraped by for more than a decade without a visible wage bump. Employment in Accommodation and Food Services and in Manufacturing grew much more slowly than total employment. If Alberta were truly experiencing a

7 Poor data quality at lower levels of aggregation, especially post-2008, prevented evaluation of a number of sub-industries.

8 A darkly tinted sub-industry is the parent of the lightly tinted sub-industries with the same colour. For example, dark blue Heavy and Civil engineering Construction is the parent of light blue Utility System Construction, and so all employees in the latter sub-industry are also employees in the former sub-industry.

9 Oil and Gas Extraction, Support Activities for Mining and Oil and Gas Extraction, Heavy and Civil Engineering Construction, Utility System Construction, Other Specialty Trade Contractors, Petroleum Product Wholesaler-Distributors, and RM (machinery and equipment repair).

demand-induced long-term labour shortage, predominantly public industries, in which non-market factors take precedent in determining employment and wages, should lag behind private industries. Yet employment growth in Health Care and Social Assistance and Public Administration hovered around the mean, and wages in Education Services and Public Administration grew over 25% faster than average.

The more recent 2010-2013 timeframe shifts the results only slightly. Mining, Quarrying, and Oil and Gas Extraction employment growth slowed, but many of the shortage sub-industries still had a strong connection to the energy sector. The pressures in energy spilled a bit further outwards, but failed to provide a larger spark to Accommodation and Food Services, Retail Trade, Wholesale Trade or Manufacturing. Alberta's largely self-inflicted budget woes since the recession seem the likely culprit for the savage wage cuts in Health Care and Social Assistance and the halt in Public Administration hiring, and those budget problems make it difficult to compare private and public labour market numbers.

Management wages are surging while Food Services employees are suffering anemic wage growth and Retail is losing rather than gaining workers. If low-skill, low-wage employers cannot find the workers they need, perhaps they should consider paying better wages. Until they do, labour shortages claims are just a ploy to spur government intervention and keep wages low.

A labour shortage is the inability of price (wages) to equalize supply and demand in the labour market. A labour shortage is not difficulty in hiring, not unwillingness to pay a market-clearing wage, not holding out for the perfect candidate. It is a specific failure of the market to provide enough workers despite a high and increasing wage. That failure, as most market failures, calls for government intervention to increase the supply of workers, and without intervention, employers and workers may take unnecessary losses. But intervention without a shortage can also be extremely damaging: workers are robbed of higher wages, students make career decisions based on false information, employers struggle with lower consumer demand, and governments collect taxes from a smaller pool. Therefore, anyone claiming a shortage must be sure to do her homework: avoid or minimize employer surveys, carefully collect and interpret economic data, fully report results and limit conclusions to those an objective shortage test can support.

The HRSDC test can only speak to what it measures. Fast employment and wage growth and low unemployment are signs of labour shortages, not proof. Moreover, the HRSDC test can only detect labour shortage signs; it cannot determine the severity of a labour shortage. But the test's basic questions are solid:

1. Do employers' actions (not words) reflect the actions of a buyer in a constrained supply market – in other words, are employers raising wages?
2. Is the pool of unemployed workers falling as employers hire all available and willing workers, even unemployed workers of below average productivity?
3. In a demand-driven expansion after a labour surplus, are employers hiring new workers – recent graduates, inter-provincial migrants, immigrants, involuntary part-timers, unemployed workers – and thereby increasing employment as fast as possible?

If employers cannot answer yes to all three and yet employer associations want to continue claims of labour shortage, it is incumbent upon those associations to provide credible, objective evidence to back up those claims. Until that happens, government must reject allegations of a low-wage labour shortage as an attack on workers, and limit intervention to oil patch industries and a few spillover sectors.



# Part Two:

## FINDING SOLUTIONS TO LABOUR SHORTAGES



Part One laid out the evidence on labour shortages in Alberta and made clear that only a few industries and sub-industries are facing labour shortages. Part Two looks at a few appropriate government policies to fill those labour shortages. The aim of this Part is not to provide fully fleshed-out ideas ready for implementation, but rather to spur thought on the sorts of labour market problems to which government should respond, and how they should respond.

### I. Productivity, Pace and Labour Shortages

Employers have two options to increase output: hire more workers or raise the output of already-hired workers. The former increases employment and the latter increases productivity. Labour shortages appear to be all about employment: industries cannot find enough people with the essential technical skills to meet their demands, and so cannot maximize output. The search for causes and solutions both focus on the supply side: post-secondary graduation rates, inter-provincial migration levels, immigration rules, and the like. Yet in some labour shortages, the problem and solution lies not with the number of workers available but with the productivity of those already employed.

From 2001 to 2010, productivity fell 22% in Mining and Oil and Gas Extraction and 23% in Construction (Cansim 383-0026). If productivity in Mining and Oil and Gas Extraction had stayed at 2001 levels, the industry would have required 28,300 fewer full-time, full-year workers in 2010 to produce the same level of output.<sup>10</sup> If productivity in Construction had frozen at 2001 levels, the industry would have required 58,700 fewer full-time, full-year workers in 2010 to produce the same level of output. August 2010 employment was 105,800 in Mining and Oil and Gas Extraction and 162,600 in

<sup>10</sup> A full-time, full-year worker works forty hours per week, fifty-two weeks per year.

Construction, so the number of employees demanded simply by declining productivity was significant.<sup>11</sup>

Productivity matters because, as a GoA report succinctly stated, “[h]igher productivity growth would alleviate most of Alberta’s labour shortage problems and secure long-term economic growth” (Government of Alberta, 2013). Over the October 2001 to October 2013 timescale, Mining and Oil and Gas Extraction was the only industry that met the criteria for a labour shortage. Weighted by employment, 81% of the October 2001 to October 2013 shortage sub-industries were in Mining and Oil and Gas Extraction and in Construction. Over the October 2010 to October 2013 period, the portion of employment-weighted shortage sub-industries in Mining and Oil and Gas Extraction and in Construction fell, but at 45% still made up a significant chunk of shortage sub-industries. Mining and Oil and Gas Extraction and Construction need more and more workers because their workers are producing less and less.

The government’s ability to challenge the energy and construction productivity trend is limited to pacing development. The province has a great deal of influence over which construction projects move forward and at what pace. The resources belong to the Crown and the Crown issues approvals.

Companies have control over the type of operational decisions that make the most difference (Czarnecka, 2013) but the one key productivity factor over which the government does have control is the pace of oil sands development, yet it has largely abdicated an active role; instead, it has permitted oil companies to set the tempo of investment, resulting in massive fluctuations based on the price of oil. Building many projects at once has led to massive labour demand spikes, compelling companies to hire under-qualified and inexperienced workers and cutting the bottom out of productivity (Bouchard & Cox, 2012) 16-17.

For as long as the government does nothing, boom-and-bust oil sands development will continue to slash productivity, stymie investors and inject volatility into the Alberta economy. Relying on industry to moderate development is a false hope: any company that slows down allows other companies to invest in a lower-cost environment at the delaying company’s expense (Bouchard & Cox, 2012) 23-24. The government of Alberta is the only actor that can build the oil sands into a stable, long-term economic asset for the people of Alberta.

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11 Cansim 383-0026 includes a labour productivity index (measured in GDP/total hours worked), a real gross domestic product index and a count of total hours worked for each major NAICS industry. The base year for the labour productivity and the GDP indices is 2002. For a particular industry, dividing the 2010 GDP index by the 2001 labour productivity index and multiplying the quotient by the total hours worked in that industry in the 2002 base year gives the total number of hours necessary to produce the industry’s 2010 GDP at its 2001 labour productivity. For Mining and Oil and Gas Extraction and for Construction, subtracting that hypothetical total number of hours from the actual number of hours worked in 2010 gives the number of additional hours worked to produce the industry’s 2010 GDP due to the decline in labour productivity between 2001 and 2010. Dividing that additional number of hours by the total hours of one full-time, full-year worker (2080) gives the number of additional workers required to produce the 2010 GDP due to the decline in labour productivity between 2001 and 2010.

Continued apathy will compress Alberta’s oil sands experiment into another few decades of macroeconomic instability, labour market pressure and environmental overload.

Governments have an undisputed role to play in the economy when the market is failing to produce the optimal outcome for any of its participants. In a classic tragedy of the commons example, shepherds grazing their flocks on a common field each increase their flocks until the field is barren; all of the shepherds would have been better off had a government regulated the number of sheep per shepherd. In the oil sands, each producer starts projects that draw from a common employment pool until productivity has crashed, wages have shot up and enormous cost overruns are the norm; producers would be better off if government regulated the timing of projects. Parts of industry, recognizing the productivity consequences of unharnessed development, have called for exactly that sort of regulation (Jergeas, 2009) 26. The provincial government has the justification, incentive and stakeholder support to act – it just needs the courage.

## II. Facilitating Interprovincial Migration

Despite very significant differences in wages and employment prospects, Canadians do not move between provinces as much as they used to (TD Economics, 2011) (Cansim 051-0012). Yet internal migration can go a long way towards solving the problems of both labour shortage and unemployment (Gomez & Gunderson, 2007) 1-2; (Amirault, et al., 2013) 16. Trained, certified Canadians with Canadian work experience are ideal candidates for Alberta’s energy sector. Departing workers from high unemployment areas bring down the unemployment rates in their home areas and may help remaining workers secure better wages. In the case of the oil patch, migrant workers and energy employers have realized some of these benefits: the oil patch workforce is well-known for its large complement of Newfoundlanders and others from Atlantic Canada.

But Alberta’s oil sector could still benefit from additional migration, and much of eastern Canada still suffers from a high unemployment rate. Yet convincing more workers to make the cross-country move is not easy. Many workers want to live near family, friends and community and would rather stay within a familiar culture (and sometimes a familiar language). Some workers rely on networks within their home provinces, and may think that their employment chances are better if they stay where they know people (Gomez & Gunderson, 2007) iii. Other workers are certified to perform an occupation within their home provinces but not elsewhere, although this problem should shrink under the revised Chapter 7 of the Agreement on Internal Trade.<sup>12</sup>

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12 The Agreement on Internal Trade is an agreement between all of provinces and territories designed to remove barriers to the movement of goods, services, investments and people. The 2009 amendment to Chapter 7 of the Agreement enabled “any worker certified for an occupation by a regulatory authority of one Party to be recognized as qualified to practice that occupation by all other Parties,” subject to a narrow public policy exception (Employment and Social Development Canada, 2013).

The financial cost of shipping a life across the country is one impediment in which government could make a difference. From down payments to truck rentals to the inevitable little things everyone needs to buy in a new place, moving is a pricey business – especially as workers get older, gain possessions and take on financial commitments to a particular location. An upfront price tag of several thousand dollars is enough to make anyone stop for a second thought about leaving home, especially if she doesn't yet have a job at her destination.

Low migration numbers from high unemployment regions to low unemployment regions due to relocation's upfront cost and uncertainty is a market failure ripe for government intervention. In the long term, the migrating worker and the economy will be better off, but in the immediate term, the worker will be significantly worse off – and therefore may not invest in the long-term benefits. The market failure is even more pronounced if the worker has no savings, in which case she may be actually unable to move. Government's role is to help bridge the financial gap. Public education works on the same principles: the monetary value of primary and secondary education is very long term and uncertain, while tuition costs are immediate. Since both individuals and society benefit when everyone gets a basic education, government removes the financial barrier.

### III. Countercyclical Apprenticeships

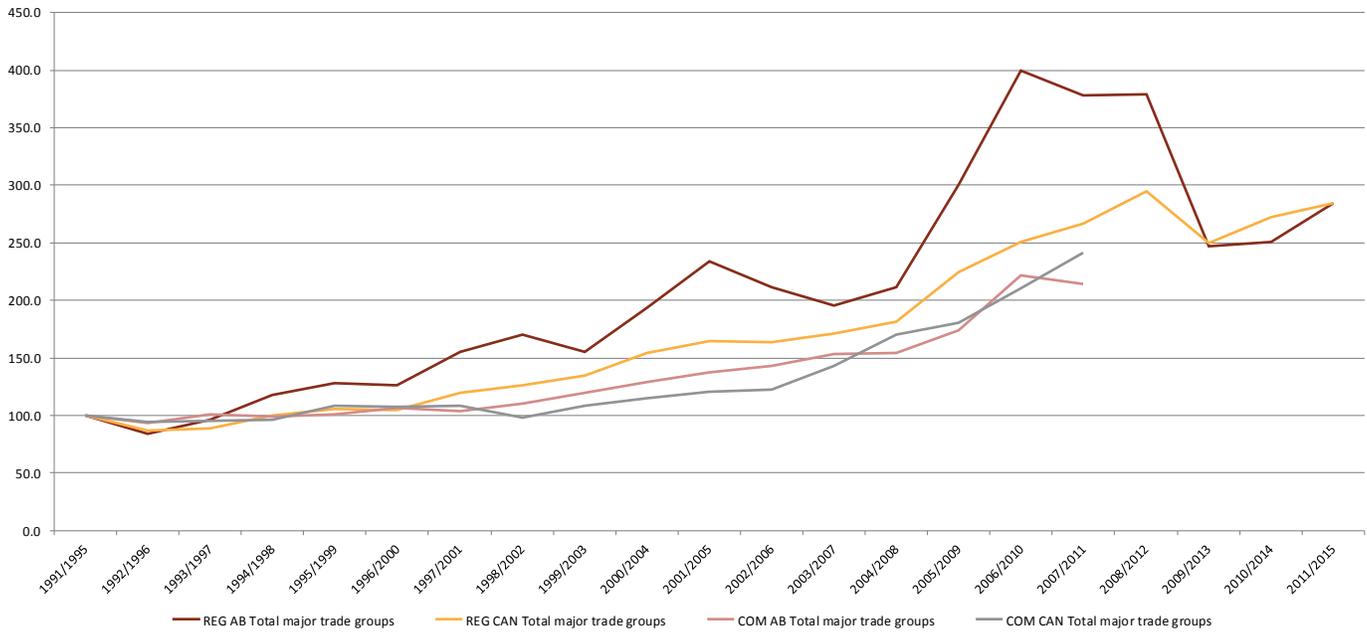
Alberta's apprenticeship system trains a far greater portion of Canada's skilled tradespeople than its share of the population: in 2011, 22% of Canada's graduating apprentices completed their training in Alberta (Cansim 477-0054). Yet Alberta still does not appear to have enough tradespeople, as the industries and sub-industries showing signs of shortage rely on tradespeople to do much of their work. Graduating more apprentices would likely reduce Alberta's oil patch labour shortages while boosting Albertans' incomes and the GoA's revenue. Moreover, while international and inter-provincial migration can help mitigate skill shortages, money earned and skills acquired by Albertans are very likely to stay in Alberta, whereas migrants may send money home or move back. If Alberta can increase the number of completed apprentices, the whole province will benefit.

Graduating more apprentices can be seen as two distinct problems: increasing the number of new apprentices, and increasing the number of apprentices who complete their programs. The first problem is probably the more complicated of the two, as it touches on public opinion on the trades, secondary school exposure, information about wages and opportunities, employer willingness to hire apprentices, and other factors. Employer willingness to hire apprentices is a significant roadblock, despite industry's desire for skilled tradespeople: only 17 percent of Canadian employers able to hire an apprentice actually do so (Luk, 2013). That dismal figure may find part of its root in the much-discussed free rider problem: rather than train its own skilled workers, an employer may simply wait until other employers invest in training and then poach trained workers with a slightly higher wage (Thelen, 2004) (Sharpe & Gibson, 2005). If every employer decides to poach from other employers, no one trains workers and employers as a group are worse off (not to mention workers).

Alberta employers, however, are more willing than most to take on apprentices: from 2001 to 2011, new registrations in Alberta made up between 18% and 30% of new registrations in Canada. Where Alberta has the most to gain is in improving the number of registered apprentices who complete their programs (Alberta Federation of Labour, 2006). The following chart gives a rough estimate of the increasing gap between registrations and completions in Alberta's apprenticeship system. The completion data are four years behind the registration data because many apprenticeship programs take four years to finish.

While Chart 1 below is not a scientific attempt to measure changes in the completion rate, it does suggest a growing mismatch in Alberta even as the gap in the rest of Canada stays similar in size. The raw numbers give perhaps a better sense of the problem: in 2007, 23 100 people registered as apprentices in Alberta, while four years later in 2011, 9 066 apprentices completed their programs (Cansim 477-0053 and 477-0054). Regardless of the exact completion rate, Alberta is losing an extraordinary number of tradespeople-in-development at a time when industry is clamoring for all the tradespeople it can get.

Chart 1: Apprenticeship Registration and Completion Growth in Alberta and Canada



Source: Author's calculations using data from CANSIM 477-0053 and 477-0054.

Many factors may contribute to Alberta's completion shortfall, but government must look to those in which it can have influence. One problem is evident from the chart: registrations jump tremendously in boom periods but often fail to translate into a jump in completions. Take the class of 2006: an enormous number of people registered as apprentices in 2006, many more than in 2005, but 2010 saw only a few more completions than 2009. Part of the problem is obvious to anyone who lived through Alberta's most recent crash: employers didn't have enough work to go around from 2008 to 2010. Apprentices, as the least experienced employees, are vulnerable to layoffs when business goes south. Such layoffs that lead to incompletions are a typical market failure: short-term decision-making on the part of the employer leaves the worker without skills and the economy without a tradesperson.

The GoA should establish an apprenticeship fund for all employers that hire skilled tradespeople. The fund would subsidize apprenticeship wages during downturns, when employers might otherwise have to layoff apprentices. The fund would ensure all employers are paying for the training on which they all depend; it would also help ensure that a ready stock of tradespeople would be ready to work when the bust turned back into boom.

Government action to correct this market failure would produce long dividends for workers, industry and Alberta alike – and maybe next time Alberta came out of a bust, the newspapers wouldn't run so many stories about labour shortages.<sup>13</sup>

13 This proposal is not to suggest that a lack of work in slow periods is the main cause of Alberta's poor completion rate. Apprenticeship completion rates are subject to a host of factors, from the economic to the psychological. However, fixing the lack of work problem is something that the government can actually accomplish relatively easily.



# Conclusion:

## A BETTER CONVERSATION



Labour shortage should not be an issue to fight over. Long-term solutions to shortages mean better training, more workers with quality jobs and higher returns to capital. When employers want people and people want jobs, the result should be a better outcome for everyone. It's only when employers undercut real solutions with policies designed to diminish worker choice and force down wages that shortage becomes a fighting word.

At the moment, the upper hand belongs to the subset of employers determined to respond to labour market pressures by bringing in temporary foreign workers and shredding the safety net. If they continue to set the direction, Alberta will suffer. Workers will have fewer skills and fewer opportunities, businesses will confront repeated shortages and limited consumer demand, and government will see declining revenues as the economy falls short of its potential.

Workers, employers and government each have a duty to fulfill in eliminating shortages. Workers need to aim for careers with high demand, employers need to reach out with training and strive to improve productivity, and government needs to address market failures that keep workers and potential employers apart. But each of these actions is only effective with correct shortage information, of which Alberta has had little. With only CFIB's bluster and faulty government of Alberta forecasts to go on, it is next to impossible for any actor to respond to Alberta's actual shortages.

This paper has begun to fill that gap. Data on employment growth, wage growth, unemployment rates and vacancies illuminate where real shortages are holding the economy back and where perceived shortages exist only in the imaginations of employers determined to suppress wages. With a better understanding of Alberta's labour market and a better grasp on the policies that make sense, workers, employers and government have the tools to start shaping a fair and prosperous future.



