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The Great Skills Divide: A Review of the Literature

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Executive Summary

Discussions of Canada's so-called "skills gap" have reached a fever pitch. Driven by conflicting reports and data, the conversation shows no signs of abating. On the one hand, economic indicators commonly used to identify gaps point to problems limited to only certain occupations (like health occupations) and certain provinces (like Alberta) rather than to a general skills crisis. On the other hand, employers continue to report a mismatch between the skills they need in their workplaces and those possessed by job seekers, and to voice concern that the postsecondary system is not graduating students with the skills they need.

This paper is the first of three on Canada's skills gap. It outlines the conflicting views around the existence and extent of a divide between the skills postsecondary graduate possess and those employers want. In laying out the competing perspectives on this issue, the report identifies four distinct themes that have been conflated in policy debates, in turn hindering efforts to gain a clearer understanding of the skills gap in Canada. For example, in the eyes of some employers and commentators, the skills gap problem is one of too few high-skilled workers in the Canadian labour market. For others, it is a problem of weak essential or soft skills, such as working with others, oral communication and problem solving. Still others use the term "skills gap" to refer to what might better be described as an "experience gap" – a shortage of "work-ready" employees possessing those skills that are acquired through work experience. Commentary on the skills gap has tended to lump these different perspectives together and this has acted as an obstacle to a coherent narrative around skills in Canada.

This report suggests that these themes should be recognized as distinct from one another. By framing Canada's skills gap in this way, we set the stage for the second and third papers of this series, which document the expectations of Canadian employers with regard to the skill levels of new graduate hires. In tackling the question of the skills gap at its interface – the initial point of contact between employers and new graduates in the advertisements and hiring processes for entry-level jobs – reports in this series provide new opportunities for groups on both the demand (employers) and supply (postsecondary) sides of the skills gap debate to strengthen alignment between the postsecondary sector and the Canadian labour market.

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Introduction

Canada's "skills gap" has come to dominate both headlines and policy debates. Employers and business representatives report a growing mismatch between the skills they need in employees and those possessed by job seekers. These concerns have fostered suggestions that the postsecondary system is not graduating students with the skills required by the labour market.

But not everyone is convinced. A growing chorus of voices questions whether or not such a gap actually exists in the Canadian economy. Nor is it clear when the skills gap is discussed that commentators have the same phenomenon in mind. Some consider the skills gap problem to result from a lack of postsecondary graduates to meet the impending demand for high-skilled workers, while others see it as a problem of students graduating with the wrong credentials for the labour market. Some suggest that Canadian students have the right credentials but not the basic essential skills needed by employers. Still others suggest that students have the right skills but lack the work experience employers demand.

This report is the first in a three-part series on the dynamics linking Canada's postsecondary system, labour market and skilled workforce. In this first paper, we address the conflicting views of Canada's skills gap, examining who is saying what and why. Taking a cue from Tyler Meredith's (2014) comment that Canada needs to "refine data collection to better reflect what is happening down below the 35,000 foot altitude perspective of the national labour market" (p. 65), the second report (*Bridging the Divide, Part I*) builds on the skills gap discussion with a content analysis of 316 Canadian job advertisements for entry-level positions for postsecondary graduates. The series concludes with the third report (*Bridging the Divide, Part II*), which reviews the findings of a follow-up survey of the employers who posted the 316 vacancies discussed in the second report, to better understand what skills employers are actually looking for (and saying they cannot find) and how they are articulating their demand for these skills. Over the course of this series, we hope to provide greater clarity to job seekers and employers navigating the job market, to postsecondary institutions tasked with developing Canada's skilled workforce and to policymakers working to ensure that labour markets operate as efficiently as possible.

Tracking the Current Discourse: Who is saying what about skills gaps

There has been a lot of discussion of skills gaps in Canada. However, there seems to be little agreement as to the basics – let alone the intricacies – of the issue: what constitutes a skills gap or a labour shortage, to what extent these problems plague Canada, and what (if anything) should we do about it?

What is actually meant by a "skills gap?" While often conflated with labour shortages, the two represent different phenomena. Labour shortages exist where there are not enough available workers in a given occupation to meet employer demand. In contrast, a skills gap exists where there is a gap between the skills that are understood by an employer to be necessary for a given occupation and the skills possessed by the job seeker. It is a problem posed by the quality of labour (Lefebvre, Simonova & Wang, 2012). In a skills gap scenario, an employee may be hired despite being either over- or under-qualified (having too many or too few skills) (Burleton, Gulati, McDonald & Scarfone, 2013).

Beyond semantics, there is little consensus as to whether or not "skills gap" is the right diagnosis for the current state of the Canadian labour market. On one side of the debate, Jason Kenney, current Minister of Employment and Social Development Canada (ESDC), has called the skills gap the "biggest economic challenge facing our country" (Kenney, 2013). The Association of Canadian Community Colleges (2013) has

suggested that certain sectors face "unprecedented" shortages of skilled employees. And the Canadian Manufacturers & Exporters points out that there were 268,000 unfilled positions in Canada by the end of 2012, even with unemployment at 7% for the general population and almost twice that for youth (Legault, 2013).

But others have expressed skepticism as to the existence of such a gap. Respected economist Don Drummond has stated that he has yet to find any credible evidence of a serious mismatch between skills and jobs and that he could not locate the data used by the Canadian government in its 2013 budget to support the existence of such a gap (Goar, 2013). Two major reports in 2013 also questioned the dominant skills gap narrative. The first report, released by TD Economics in November 2013, tested for skills shortages and mismatch by compiling a database of unemployment rates, wage rates and vacancy rates[1] for 140 occupations thought to be in excess supply or demand. While the report found "some evidence of mismatch" in specific occupations and provinces (particularly in Alberta as a result of its booming natural resources economy), it was muted in its assessment of the gaps, noting that vacancy rates and wage growth for a number of these occupations have not accelerated at the pace that would be anticipated for serious shortages (Burleton, Gulati, McDonald & Scarfone, 2013). The second report, released soon after by the Institute for Research on Public Policy, also expressed doubt that widespread skills shortages exist and/or can be anticipated, although author Cliff Halliwell did suggest that slower labour market growth is creating a new normal for the Canadian labour market (Halliwell, 2013).

Part of the confusion stems from the data. Ahead of the government's February 2014 budget, Canada's Department of Finance reported a steady increase in the share of available unfilled jobs (the vacancy rate) beginning in 2009, potentially indicative of a misalignment between the skills of the unemployed and those required by employers (Department of Finance, 2014). Shortly thereafter, Statistics Canada (2014) released data that contradicted the Department of Finance's figures, finding instead that the national vacancy rate had fallen (from 1.5% to 1.3%) in the 12 months leading up to December 2013.[2]

A second – likely more intractable – reason why confusion persists is that while much of the traditional data (such as wage and vacancy rates) on labour shortages and skills gaps in Canada suggest that the problem has been overstated, Canadian employers sound alarms about skills deficits in their own operations. The Canadian Chamber of Commerce (2012) cites data compiled through consultations with its business members, including 18 roundtables and an employer survey with over 2,000 participants, in contending that:

> The evidence is clear. The demographic shift resulting in retirements, a deepening shortfall of skilled workers and the growing mismatch between the skills needed and those available has evolved into a skilled crisis. The Canadian economy faces a deep structural problem. (p. 3)

At the provincial level, the Conference Board of Canada's survey of 1,538 Ontario employers was used to conclude that the problem is widespread in Ontario, affecting major Ontario sectors – manufacturing; healthcare; professional, scientific and technical services; and financial industries – that make up almost 40% of employment in the province (Stuckey & Munro, 2013). The Conference Board calculates that this misalignment in skills may be costing the Ontario economy as much as $23.4 billion in foregone gross domestic product (GDP) annually.

A more recent survey of 95 Canadian employers conducted by the Canadian Council of Chief Executives (CCCE, 2014) was somewhat more subdued in its assessment of skills gaps. Approximately half of the

[1] The idea here is that, if employers face real shortages, there will be a higher vacancy rate (more jobs going unfilled) and higher wages (because employers will have to offer more to attract qualified workers). If widespread labour shortages exist, a lower unemployment rate should also be observed.
[2] The methodology used by Finance Canada in particular has been heavily criticized, but these conflicting data have only added to the confusion on skills gaps.

companies surveyed indicated that a shortage of skilled workers was a moderate problem, while close to 30% said it was a small problem or not a problem at all. Only 10% of companies thought that a shortage of skilled workers was a big problem (CCCE, 2014). However, the perception that Canadian employers cannot find employees with the skills they need in their workplaces remains pervasive among employers and policymakers.

Digging Deeper

As evidenced by the preceding summary, a lot is being said about skills gaps in Canada but no cohesive story has emerged. One reason it is so difficult to make sense of the skills gap narrative is that current debates on the subject tend to conflate a number of different concerns into one discussion, even though they warrant separate examination. In the sections that follow, this paper will attempt to unpack the current narrative on skills gap in Canada by examining four distinct – and sometimes conflicting – claims commonly heard in the media and observed in the literature:

- Claim 1: Canada will not have enough postsecondary graduates to meet future demand for high-skilled[3] workers;
- Claim 2: Canadian postsecondary students are graduating with the wrong credentials to meet current and future labour market demands;
- Claim 3: Canadian students have the right credentials but lack the essential skills employers require;
- Claim 4: Students have the right skills but lack work experience.

Claim 1: Canada will not have enough postsecondary graduates to meet future demand for high-skilled workers

Several recent reports have asked whether or not Canadians will possess the postsecondary education and/or training they need to meet future labour market demand. One report that has been particularly influential in addressing this question is Rick Miner's (2010) *People Without Jobs, Jobs Without People.* In this report, Miner argues that Canada – and Ontario more specifically – faces a looming skills and labour crisis. This crisis has two parts. On the one hand, Canada will experience generalized labour shortages as baby boomers retire and the proportion of the population in its prime working years (ages 15 to 64) declines. On the other hand, changing labour market requirements will mean that the proportion of the labour force requiring some form of postsecondary education needs to increase dramatically. Postsecondary attainment rates for the 25 to 34 age group currently hover around 66.6%, but Miner predicts that 77% of jobs in the Ontario workforce will require postsecondary credentials by 2031.

Miner uses several different Canadian and American estimates to come to the conclusion that the Ontario labour market is staring down an imminent skills crisis. These estimates, which forecast the percentage of jobs that will require postsecondary education and/or training equivalent in the future, are: ESDC's (at the time HRSDC) (2007) "conservative" estimate of close to 65% of new jobs created in the next five years; British Columbia's Ministry of Skills, Training and Education's (1997) estimate of 75% (time period not specified in report); British Columbia's Ministry of Advanced Education and Labour Market Development (2009) updated estimate of 76.2%; and Holzer and Lerman's (2007) estimate of 78% between 2004 and 2014 for the American labour market. Miner also includes the U.S.-based Lumina Foundation's forecast that the US will face a shortage of 16 million postsecondary educated workers by 2025.

[3] Higher-skilled occupations require education or formal training that includes: university education, college education, vocational education and/or apprenticeship training (ESDC, 2014).

What is important for Miner is that, "while these studies vary in the details of their analysis, they all agree on the nature and direction of the changes that are occurring and can be expected to continue and accelerate" (p. 8). As a result, his own projections of the proportion of new jobs that will require skilled workers use the most conservative of his cited estimates – ESDC's estimate of 65% – as a starting point for 2006. Since "all the other predictions are higher" (p. 9), Miner assumes that this rate will increase to 70% by 2011 and by 0.5% each year thereafter. Miner thus concludes that by 2031 the proportion of new jobs requiring skilled workers will reach 80%. If postsecondary attainment rates for the 25 to 34 age group remain at the current level (66.6%) until 2031, 77.1% of all jobs (not just new jobs) at that time will require skilled workers.

One concern with Miner's projections is that they rely on what appears to be a cherry-picked sampling of Canadian and U.S. estimates that pre-support his ultimate conclusion. Indeed, Miner's projections highlight a problem that reappears throughout the broader literature on skills gaps: labour market forecasting is incredibly difficult and projections are heavily dependent on the assumptions upon which they are built. Usher (2013) makes this point, examining the assumptions underlying Miner's labour shortage projections.[4] In forecasting that Canada will face large-scale labour shortages by 2031, Miner assumes constant labour market participation rates until 2031. However, Usher points out that the employment rate has actually been increasing by 1% per year since 2000, since older workers are staying in the workforce longer than expected. If instead the assumption is made that the size of the labour force will continue to increase even marginally (rather than staying constant), Miner's projected shortage of workers in Ontario disappears. As Usher concludes, "the whole 'looming labour shortage' meme depends heavily on initial assumptions."

A second assumption implicit in Miner's projections is that requirements for formal schooling will continue to increase as the labour market becomes increasingly knowledge-based. However, while the view that the evolution of Canada's knowledge-based economy will heighten demand for high-skilled labour is commonly held (see, for example, Cheung, Guillemette & Mobasher-Fard, 2012; Finnie & Usher, 2007; Conference Board of Canada, 2007), it is based on speculation (Halliwell, 2013). Halliwell cites evidence from Beaudry, Green and Sand (2013) for the U.S. labour market that suggests that, following two decades of growth in demand for high-skilled workers, demand for cognitive skills associated with higher education has been declining since the "tech bust" in 2000. Halliwell argues that a similar trajectory could emerge in Canada as well.

The Canadian Occupations Projection System (COPS)

Miner's report has attracted widespread media attention, but the Canadian government actually produces its own projections on labour market trends. This is done by ESDC (formerly HRSDC), which uses its Canadian Occupational Projection System (COPS) to predict imbalances between labour supply and demand. While Miner bases his own projections on previous forecasts made by various American and Canadian groups – including ESDC's own projections – COPS is a much more comprehensive modeling system. Using a variety of data sets[5], COPS models the components of labour demand and supply individually.

COPS forecasts job openings and job seekers by broad skill level – that is, the level of skill required for the job (university education, college education, high school, on-the job training or management) and the level of skill possessed by the job seeker. This projection targets the same question asked in Miner's report: will we have workers with the broad skills (education or training) to meet labour market demand? But COPS is more measured than Miner in its forecasts. According to COPS 2011 projections, 69.8% of jobs created by economic expansion over the next 10 years are expected to be in occupations generally requiring postsecondary education (or in management). This is lower than the number forecasted by Miner, who puts it

[4] Miner projects both labour shortages and skills shortages in his report, although this paper focuses on the skills gaps projections.
[5] These data sets are: Labour Force Survey (LFS), National Graduate Survey (NGS), Post-secondary Student Information System (PSIS), Youth in Transition Survey, Canadian Census, Annual Demographic Statistics and Longitudinal Administrative Data (LAD).

at 75% by 2021. COPS also projects that 71.1% of school leavers in the next 10 years will have the postsecondary education required to fill these jobs. As a result, in contrast to Miner, ESDC reports that "no major imbalances by skill level are projected over the next decade" (p. 7).

More Evidence on whether or not we need more Postsecondary Graduates

Although Miner's advocacy for greater postsecondary enrolment has garnered headlines, Canada has already witnessed a rapid expansion of postsecondary education (Clark, Trick & Van Loon, 2011). In fact, a major concern has been whether or not Canada is graduating too many postsecondary students, not whether or not it has enough graduates.

Evidence suggests that Canada has done a generally good job in supplying the labour market with postsecondary graduates in the past decades (Halliwell, 2013; Drewes, 2010; Boothby & Drewes, 2010). For example, looking at 2011 Canadian National Household Survey (NHS) data, Burleton et al. (2013) point out that unemployment rates are significantly lower for individuals with a postsecondary education. In 2011, unemployment rates for the 25 to 29 year old cohort with some form of postsecondary education ranged from 6 to 8% (depending on education levels) and dip to 5.5% for individuals who received their bachelor's degree in Canada, compared to 10.4% for individuals in this age group with only a high school diploma.

Others point to the continued existence of a "wage premium" for postsecondary graduates. The idea here is that, if employers are paying more for workers with degrees than for ones without, it is because they believe that postsecondary educated workers possess greater skills and that these skills are required for the positions employers are seeking to fill. Put differently, if there were too many postsecondary graduates, the labour market would respond and the wage advantage of postsecondary graduates over their high school-educated counterparts would begin to disappear (Carnevale, Smith & Strohl, 2010).

However, this has not been the case. In the past 30 years, the positive relationship between earnings and level of education has frequently been re-established (Walters, 2004). Most recently, a Statistics Canada report by Marc Frenette found that the earnings premium associated with a bachelor's degree over a 20-year period was an average of $728,000 for men and $442,000 for women. Men with college certificates had an average premium of $248,000, while women with the same credential averaged a premium of $180,000 (Frenette, 2014).[6] Torben Drewes (2010) looked at the Ontario context specifically, using annual earnings estimates from the National Graduates Surveys and Census data for graduates from 1986 to 2005 to find that the earnings premiums to postsecondary education continue to grow moderately. This is an important conclusion given the influx of students into the system in the past decade.

Claim 2: Canadian postsecondary students are graduating with the wrong credentials to meet current and future labour market demands

Even if job seekers have the right education and training to meet job opening needs at the aggregate level, skills shortages may still exist in specific occupations. Indeed, the conclusion that skills shortages are largely confined to specific occupations in Canada has gained traction in the media and literature (Wright, 2014; Burleton et al., 2013; Grant, 2013; Halliwell, 2013; Mendelson & Zon, 2013). Yet there is significant disagreement as to which occupations face the most serious shortages. In March 2013, a member of the federal government made waves with his comment that Canada has "too many kids getting BAs and not enough welders" (Weston, 2013). This narrative has also become popular in the media (Turpin, 2014; Watts-Rynard, 2014; Lynch 2013; Sorensen, 2013).

[6] The difference in average wage premiums for men and women is troubling, but a discussion of this issue is outside the scope of this paper.

It is worth examining the evidence in support of this view. There is some evidence to support the assessment that Canada's primary concern should be with labour shortages in skilled trades. For example, ManpowerGroup's 2013 Talent Shortage Survey, which surveyed nearly 38,000 globally (and 10,000 in the Americas[7]), found that both Canadian and global employers ranked skilled trades as the most difficult positions to fill. According to ManpowerGroup, the 10 jobs Canadian employers have the most difficulty filling are:

Table 1: ManPowerGroup's List of Occupations Employers are Having Difficulty Filling

Top 10 Jobs Canadian Employers are Having Difficulty Filling
1. Skilled trades
2. Engineers
3. Management/Executive
4. Sales representatives
5. Technicians
6. Drivers
7. Accounting & finance staff
8. IT staff
9. Teachers
10. Labourers
Source: ManpowerGroup Talent Shortage Survey (2013)

However, it is important to be cautious when drawing conclusions from employer surveys. While they can be useful in assessing "the actual issues and real needs of employers" (Stuckey & Munro, 2013, p. ii), they are also subjective surveys and there is incentive for employers to overstate labour market imbalances in order to influence policymaking. Unsurprisingly, then, the tendency of employer surveys to overestimate labour market shortages has been noted (Lefebvre, Simonova & Wang, 2012).

In a 2012 report prepared for CIBC, Benajmin Tal argues that, instead of relying on what businesses are saying, a better approach to assessing skilled labour shortages is to look at what they are doing. This means examining whether rapidly rising wages and low or falling unemployment rates are observable in occupations where employers say they are facing skills shortages. Using this approach, Tal identified 25 occupations – constituting 21% of the Canadian labour market – showing signs of skilled labour shortages. These 25 occupations had an average unemployment rate of just above 1%, with wages increasing at an average rate of 3.9% annually, twice as fast as in the broader economy. Using similar methods, Tal also identified 20 occupations with a surplus of workers. In 2012, these jobs constituted 16% of total unemployment and experienced zero wage growth:

[7] The survey does not specify how many of these employers were Canadian.

Table 2: Tal's Occupations Showing Signs of Skills Shortages and Labour Surplus

25 Occupations Showing Signs of Skills Shortages	20 Occupations Showing Signs of Labour Surplus
Managers in Engineering, Architecture, Science and Information Systems	Managers in manufacturing and Utilities
Managers in Health, Education, Social and Community Services	Clerical Supervisors
Managers in Construction and Transportation	Clerical Occupations
Auditors, Accountants & Investment Professionals	Clerical Occupations, General Office Skills
Human Resources and Business Service Professionals	Office Equipment Operators
Professional Occupations in Natural and Applied Sciences	Finance and Insurance Clerks
Physical Science Professionals	Mail & Message Distribution Occupations
Life Science Professionals	Secondary/Elementary Teachers and Counsellors
Civil, Mechanical, Electrical and Chemical Engineers	Sales and Service Supervisors
Other Engineers	Cashiers
Professional Occupations in Health	Occupations in Food and Beverage Services
Physicians, Dentists and Veterinarians	Tour and Recreational Guides and Amusement Occupations
Optometrists, Chiropractors, Other Health Diagnosing and Treating Professionals	Other Attendants in Travel, Accommodation and Recreation
Pharmacists, Dieticians and Nutritionists	Technical Occupations in Personal Service
Therapy and Assessment Professionals	Other Occupations in Personal Service
Nurse Supervisors and Registered Nurses	Butchers and Bakers
Technical & Related Occupations in Health	Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations
Medical Technologists and Technicians (except Dental Health)	Fishing Vessel Masters, Skippers and Fishermen/women
Technical Occupations in Dental Health Care	Machine Operators and Related Workers in Metal and Mineral Products Processing
Other Technical Occupations in Health Care (except Dental)	Machine Operators and Related Workers in Pulp and Paper Processing
Psychologists, Social Workers, Counsellors, Clergy and Probation Officers	
Supervisors, Mining, Oil and Gas	
Underground Miners, Oil and Gas Drillers and Related Workers	
Supervisors in Manufacturing	
Supervisors, Processing Occupations	

Source: Tal (2012)

ESDC's COPS similarly projects imbalances by occupation and has generated a list that is broadly similar to Tal's. While stressing that job seekers and job vacancies are in balance at the aggregate level, COPS found imbalances in specific occupations accounting for 15% of 2010 employment (with recent labour market conditions and projections indicating more job openings than job seekers). This number is not too far off Tal's

projection of 21%, which uses 2012 (not 2010) employment numbers. Conversely, occupations with a surplus outlook – with more job seekers than job openings – accounted for 25% of 2010 employment. With Tal forecasting that occupations constituting 16% of the labour market will be in shortage, there is thus a greater gap between COPS' and Tal's projections for occupations facing shortages than surpluses. From these projections, COPS produced the lists of occupations in surplus and shortage shown in Table 3.

Table 3: COPS' Occupations Projected to Face Shortages or Surpluses

Occupation Type	COPS Occupations in Shortage	COPS Occupations in Surplus
Business, Finance and Administration	Human Resources and Business Service Professionals; Administrative and Regulatory Occupations	Managers in Communication; Secretaries, Recorders and Transcriptionists; Clerical Occupations, General Office Skills; Office Equipment Operators; Library, Correspondence and Related Information Clerks; Recording, Scheduling and Distributing Occupations
Natural and Applied Sciences and Related	Other Engineers; Architects, Urban Planners and Land Surveyors	Computer and Information Systems Professionals; Technical Occupations in Physical Sciences
Health Occupations	Managers in Health, Education, Social and Community Services; Physicians, Dentists and Veterinarians; Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals; Therapy and Assessment Professionals; Nurse Supervisors and Registered Nurses; Medical Technologists and Technicians; Assisting Occupations in Support of Health Services	
Social Science, Education, Government Service and Religion	Managers in Health, Education, Social and Community Services; Judges, Lawyers and Quebec Notaries; College and Other Vocational Instructors; Policy and Program Officers; Researchers and Consultants	
Sales and Service	Managers in Protective Services; Insurance and Real Estates Sales Occupations and Buyers; Police Officers and Firefighters;	Chefs and Cooks; Retail Salespersons; Occupations in Travel and Accommodations; Occupations in Food and Beverage Service; Cashiers; Other Sales and Related Occupations; Food Counter Attendants, Kitchen Helpers

Occupation Type	COPS Occupations in Shortage	COPS Occupations in Surplus
	Other Occupations in Protective Services	and Related Occupations; Security Guards and Related Occupations; Other Elemental Service Occupations
Trades, Transport and Equipment operators and Related	Managers in Construction and Transportation	Facility Operation and Maintenance Managers; Machinists and Related Occupations; Metal Forming, Shaping and Erecting Trades; Carpenters and Cabinetmakers; Masonry and Plastering Trades; Other Construction Trades; Upholsters, Tailors, Shoe Repairers, Jewellers and Related Occupations; Heavy Equipment Operators; Other Transport Equipment Operators and Related Workers; Other Installers, Repairers and Services; Longshore Workers and Material Handlers; Trades Helpers and Labourers; Public Works and Other Labourers
Unique to Primary Industry	Supervisors Logging and Forestry; Supervisors Mining, Oil and Gas; Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture	Fishing Vessel Masters and Skippers; Logging and Forestry Workers; Agriculture and Horticulture Workers; Other Fishing and Trapping Occupations; Primary Production Labourers
Unique to Processing, Manufacturing, and Utilities		Supervisors, Assembly and Fabrication; Central Control and Process Operators in Manufacturing and Processing; Machine Operators and Related Workers in Metal and Mineral Products Processing; Machine Operators and Related Workers in Pulp and Paper Production; Machine Operators and Related Workers in Textile Processing; Machine Operators and Related Workers in Food, Beverage and Tobacco Processing; Printing Machine Operators and Related Occupations; Mechanical, Electrical and Electronics Assemblers; Other Assembly and Related Occupations; Machining, Metalworking, Woodworking and Related Machine Operators

Source: HRSCD 2011 COPS Reference Scenario

Because Tal and COPS both use ESDC's National Occupational Classification (NOC) system, which describes and classifies all Canadian occupations, in generating their lists of occupations in shortage, the two lists can easily be compared. The NOC system is a useful tool that organizes over 40,000 job titles into 500 occupational group descriptions, including everything from "skilled sales and service occupations" to "lawyers and Quebec notaries" (ESDC, 2013). However, in comparing COPS' and Tal's lists, it is important to note that NOCs are updated every five years to account for the evolution of the Canadian labour market and that COPS uses NOC coding from 2006, while Tal's report mainly uses 2011 NOC coding.[8] Thus, some

[8] The NOC is updated every five years to match the census cycles. This process involves both labour market research and consultation.

differences in grouping are evident across the two reports and minor reordering was required on our part to facilitate comparability.

Reordering the two lists by NOC yields the lists in Tables 4 and 5.

Table 4: Tal's Occupations Showing Signs of Skill Shortages Sorted by Occupational Type (Using NOC 2011)

Business, Finance and Administrative Occupations	Natural and Applied Sciences and Related Occupations
• Auditors, Accountants and Investment Professionals (NOC 111) • Human Resources and Business Service Professionals (NOC 112)	• Managers in Engineering, Architecture, Science and Information System (NOC 021) • Physical Science Professionals (NOC 211) • Life Science Professionals (NOC 212) • Civil, Mechanical, Electrical and Chemical Engineers (NOC 213) • Other Engineers (NOC 214)
Health Occupations	**Occupations in Education, Law and Social, Community and Government Services**
• Managers in Health Care (NOC 031) • Physicians, Dentists, and Veterinarians (NOC 311) • Optometrists, Chiropractors, Other Health Diagnosing and Treating Professionals (NOC 312) • Pharmacists, Dietitians and Nutritionists (NOC 313) • Therapy & Assessment Professionals (NOC 314) • Nurse Supervisors and Registered Nurses (NOC 315) • Medical Technologists and Technicians (Except Dental Health) (NOC 321) • Technical Occupations in Dental Health Care (NOC 322) • Other Technical Occupations in Health Care (Except Dental Health) (NOC 323)	• Managers in Education and Social and Community Services (NOC 042) • Psychologists, Social Workers, Counsellors, Clergy and Probation Officers (NOC 415)

Trades, Transport and Equipment Operators and Related Occupations	Natural Resources, Agriculture and Related Production Occupations
• Managers in Construction and Transportation (NOC 071)	• Supervisor, Mining, Oil and Gas Drillers and Related Workers (NOC 823) • Underground Miners, Oil and Gas Drillers and Related Workers (NOC 823)

Occupations in Manufacturing and Utilities
• Supervisors in Manufacturing (NOC 921) • Supervisors, Processing Occupations (NOC 921)

Table 5: COPS' Occupations Projected to be in Shortage Sorted by Occupational Type (Using NOC 2006)

Business, Finance and Administrative Occupations	Natural and Applied Sciences and Related Occupations
• Human Resources and Business Service Professionals (NOC 112) • Administrative and Regulatory Occupations (NOC 122)	• Other Engineers (NOC 214) • Architects, Urban Planners and Land Surveyors (NOC 215)

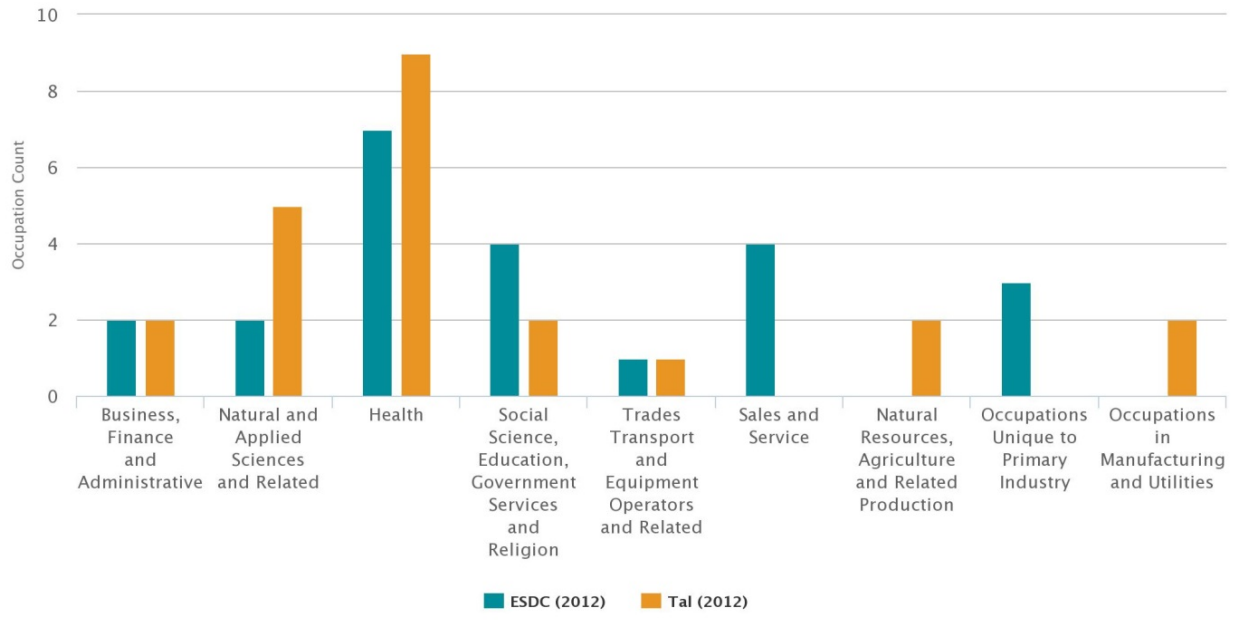
Health Occupations	Occupations in Social Science, Education, Government Services and Religion
• Managers in Health Care, Education, Social and Community Services (NOC 031) • Physicians, Dentists, and Veterinarians (NOC 311) • Optometrists, Chiropractors, Other Health Diagnosing and Treating Professionals (NOC 312) • Therapy and Assessment Professionals (NOC 314) • Nurse Supervisors and Registered Nurses (NOC 315) • Medical Technologists and Technicians (NOC 321) • Assisting Occupations in Support and Health Services (NOC 341)	• Managers in Health, Education, Social and Community Services (NOC 041) • Judges, Lawyers and Quebec Notaries (NOC 411) • Colleges and Other Vocational Instructors (NOC 413) • Policy and Program Officers, Researchers and Consultants (NOC 416)

Sales and Service Occupations	Trades, Transport and Equipment Operators and Related Occupations
• Managers in Protective Services (NOC 064) • Insurance and Real Estate Sales Occupations and Buyers (NOC 623) • Police Officers and Firefighters (NOC 626) • Other Occupations in Protective Services (NOC 646)	• Managers in Construction and Transportation (NOC 071)

Occupations Unique to Primary Industry
• Supervisors in Logging and Forestry (NOC 821) • Supervisors in Mining, Oil and Gas (NOC 822) • Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture (NOC 825)

The first observation to be made is that, at the occupational level, the two lists agree on where the shortages are located approximately half of the time. The area with the most agreement is health occupations. On both lists, health occupations have the highest number of individual NOCs in shortage, accounting for close to one-third of all jobs on each list.

Figure 1: Number of Occupations Predicted to Experience Shortages by Occupational Type



A second observation from both Tal and COPS projections is that almost all of the occupations that are expected to face labour shortages are in high-skilled occupations that require postsecondary education. Jobs that usually require a university bachelor's, master's or doctoral degree face the most significant shortages and account for close to one-half of the jobs listed by both Tal and COPS, with 10 of 20 occupations listed by COPS and 12 of the 19 occupations listed by Tal falling into this category.[9] Almost all of the remaining occupations on both lists are occupations that usually require college, vocational education or apprenticeship training. This grouping accounts for seven occupations on both lists.

Table 6: Occupations in Shortage (Excluding Management) by Skill Level Typically Required

Skill Level	Tal (2012)	COPS (2012)
University Education (NOC 2nd digit 0 or 1)	1. Auditors, Accountants and Investment Professionals 2. Human Resources and Business Service Professionals 3. Physical Science Professionals 4. Life Science Professionals 5. Civil, Mechanical, Electrical and Chemical Engineers 6. Other Engineers 7. Physicians, Dentists and Veterinarians 8. Optometrists, Chiropractors, Other Health Diagnosing and Treating Professionals 9. Pharmacists, Dietitians and Nutritionists 10. Therapy and Assessment Professionals 11. Nurse Supervisors and Registered Nurses 12. Psychologists, Social Workers, Counsellors, Clergy and Probation Officers	1. Human Resources and Business Service Professionals 2. Other Engineers 3. Architects, Urban Planners and Land Surveyors 4. Physicians, Dentists and Veterinarians 5. Optometrists, Chiropractors, Other Health Diagnosing and Treating Professionals 6. Therapy and Assessment Professionals 7. Nurse Supervisors and Registered Nurses 8. Judges, Lawyers and Quebec Notaries 9. Colleges and Other Vocational Instructors 10. Policy and Program Officers, Researchers and Consultants
College, Vocational Education or Apprenticeship Training (NOC 2nd digit 0 or 1)	1. Medical Technologists and Technicians (except Dental Health) 2. Technical Occupations in Dental Health Care 3. Other Technical Occupations in Health Care (Except Dental Health) 4. Supervisors, Mining, Oil and Gas Drillers and Related Workers 5. Underground Miners, Oil and Gas Drillers and Related Workers 6. Supervisors in Manufacturing 7. Supervisors, Processing Occupations	1. Administrative and Regulatory Occupations 2. Medical Technologists and Technicians 3. Insurance, Real Estate Sales Occupations and Buyers 4. Police Officers and Firefighters 5. Supervisors in Logging and Forestry 6. Supervisors in Mining, Oil and Gas 7. Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture

[9] Note that these numbers exclude management positions (accounting for three occupations in shortage on each list) because COPS does not classify management positions by skill level.

Skill Level	Tal (2012)	COPS (2012)
Secondary School and/or Occupation-Specific Training (NOC 2nd digit 0 or 1)	None	1. Assisting Occupations in Support and Health Services 2. Other Occupations in Protective Services
On-the-job Training (NOC 2nd digit 0 or 1)	None	None

By disaggregating this grouping further, it is possible to glean some insight into whether or not current narratives of a shortage of skilled tradespeople in Canada hold true. Both COPS' and Tal's lists suggest that this common claim is not supported by the evidence. In fact, although the pathway to entry for various occupations varies by province, Alex Usher (2013a) estimates that only five or so of the occupations listed by Tal require apprenticeships, a number that correlates approximately with the COPS list. It is thus difficult to draw support for the conclusion that Canada faces its largest shortages in skilled trades from these lists.

Both lists do, however, support the conclusion that there is weak demand in low-skilled occupations (not requiring postsecondary education). Secondary school and/or on-the-job training is a sufficient level of educational attainment for only two of the occupations listed by COPS and none of those listed by Tal. Unsurprisingly, then, both lists of occupations projected to be in a labour surplus position are also dominated by low-skilled occupations (Tables 2 and 3).

More evidence on whether or not Canadians have the Right Credentials

With both COPS and Tal's lists of occupational shortages heavily dominated by high-skill occupations, one possible conclusion is that Canada needs to ramp up postsecondary attainment. An alternative possible implication is that Canada has enough postsecondary graduates but in the wrong fields; that is, too many liberal arts and humanities graduates and too few STEM (science, technology, engineering and mathematics) graduates (Meredith, 2014). This, it is argued, has led to a skills mismatch, with liberal arts and humanities graduates ending up in low-skilled employment for which they are over-qualified, while high-skilled jobs go unfilled (Burleton et al., 2013).

Some support for this view can be drawn from the observation that occupations in STEM fields are heavily represented on both COPS and Tal's lists. A quick – and by no means comprehensive – scan of the two lists shows that somewhere between one-half to one-third of all occupations listed (with Tal's report on the higher end) require either a postsecondary STEM degree, or a high level of proficiency in one of these fields.

If high-skilled STEM jobs are going unfilled, as COPS and Tal show, does it also hold that there are a growing number of over-qualified PSE graduates in Canadian labour markets, and specifically graduates from liberal arts and humanities fields? Yes and no. Over-qualification certainly exists among young Canadian university graduates. A recent report by Uppal and LaRochelle-Côté (2014) for Statistics Canada found that 18% of university graduates aged 25 to 34[10] worked in occupations usually requiring a high school education or less, while 40% worked in occupations usually requiring a college-level education or less. However, these figures have remained essentially unchanged for the last two decades.

[10] This excludes individuals working in management positions because ESDC classifies these positions differently.

Nevertheless, over-qualification does vary significantly by field of study. Uppal and LaRochelle-Côté found that three areas of study – business, management and public administration; social and behavioural sciences and law; and humanities – accounted for 60% of all overqualified individuals. The highest rates of over-qualification were found among humanities graduates (with one-third of these graduates working in occupations usually requiring high school or less), while the lowest rates were found in education; architecture, engineering and related technologies; and health and related areas (with a rate of over-qualification between 9 and 13%). These findings also align with an earlier study by Li, Gervais and Duval (2006), which found that graduates in the fields of arts, humanities and social sciences were most likely to be over-qualified (25.6% were over-qualified in 2001), compared to only 15.5% for sciences and health graduates.

Further evidence on over-qualification by field of study has been drawn from wage data. When measured using earnings, Drewes (2010) found that the variation in earnings across fields of study in Ontario is increasing, indicating there is a lag between enrolment patterns by field of study and labour market requirements. Specifically, growth in earnings for graduates in engineering, math and computer science has outpaced wage growth for other postsecondary graduates, suggesting that demand for graduates in these fields is greater than supply. At the same time, however, there is evidence to support that the gap in earnings between liberal arts or humanities graduates and other graduates may diminish over time (Adamuti-Trache, Hawkey, Scheutze & Glickman, 2006; Giles & Drewes, 2001). This aligns with a body of literature arguing that the skills required in rapidly changing labour market are difficult to predict, and liberal arts graduates possess the skills needed to adapt as the market evolves over time (Brisbois, Orton & Saunders, 2008; Axelrod, Anisef & Lin, 2001; Giles & Drewes, 2001).

Claim 3: Canadian students have the right credentials but lack the essential skills employers require

What has emerged thus far from this literature review is that the evidence on skills shortages – when measured in terms of the requirements for formal credentials – is mixed at best. However, another story being told is that although potential employees may have the proper credentials, they often lack the right essential or “soft” skills. Essential skills are defined as those skills and competencies that provide the groundwork for learning all other skills and include such abilities as literacy, numeracy and working with others (Stuckey & Munro, 2013). “Soft” skills are a subset of essential skills, referring more narrowly to personal attributes like determination, confidence and persistence. They are also sometimes more accurately described as “transferable life skills”, because they are seen as being transferable to and necessary for success in any job (Weingarten, 2014). These “soft” skills stand in contrast to “hard” skills, which are defined as “technical expertise or content knowledge” (Sattler & Peters, 2012). It should be noted that this report uses the terms “soft” or “hard” skills when referencing literature or employer surveys that themselves use this term. In all other cases, we use the term “essential skills” as we are referring to this broader set of foundational skills.

Because it is difficult to predict what occupations will be important in the future, essential skills are seen as fundamental to ensuring that workers can adjust to workplace change. Worryingly, it has become increasingly common to hear anecdotes of the engineering or IT firm which, despite the availability of trained engineers or technicians, cannot find workers with the right cognitive and communication skills to work in the field (Finnie, 2013; Stuckey & Munro, 2013).

Anecdotal evidence aside, it is very difficult to measure an essential or soft skills gap. This is one reason why much of the literature, including Miner’s report or ESDC’s COPS, uses education as a proxy for “skills.” Degree completion can be measured but essential skills are a much less tangible concept and difficult to quantify. Moreover, a variety of terms for various competencies are often used interchangeably, and terms like “essential” or “soft” skills have come to be applied to an unhelpfully wide range of behaviours (Jackson, 2009).

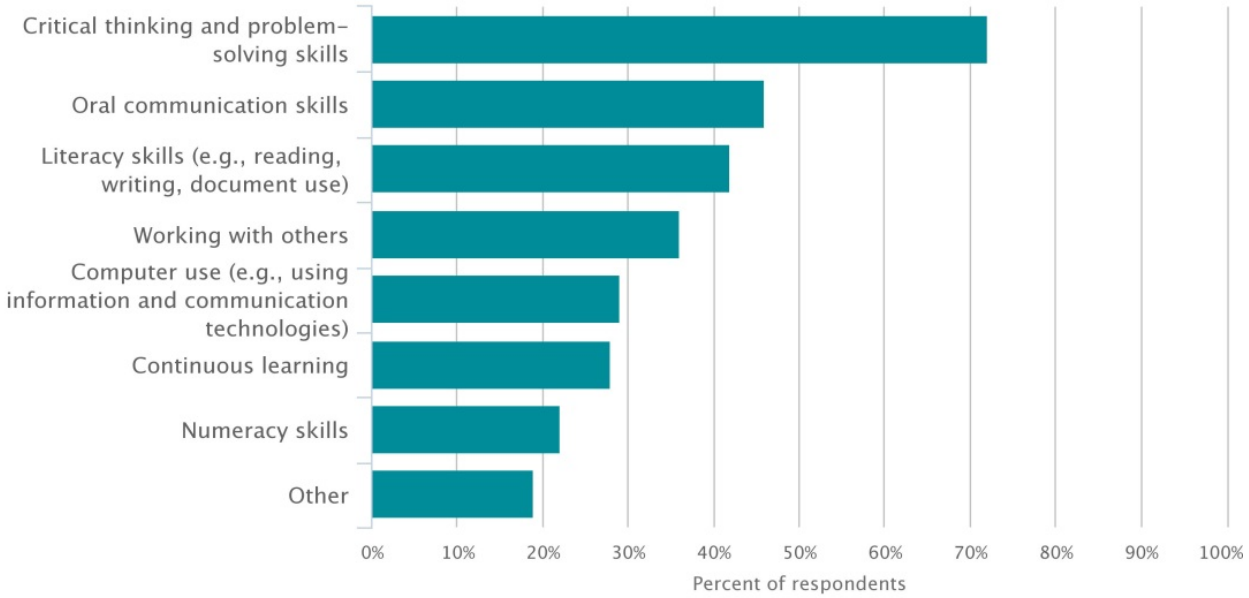
Employer Surveys

Those attempts that have been made to quantify the skills gap come mostly from employer surveys that ask employers to assess both the credentials and skillsets of the pool of workers applying for jobs.

What constitutes an essential skill varies across surveys. The Canadian Chamber of Commerce (2012) uses ESDC's list of nine basic skills: reading, writing, document use, numeracy, thinking skills, oral communication, computer use, teamwork and continuous learning. The Chamber found significant deficiencies in these skills across provinces. It also shares the concerns of employers familiar with programs like Ontario's Second Career Program, which retrain unemployed workers, that too many participating workers lack the essential skills required to be effectively retrained.

The Conference Board of Canada's (2013) report paints an even more dire picture for Ontario. Of the more than 1,500 Ontario employers surveyed, over 70% said that their workers have insufficient critical thinking and problem-solving skills, 46% said that they lack oral communication skills, and 42% said that workers are deficient in literacy skills (Figure 2). Employers were least likely to cite numeracy skills as being deficient, but even here 22% of employers said that they see gaps.

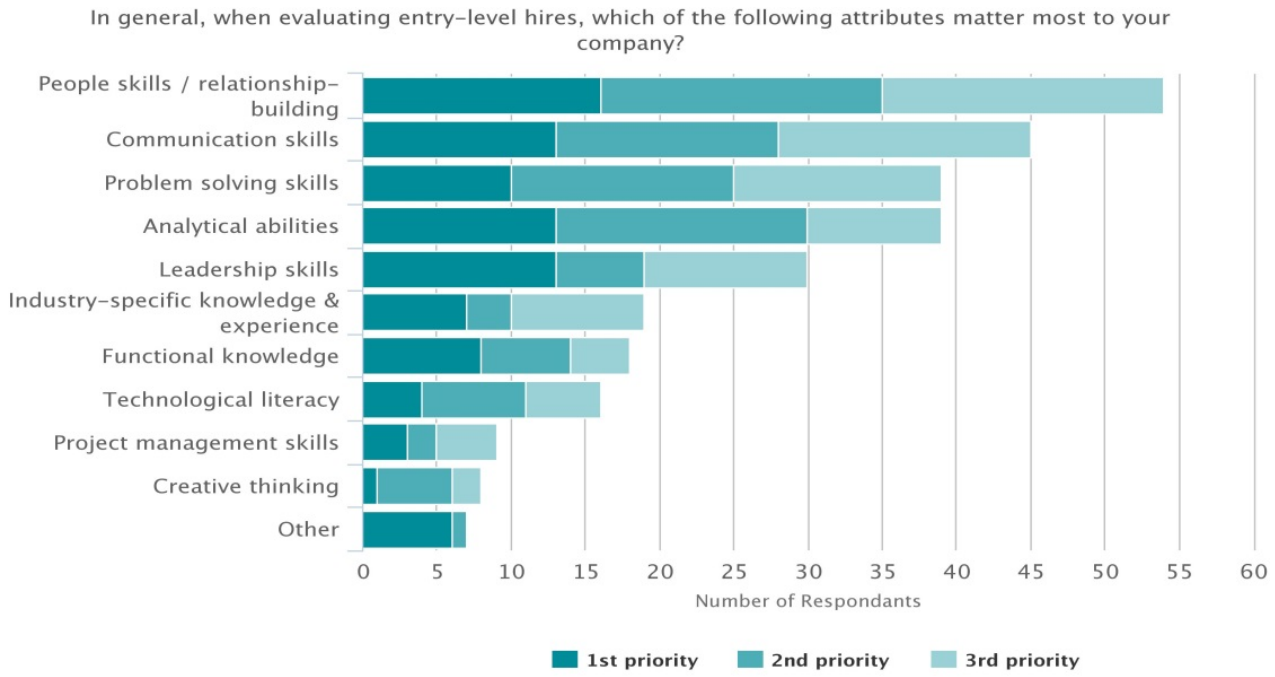
Figure 2: The Conference Board of Canada's Essential Skills Gaps



Source: The Conference Board of Canada (2013)

The Canadian Council of Chief Executives' (2014) employer survey (n=95) is of particular interest to this report because it asked employers what skills they look for in entry-level hires specifically. The CCCE survey found that employers prioritize soft skills over hard skills when hiring. According to employers, the skills they look for most in job candidates for entry-level positions are people skills/relationship building, communication skills and problem solving skills (Figure 3).

Figure 3: The Canadian Council of Chief Executives' Attributes that Matter Most to Employers When Hiring

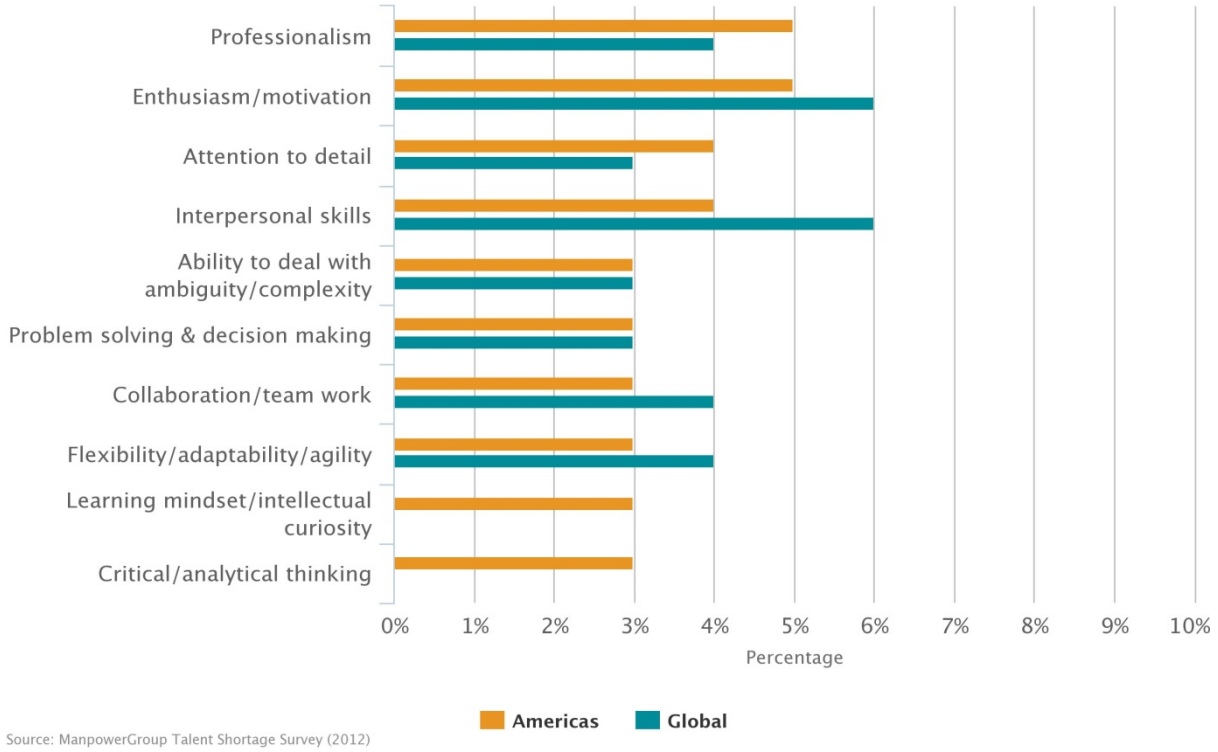


Source: Canadian Council of Chief Executives (CCCE, 2014)

In its 2012[11] Talent Shortage Survey, ManpowerGroup examined soft skills deficiencies globally. Interestingly, only 15% of employers surveyed in the Americas (n=10,232) cited a lack of employability/soft skills as a reason behind their inability to fill jobs. In contrast with the CCCE's survey, many more employers suggested that they lack applicants (36%) or that they lack applicants with the right "hard skills" or credentials (36%). Of the employers that did indicate that soft skills were a concern, the employability skills in Figure 4 were most frequently said to be lacking.

[11] Although results from the 2013 survey are now available, this question was only included in 2012.

Figure 4: ManpowerGroup's Employability/Soft Skills Deficiencies (Americas and Global)



Thus, even among the relatively small group of employers concerned with gaps in employability skills according to the ManpowerGroup, there is little agreement as to where the deficiencies are.

OECD Surveys on Skills

Employer surveys are subjective and other sources try to assess workers' skills more directly by measuring individual skills – notably literacy and numeracy – and using these as proxies. The Organisation for Economic Co-operation and Development (OECD) has taken the lead in attempting to quantify these skills. Since 2000, the OECD's Program for International Student Assessment (PISA) has measured the extent to which youth aged 15 have the knowledge and skills they will need to participate fully in "modern society" (Knighton, Brochu & Gluszynski, 2010, p. 9). Canada has historically scored near the top of the pack on PISA. In the 2009 PISA survey of 65 countries, four countries outperformed Canadian youths in reading, six in science and seven in mathematics (Knighton, Brochu & Gluszynski, 2010). Canadian youths did however slip in the most recent 2012 PISA results, with five countries outperforming Canada in reading, seven in science and – most significantly – nine in math (Brochu, Deussing, Houme & Chuy, 2013).

OECD surveys also show that Canada's performance falls further by the time youths join the working-age population (Halliwell, 2013). The OECD has now run three successive international comparative surveys aimed at measuring skillsets in the adult populations of participating countries. These surveys include the 1994 International Adult Literacy Survey (IALS), the 2003 International Adult Literacy and Skills Survey (IALSS), and the recently released 2012 Programme for International Assessment of Adult Competencies (PIAAC). Across the three surveys, the Canadian adult population converged around the middle on all three skills measured – literacy, numeracy and problem solving. Although an in-depth analysis of all three surveys

is beyond the scope of this paper, it is worth examining a few high-level findings from the most recent PIAAC survey (Statistics Canada, 2013):

- Canada scored at the OECD average for *literacy*. However, Canada has a higher proportion of its population than other participating countries at both the highest and lowest levels of literacy.
- Canada scored slightly below the OECD average for *numeracy.*
- Canada scored slightly above the OECD average for *problem solving in technology-rich environments* (which measures the skills required to operate in today's information age).

It is interesting to note the discrepancies between the essential skills as measured by employer surveys and as measured by PIAAC data. Notably, although PIAAC found the Canadian workforce to be most deficient in its numeracy skills, these skills are either infrequently or not cited altogether by employers in their assessment of their own workforce.

PIAAC results were only released in October of 2013, so major comparative analyses of PIAAC data with previous surveys have yet to be undertaken. However, economists Green and Riddell (2007; 2013) have looked extensively at the data on literacy provided by both the Canadian component of the 2003 IALS and the 1994 IALSS, examining how the skills of Canadian adults have evolved between the two surveys. A finding that emerges from Green and Riddell's comparison of the two surveys is that younger Canadian cohorts have lower levels of literacy than did their older counterparts at the same age, a gap that is particularly pronounced for highly educated individuals. Given the high levels of unemployment amongst Canadian youth, this finding is cause for concern.

Claim 4: Students have the right skills but lack work experience

When recent postsecondary graduates are asked about their experience searching for their first job, they often tell a different story altogether. They feel that they have the skills required by employers; what they lack is the work experience. Increasingly, even when searching for an entry-level job, they find that most if not all of the job postings ask for as many as three years of prior work experience (Dehaas, 2014).

Indeed, Andrew Jackson (2010) contends that a noticeable recent employment trend has been the increased emphasis placed by employers on prior work experience. This observation is supported by data collected by the 2012 Work-Integrated Learning Employer Survey, which was co-funded by the Higher Education Quality Council of Ontario and Ontario's Ministry of Training, Colleges and Universities. This survey found that relevant work experience and general work experience were the two most important factors for employers in making hiring decisions (Sattler & Peters, 2012). This finding also aligns with the results of the CCCE's employer survey, which found that most employers look for an average of two years or less of full-time work experience (but not no work experience) when hiring for entry-level positions (CCCE, 2013).

Peter Cappelli (2012), in his book *Why Good People Can't Get Jobs*, argues that labour market mismatches in the US – and consequently high unemployment rates – result from employer hiring practices rather than mismatches between employee skills and employer needs. According to Cappelli, who has tracked employer hiring practices since working on the U.S. Secretary of Labor's Commission on Workforce Quality and Market Efficiency in 1988, employers are not "complaining about the lack of academic skills among job applicants it is mainly other things that they see as important, in particular the lack of work experience" (2012, p. 10). To support this argument, Cappelli points to findings from the ManpowerGroup Talent Shortage Survey, which show that employers across the Americas are twice as likely to blame difficulty filling positions on a lack of experience than on a lack of soft skills.

Since schools do not always provide students with job-specific experience, training provided by employers has traditionally been the means through which students get the experience needed for their first job. The

problem, according to Cappelli, is that employers do not want to invest the resources required to train a new employee. Youth cohorts, which generally have little work experience, thus become undesirable employees, not because they lack the essential skills required for the job but because employers are unwilling to provide the job-specific training they require. As a result, high unemployment rates for youth can be observed, even while employers claim to face substantial shortages.

Cappelli's view is popular with many labour groups, which argue that employers have inflated the skills gap narrative, placing blame on postsecondary institutions for graduating students with insufficient skills as a means of shifting responsibility for training from business to the education system (Marcus, 2013). Several Canadian reports support the view that employer training has not been a priority in the last decade (Stuckey & Munro, 2013; OECD, 2011; Canada Council on Learning, 2007). Between 1993 and 2013, Conference Board of Canada research found that employer spending on training and development (in constant dollars) declined from $1,207 to $705 per employee (quoted in Munro, 2014). This figure is worrying on its own, but is of further concern when compared with U.S. figures on learning development; since 2006, Canadian employers have spent only 68 cents for every dollar spent by American organizations (Hall, 2014). At the same time, less than one-third of Canadian adults received employer-sponsored training in 2009, a participation rate that is well below that of other powerhouse economies in the OECD, including Sweden, Norway, Finland, Switzerland, the Netherlands and the US. Moreover, those Canadians who did participate in training received only 49 hours of job-related training in the 2009 year (Munro, 2014). While there may be legitimate reasons why employers are hesitant to provide training – the chief concern being that competitors will poach trained employees (Canadian Chamber of Commerce, 2012) – this trend suggests that employer alarm over skill shortages may be overstated.

Employers often retort that they would be willing to provide training to prospective entry-level employees who demonstrate the essential skills required to be trained effectively, but that these skills are increasingly lacking in new labour market entrants (Canadian Chamber of Commerce, 2012). Given Canada's weak showing in recent PIAAC surveys on essential skills, this may be a legitimate argument. Moreover, it may help explain why employers increasingly require work experience for historically entry-level jobs. As employers begin to doubt that schools are adequately teaching students the foundational skills, they no longer see formal credentials as accurate signifiers of skill level. Instead, they look to new signifiers, notably work experience, as evidence that prospective employees actually possess the skills they require.

Conclusion

In spite of the considerable attention that skills gaps have received in Canadian policy circles, there is little agreement as to the extent or even existence of such a divide. Given the challenges around predicting and analyzing labour market behaviour, this is perhaps not surprising. However, as our review of these discussions has indicated, the rush from various policy corners to explain and mend the rift between recent postsecondary graduates and the workforce has muddied the waters significantly. Employers, postsecondary institutions and government all have legitimate interests at stake in this issue, yet the overlap of perspectives has conflated a number of distinct dynamics at work in the present circumstances. Our review has attempted to untangle these competing influences in order to clarify the landscape for further analysis and policymaking.

This paper has reviewed four of the claims at the heart of the discussion around the skills gap. These claims – that Canada will not have enough postsecondary graduates to meet future demand for high-skilled workers; that Canadian postsecondary students are graduating with the wrong credentials to meet current and future labour market demands; that Canadian students have the right credentials but lack the essential skills employers desire; and that students have the right skills but lack work experience – divert attention from what is actually happening on the ground. Ongoing policy debates are snarled in questions of impact and

responsibility, but it has so far been unproductive to approach these issues at the level of labour market trends. Moreover, most research to date has emphasized the 'demand' side of skills shortages in Canada, relying on employer surveys to generate and analyze data, even though such surveys are generally several steps removed from the point of initial contact between businesses and new graduates in the hiring process. If anything can be concluded from our review of the skills gap debate, it is that policy and research studies are talking past each other.

As we proceed with our series on Canada's perceived skills gap, we will focus the discourse outlined in this paper through the 'supply' side of the skills shortage equation. The second paper in this series describes our content analysis of job advertisements targeting new postsecondary graduates seeking entry-level positions. Though the American job market for college graduates has been studied recently through online job postings (see Carnevale, Jayasundera & Repnikov, 2014), Canada's skills shortage has yet to be investigated in this way. Moreover, while the American study was conducted at a macro level, drawing broad labour market trends from a sample of nearly 2 million postings, our research takes a micro approach to individual recruitment processes – what skills and qualities employers look for and how these attributes are articulated in the advertisements themselves. This study will be expanded in the third and final paper of the series, which describes the findings of a follow-up survey with the employers behind the job advertisements reviewed in the content analysis to learn about the skills and experience of their new hires. As the quality and accountability of postsecondary education and training are at the heart of HEQCO's research program, it is in the hopes of encouraging and strengthening the alignment of the PSE and employer sectors that we continue to investigate the relationships between new graduates, the job market and the workforce in Canada.

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Bridging the Divide, Part I: What Canadian Job Ads Said

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Executive Summary

Discussions of Canada's so-called 'skills gap' have reached a fever pitch. Driven by conflicting reports and data, the conversation shows no signs of abating. On the one hand, economic indicators commonly used to identify gaps point to problems limited to only certain occupations (like health occupations) and certain provinces (like Alberta) rather than to a general skills crisis. On the other hand, employers continue to report a mismatch between the skills they need in their workplaces and those possessed by job seekers, and to voice concern that the postsecondary system is not graduating students with the skills they need.

For some employers and commentators, the skills gap problem is one involving too few highly skilled workers in the Canadian labour market. For others, it is a problem related to weak essential skills, such as working with others, oral communication and problem solving. Still others use the term "skills gap" to refer to what might better be described as an "experience gap" – a shortage of "work-ready" employees possessing those skills that employers claim can only be acquired through work experience. To address the conflicting views on Canada's skills gap and to argue that a better understanding of Canada's skills problem is hindered by disagreement over what actually constitutes a skills gap, HEQCO recently published *The Great Skills Divide: A Review of the Literature*.

To further explore the skills gap issue, HEQCO also published a two-part analysis of Canadian job advertisements. The current report, *Bridging the Gap, Part I: What Canadian Job Ads Said*, examines the skills employers say they need and how they communicate this need to prospective employees. Through a content analysis of 316 Canadian job advertisements for entry-level positions geared toward postsecondary graduates, this study considers what employers look for in recent postsecondary graduates in terms of credentials, essential skills and work experience. The follow-up report, *Bridging the Gap, Part II: What Canadian Job Ads Produced,* examines survey responses from employers who posted the job advertisements included in the preceding study to explore in detail the outcome of the hiring process (e.g., Was someone hired? What were his or her qualifications? Is the employer satisfied?).

The current report revealed that most employers look for employees with substantial prior experience, even for positions that were advertised as entry-level. Less than one-quarter (24%) of all employers would accept no work experience as a minimum requirement. On average, employers asked for a minimum of 1.4 years and a maximum of 2 years of work experience for entry-level positions, suggesting that the skills gap problem may be as much about experience as skills.

Of the essential skills favoured by employers, we found that employers most clearly and commonly valued employees who could work well with others, who had effective oral communication skills and strong computer skills. And while all employers in our sample requested some form of postsecondary education, almost half of employers (47%) were indifferent as to whether candidates received this credential from a college or university. Finally, the study found that in almost three-quarters of job postings examined, stated educational requirements were aligned with those of Employment and Social Development Canada, which classifies occupations by skill type and educational attainment.

These findings raise important questions for both employers and postsecondary institutions. Do employers prefer job candidates with work experience because they find recent graduates from postsecondary institutions to be ill-prepared for the labour market? Or are employers shirking their responsibilities to train new employees? More broadly, what skills should postsecondary institutions be teaching and what skills should properly be learned through on-the-job training? Answers to these questions will provide new opportunities for groups both on the demand (employers) and supply (postsecondary) sides of the skills gap debate to strengthen alignment between the postsecondary sector and the Canadian labour market.

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Introduction

Canada's "skills gap" has come to dominate both headlines and policy debates. Employers and business representatives report a growing mismatch between the skills they need in employees and those possessed by job seekers. These concerns have fostered suggestions that the postsecondary system is not graduating students with the skills required by the labour market.

But not everyone is convinced. A growing chorus of voices questions whether or not such a gap actually exists in the Canadian economy. Nor is it clear when the skills gap is discussed that commentators have the same phenomenon in mind. Some consider the skills gap problem to result from a lack of postsecondary graduates to meet the impending demand for high-skilled workers, while others see it as a problem of students graduating with the wrong credentials for the labour market. Some suggest that Canadian students have the right credentials, but not the basic essential skills needed by employers. Still others suggest that students have the right skills, but lack the work experience employers demand.

In *The Great Skills Divide: A Review of the Literature*, HEQCO addresses the conflicting views on Canada's skills gap by examining who is saying what and why. Taking a cue from Tyler Meredith's (2014) comment that Canada needs to "refine data collection to better reflect what is happening down below the 35,000 foot altitude perspective of the national labour market" (p. 65), HEQCO adds to the skills gap discussion in the current report through a content analysis of 316 Canadian job advertisements for entry-level positions for postsecondary graduates. The purpose of this analysis is to better understand what skills employers are actually looking for (and saying they cannot find) and how they are articulating their demand for these skills. In doing so, we hope to provide greater clarity to job seekers and employers navigating the job market, to postsecondary institutions tasked with developing Canada's skilled workforce and to policymakers working to ensure that labour markets operate as efficiently as possible.

Aims of this Study

What is striking about the discussion on skills gaps in Canada is that is contains so little agreement as to the extent – or even existence – of such a gap. This should perhaps not be surprising, given the notorious difficulties of both analyzing and predicting labour market behaviour.

The author of this paper is not an economist and so will spare you any attempt at labour market forecasting. Instead, this study aims to add to the skills gap discussion through a content analysis of job advertisements geared toward new postsecondary education (PSE) graduates seeking entry-level positions. Currently, most of our knowledge on skills shortages in Canada comes from employer surveys. This is problematic because employer surveys do not always tell the whole story. Employers may *say* one thing but *do* another, a contrast that can be captured in part by how they advertise the positions they seek to fill.

Canada's perceived skills gap has yet to be investigated through the lens of job advertisements. Carnevale, Jayasundera and Repnikov (2014) recently completed work using online job advertisements to look at the U.S. job market for college graduates, but their analysis was done on a macro level, drawing out broad labour market trends from a sample of almost 2 million job postings. Our research is different both because it examines the Canadian context and, more significantly, because it takes a micro approach to examining job advertisements. We are interested less in general labour market trends and more in the ways in which individual employers approach the recruitment process – what skills and qualities they look for and how they articulate their demand for these attributes in job advertisements.

Job advertisements are a valuable methodological tool in the skills gap debate because they are often the first point of contact with labour markets for job candidates. If the skills listed in the job advertisement do not match a candidate's own self-assessed skill set, they may not apply for that position despite actually being qualified.

An overarching goal of this study is to encourage and strengthen alignment between the PSE and employer sectors. Employer surveys and much of the recent literature on skills gaps adopt the perspective of groups on the demand side of the labour market. Conversely, HEQCO is interested in the supply side, tasked with supporting the postsecondary system that supplies the economy with recent graduates. Unfortunately, there is a tendency for these two sides to operate independently of one another. By looking at job advertisements geared toward new PSE graduates, we examine the demand side from the perspective of the supply side.

Keeping HEQCO's mandate in mind, the following research questions guided this study:

1. What skills are employers seeking across occupations for recent graduates in entry-level positions?
2. What can the PSE sector learn from job advertisements to help it better support its students as they transition into the labour market?

Methodology and Data

Sample

The sample of job advertisements used in this study was collected in the week of January 20, 2014. A total of 316 job advertisements were collected, representing the greatest number of advertisements that could be accessed in our time period.

As mentioned, the goal of this study was to look at the jobs available to recent postsecondary graduates seeking their first (entry-level) job out of PSE. To be included in our sample, a job advertisement thus had to meet the following criteria:

1. It had to require that the applicant have completed some form of PSE.
2. It had to state explicitly that the position was entry-level.

There are three major job search engines that allow for job seekers to search specifically for 'entry-level' positions. As such, these three search engines were used. These search engines are:

1. Monster Canada: http://www.monster.ca
2. Workopolis: http://www.workopolis.com
3. Charity Village: http://www.charityvillage.com

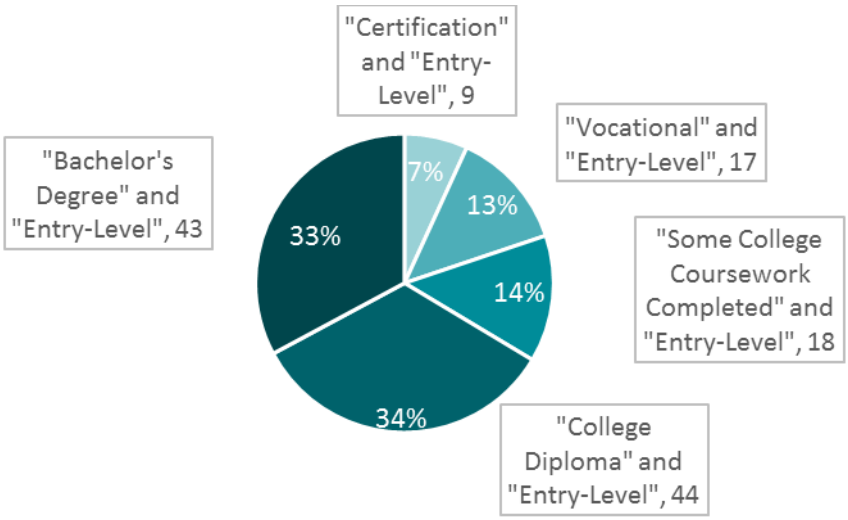
The section that follows will discuss briefly how jobs were collected from each of the three search engines in order to accommodate the minor differences in search categories available for each engine.

Collecting Job Advertisements on Monster Canada

To find advertisements for entry-level jobs requiring PSE, Monster Canada's advanced search function was used. This function allows the user to search by multiple terms at once and returns only jobs that match all selected criteria. For all searches, the "entry-level" classification was selected from a drop-down menu that

lets the user specify “career level.” Monster Canada also has a drop-down menu that lets the user select an “education level.” This study is concerned with PSE graduates entering the labour market, so the cross-selections in Figure 1 were searched.

Figure 1: Job Advertisements Sampled from Monster Canada, by Education Level



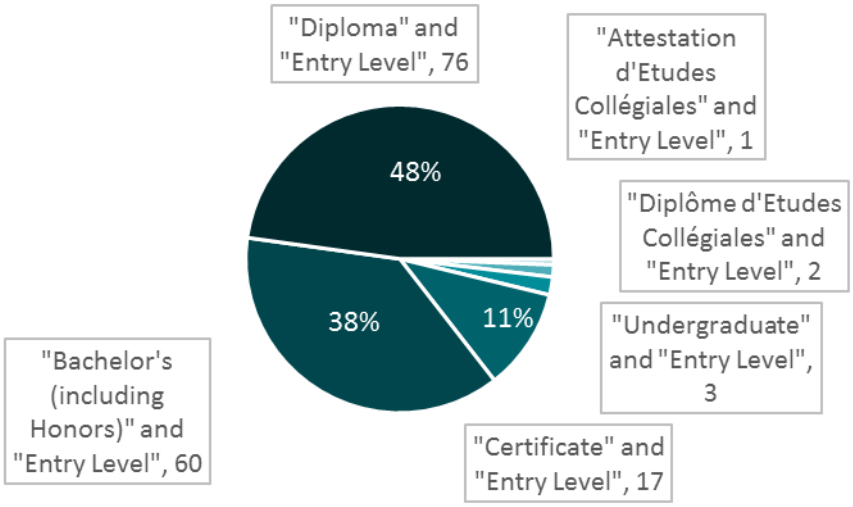
For each cross-selection of keywords, all jobs returned by the search engine at that point in time in January were collected as PDF screen shots. No further job advertisements were collected from Monster Canada subsequent to this point. In total, 131 job advertisements were collected using Monster Canada.

By collecting these educational level categories, the aim was to capture all jobs on the search engine that were open to students seeking entry-level jobs out of PSE. The decision was made to exclude graduate degrees and professional programs, as these degrees tend to be more specialized and it was determined that search engines are not the primary means through which labour market entrants with these credentials find positions. This was reflected by the fact that these search categories returned few if any job positions.

Collecting Job Advertisements on Workopolis

The same approach was used for the Workopolis search engine. Using the advanced search function again, “entry-level” was selected for “career level.” Workopolis has a slightly different list of educational categories, from which the cross-selections in Figure 2 were searched:

Figure 2: Job Advertisements Sampled from Workopolis, by Education Level



As with the Monster Canada search, all jobs returned under these cross-selections were collected. In total, 159 job advertisements were collected using Workopolis.

Collecting Job Advertisements on Charity Village

Job advertisements from Charity Village were collected slightly differently because its advanced search function allows the user to search by career level (e.g., entry-level) but not by education level. Instead, while "entry-level" was again selected for career level, once the search engine had returned its listings for entry-level jobs, education level was then assessed manually. Any job requesting any level of PSE (except for a graduate or professional degree) was retained. Several jobs that "preferred" but did not require PSE were also included.

In total, 26 job advertisements were collected using Charity Village.

Other Criteria for Inclusion/Exclusion of Job Advertisements in the Sample

Once all job advertisements had been collected based on the above criteria, jobs were also included/excluded on the following basis:

- Only jobs written in English were included (this included bilingual advertisements)
- Only jobs for which the position was based in Canada were included
- Duplicate advertisements were eliminated
- Only paid full-time jobs were collected
- Jobs listed by recruiters that did not list a business name were not included. These job ads were excluded because they often lacked information, such as industry type, necessary to our analyses.

Coding and Content Analysis

Upon collection of our sample, a team of three coders analyzed the content of the 316 advertisements. A head coder led the coding team and coded all job advertisements across categories. Two supplementary

coders were used to check the work of the primary coder to ensure that no coding category was coded in its entirety by only one person.

Coding was approached using a directed content analysis approach (Hsieh & Shannon, 2005). This coding strategy involves drawing on existing theories or frameworks to inform initial coding categories. Predetermined codes are thus employed but are expanded as the coding progresses so that "data that cannot be coded are identified and analyzed later to determine if they represent a new category or a subcategory of an existing code" (Hseih & Shannon, 2005, p. 1282). For example, essential skills were coded in this project using a framework of nine essential skills designed by ESDC, but mentions of skills that did not fit within the framework were also collected, eventually forming the basis for another eight skills categories.

Unifying ideas emerging from the job advertisements were ultimately sorted into four categories: position details, formal education, work experience and essential skills. The section that follows briefly discusses each of these categories.

1. Position Details

In order to build a broad profile of the job advertisements in our sample, the following information was collected:

- Name of position
- Company
- Province of job opening
- Occupation type, as determined by the job position's corresponding 2011 National Occupation Classification (NOC) code

National Occupation Classification (NOC) – First Digit

Although many of these categories are self-explanatory, it is worth elaborating on how and why we coded for occupation type. This was done by matching the position titles of the job postings against ESDC's 2011 National Occupation Classification (NOC) system and NOC Occupational Structure.[1] Matching job advertisements to their NOC allows us to sort the advertisements into the following occupation types based on the first digit of the NOC code:

[1] http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/OccupationIndex.aspx

Table 1: NOC Occupation Types (1st Digit)

NOC (1ST Digit)	Occupation Type	NOC (1ST Digit)	Occupation Type
0	Management Occupations	5	Occupations in Art, Culture, Recreation and Sport
1	Business, Finance and Administration Occupations	6	Sales and Services Occupations
2	Natural and Applied Sciences and Related Occupations	7	Trades, Transport and Equipment Operators and Related Occupations
3	Health Occupations	8	Natural Resources, Agriculture and Related Occupations
4	Occupations in Education, Law and Social, Community and Government Services	9	Occupations in Manufacturing and Utilities

1. Formal Education

To get a sense of what PSE credentials were most commonly requested by employers on employment websites, we also coded information pertaining to the formal education requirements for the job posting. For formal education, the following was coded:

- Specified level of education
- Education level (referred to as skill level by ESDC) associated with the job position's NOC code
- Preferred field(s) of study
- Openness to other field(s) of study

Specified Credential

Each job advertisement was coded for the credential that was requested by an employer. A number of keywords were grouped into five education categories. These categories and keywords are:

Table 2: Credential and Common Keywords

Coding Category	Common Keywords
Postsecondary education (non-specific)	"college or university degree;" "degree or diploma;" "university degree or equivalent"
University degree	"university degree;" "bachelor's degree;" "undergraduate degree"
College diploma or degree	"diploma;" "college diploma"
Certificate primarily granted by colleges	"certificate;" "college diploma"
Apprenticed trade positions	"journeyman"
"Some college coursework"	"some college coursework"
Certificate primarily granted by private career colleges/institutions	

National Occupation Classification (NOC) – Second Digit

ESDC's NOC codes were also used to assess educational requirements because the second digit of the job's NOC code tells us what level of education ESDC considers to be normally associated with a job title. This allows us to determine the level of education that ESDC expects a suitable candidate for a position in one of our job advertisements to possess, which can be compared to the level of education actually requested in the advertisement. Possible levels of education are:

Table 3: NOC Skill Types (2nd Digit)

NOC (2nd Digit)	Skill/Education Level
0 and 1	Occupations Usually Requiring University Education
2 and 3	Occupations Usually Requiring College or Vocational Education or Apprenticeship
4 and 5	Occupations Usually Requiring Secondary School and/or Occupation-specific Training
6 and 7	Occupations Where Required On-the-job Training is Usually Provided

Preferred Field of Study

Many job advertisements requested that the degree possessed by the job seeker be in a particular field(s) of study. For example, a job advertisement might ask for "a university degree in communications, public policy or journalism." In order to capture the diversity of fields of study being requested by employers, we counted the mentions of each field. Relying heavily on the University of Toronto's categorization of academic disciplines, Ontario Colleges' classification of college-specific programs[2] and the Ontario Colleges of Trades' classification of trades[3], fields of study were grouped as follows:

1. Humanities
2. Natural sciences
3. Formal sciences
4. Social sciences
5. Agriculture
6. Architecture & design
7. Business
8. Education
9. Engineering
10. Healthcare sciences
11. Journalism, media studies & communications
12. Library & museum studies
13. Public administration
14. Office administration
15. Computer & telecommunications
16. Culinary, hospitality, recreation & tourism
17. Community & social services
18. Fire, justice/law & security
19. Health, food & medical
20. Insurance
21. Trades
22. Performance arts

Openness to Other Fields of Study

While many job advertisements were explicit in requesting candidates with credentials only in specific disciplines, other job advertisements were open to unspecified or "related" fields of study. We coded whether or not an employer was open to a candidate with a non-specified disciplinary background or one outside of that which they requested.

Work Experience

Another common theme emerging from the job advertisements was the mention of work experience. In particular, the following information pertaining to work experience was collected:

- Minimum years of work experience requested
- Maximum years of work experience requested
- Is the type of experience specified or is any type of experience accepted?

Minimum and Maximum Years of Work Experience Requested

Many jobs requested that applicants fall within a range of years of work experience (e.g., three to five years). We coded both the maximum and minimum numbers of years requested to capture these ranges.

Is the type of experience specified or is any type of experience accepted?

Some employers wanted job-specific experience (e.g., an employer seeking an administrative assistant might ask for two years of work experience as an administrative assistant), while others considered any experience in a workplace to be sufficient. These job advertisements simply asked for some number of years of "work experience." It was noted whether a job advertisement asked for the former or the latter.

[2] http://www.ontariocolleges.ca/findprogram
[3] http://www.collegeoftrades.ca/about/trades-in-ontario

Essential Skills

One of the most difficult details to capture in the coding was the immense diversity of essential skills requested by employers in the job advertisements. To try to translate this diversity into something more manageable, we used ESDC's (2013) categorization of essential skills as a springboard. ESDC's list of essential skills comprises nine skills considered to be fundamental to "work, learning and life." These nine skills are reading, document use, numeracy, writing, oral communication, working with others, thinking, computer use and continuous learning (Table 4).

We wanted our coding to portray the relative value employers place on each of these skills, which we determined would best be approximated if we coded each job advertisement for the number of times an activity listed in that job advertisement required an essential skill rather than simply whether or not that skill appeared at all. For example, if a job advertisement listed main duties for that position as including "reading and writing project briefs and reports" and then later listed "good written communication" as a required skill, the advertisement would be coded as having two mentions of writing and one mention of reading.

A number of keywords emerged that helped determine if information listed in the job advertisement fit into one or more of the essential skill categories. Table 4 lists some of these common keywords.

Table 4: ESDC's Essential Skills Definitions and Common Keywords

Essential Skill	ESDC Definition	Common Keywords
Reading	Understanding materials written in sentences or paragraphs (e.g., letters, manuals)	gathering information; compiling information; reviewing literature; researching; extracting content
Document Use	Finding, understanding or entering information (e.g., text, symbols, numbers) in various documents, such as tables or forms	providing documentation; filling in forms; verifying reports; documenting activity; data entry; transcribing; record keeping; payroll documentation; accounting documentation
Numeracy	Using numbers and thinking in quantitative terms to complete tasks	producing statistics; forecasting; analyzing data; modelling; metrics and analytics; evaluating data; economic analysis
Writing	Communicating by arranging words, numbers and symbols on paper or a computer screen	developing materials; producing or preparing written documents; editing; written communications; spelling and grammar; developing content; writing emails
Oral Communication	Using speech to exchange thoughts and information	verbal communication; telephoning; delivering presentations; greeting people; teaching and training; responding to inquiries
Working with Others	Interacting with others to complete tasks	interpersonal skills; customer service skills; teaching and training; leadership; negotiating; collaborating; networking; coordinating with

Essential Skill	ESDC Definition	Common Keywords
Thinking	Finding and evaluating information to make rational decisions or to organize work	innovative; analytical; problem solving; investigating; assessing; critical thinking; making recommendations; evaluating; developing strategies; developing policies and proposals
Computer Use	Using computers and other forms of technology	proficiency in Microsoft Word; website coordination; typing; social media; managing online databases; computer skills; emails; IT management; database development; software use; programming; IT service desk
Continuous Learning	Participating in an ongoing process or improving skills and knowledge	initiative; willingness to learn; adaptable; likes challenge; constant learner

Throughout the coding process, a number of themes emerged from the job advertisements that did not fit within EDSC's characterization of essential skills. These skills (based on associated keywords) were coded into the following categories:

Table 5: Other Skills Appearing in Job Advertisements and Common Keywords

Essential Skill	Common Keywords
Administration and Organization Skills	administration; organizational skills; logistical coordination; clerical skills; day to day coordination; help plan events
Sales Skills	ability to sell; sales skills; meet sales quotas; convert sales leads; brand marketing; solicitation skills
Attention to Detail	attention to detail; detail oriented; high degree of accuracy; meticulous
Time Management	time management; multitasking; punctual; work in a fast paced environment; work under pressure
Ability to Work Independently	self-motivated; work independently; work unsupervised
Social Responsibility, Professional Responsibility and Judgment	professionalism; strong sense of judgment; maintains confidentiality; mature; political engagement; concern for environment; integrity; values
Visual Skills (eye for design)	design skills; visual design; print design; communicate through design; prepare drawings; read drawings
Other Skills	(see below)

The “other skills” category was used to collect a number of terms that appeared frequently in advertisements but that had no obvious place in the delineated coding categories. These terms were: persistence/determination; reliable/dependable; flexible; driven; entrepreneurial; results/goal oriented; dynamic; confident; hard worker; quick learner; passionate; energetic; enthusiastic; positive attitude; follows direction; courteous; competitive; resourceful; and sense of humour. For each of these terms, it was noted whether or not they appeared (on a yes/no basis) in a given job advertisement.

Inter-observer reliability

With the exception of the essential skills coding, the information collected from the job advertisements – such as province, PSE requested, years of work experience – was coded into finite categories. For these sections, the head coder defined the codes, which were employed by both the head and second coder in coding these categories in their entirety. The head coder then checked their codes against the codes of the secondary coder, adjusting the data to account for misassigned codes. Misassigned codes were found to be the result of error rather than disagreement between coders.

The coding of essential skills was more complex because it required more subjective decision-making. As such, ensuring inter-observer reliability was paramount. Due to the time-intensiveness of the process, the essential skills section was coded primarily by one coder, so a second coder was used for “check-coding” (Scott, 1955) of a random sample of the advertisements. Starting with the randomly selected fourth job advertisement in the sample, the second coder coded every twentieth job advertisement. In doing so, they relied on an extensive list of keywords (a sample of which are listed above) prepared by the head coder. The findings of the head coder and second coder were then compared, with agreed upon discrepancies reconciled and non-agreement documented. Inter-observer reliability was calculated using Cohen’s Kappa coefficient, a statistical measure of inter-rater agreement. Cohen’s Kappa is considered a more robust measurement of inter-observer reliability than simple percent agreement because it accounts for the agreement that occurs by chance (Carletta, 1996). Reliability for the essential skills coding in this report was determined to be 0.88 (88%). While there is some disagreement as to how to interpret the Kappa statistic, Landis and Koch (1977) consider a Kappa of 0.81 to 1.00 to be “almost perfect”, while Krippendorff (1980) more conservatively considers a Kappa of 0.80 or greater to represent “good reliability.”

Study Limitations

There are several limitations that arise from both this study’s sampling methodology and its use of content analysis.

Sampling Limitations

It is important to recognize that online job postings do not fully reflect actual labour markets (Carnevale et al., 2014). Only certain types of employers advertise vacancies using online job search engines. Because of the cost associated with advertising on these search engines, it is likely that these websites are more commonly frequented by large businesses. Other employers may not advertise at all, choosing instead to rely on separate networks to do their hiring. For example, it has been observed that ‘white collar’ jobs are more commonly advertised online than are ‘blue collar’ positions (Carnevale et al., 2014). However, since the skills gap narrative stems in part from employers saying that they cannot find suitable candidates to fill their jobs, we would hope to see employers using all available avenues to recruit employees.

At the same time, job descriptions are often carefully crafted by human resource departments, particularly in large workplaces, and may reflect specific HR concerns more so than the preferences of the actual hiring unit. Other concerns include the fact that not all positions are advertised externally, while other positions are only advertised because union rules stipulate open competition, even though the employer has already found an internal candidate.

In the case of Charity Village, this search engine only posts jobs from non-profit organizations, so jobs in this sector are over-represented. However, only 8% of jobs in our sample were collected using Charity Village. Despite these limitations, online job databases provide valuable information on labour market demand as they are used extensively by both employers and job seekers (Carnevale et al., 2014). Of all mediums available for disseminating information on job openings, job postings on major search engines like Monster or Workopolis likely also reach the largest audience and are thus particularly useful in examining how employers maximize their chances of finding an employee with the hard-to-find skills they require.

Coding Limitations

A second set of limitations emerges when trying to extract information on skills demand from advertisements. Job advertisements may list any number of skills, ranked in no particular order. For this reason, we coded not only whether a skill was mentioned but also the number of times the job referenced activities relating to each skill. However, there is no guarantee that frequent mentions of a skill mean that that particular skill matters most to an employer.

At the same time, it is impossible in many job advertisements to discern whether the skills listed are required skills or merely preferred ones. Conversely, the fact that a skill is not listed does not mean that it is not important to employers. The very opposite may be true – an employer seeking a software developer may make infrequent mention of “computer use skills” because they consider these skills to be so fundamental to the job as to be assumed to be self-evident to the applicant.

Several researchers have furthermore acknowledged that skills listed in job advertisements may suffer from being inconsistently defined, so that two employers may interpret what appears to be the same skill on paper very differently (Gallivan, Truex & Kvasny, 2004).

Another common problem was the poor quality of job advertisements. It was not unusual to find job advertisements that were riddled with spelling mistakes, missing words, contradictions and/or generally confusing statements. These problems were at times significant enough to impede the ability of the coder to assess the content of the job advertisements accurately.

Finally, although this content analysis of job advertisements was useful in identifying the skills demanded by the Canadian labour market, it falls short in its inability to tell us anything about the job advertisement’s outcome. Did the employer find an employee with suitable skills? Why or why not? There may be a variety of reasons why an employer did not hire a candidate who fit the job advertisement, none of which will be possible to identify in this study. For example, candidates may be interviewed, none of whom possess the skills in demand. Or, despite the availability of candidates with the skills listed in the job advertisement, employers may hire a candidate with a different skillset. Another potential outcome is that the employer hired a candidate with the skillset demanded in the job advertisement but that the skills listed in the job advertisement were not really necessary for the day-to-day work of the successful candidate (Harper, 2012). All of these outcomes point to different root causes of Canada’s real or perceived skills gap, but none of them can be identified through this content analysis. However, many of these questions will be explored in *Bridging the Divide, Part II: What Canadian Job Ads Produced*.

Findings

Occupational Type

Using the NOC code associated with each job position, we tracked the distribution of job advertisements across occupation type.

Figure 3: Job Postings by Occupation Type

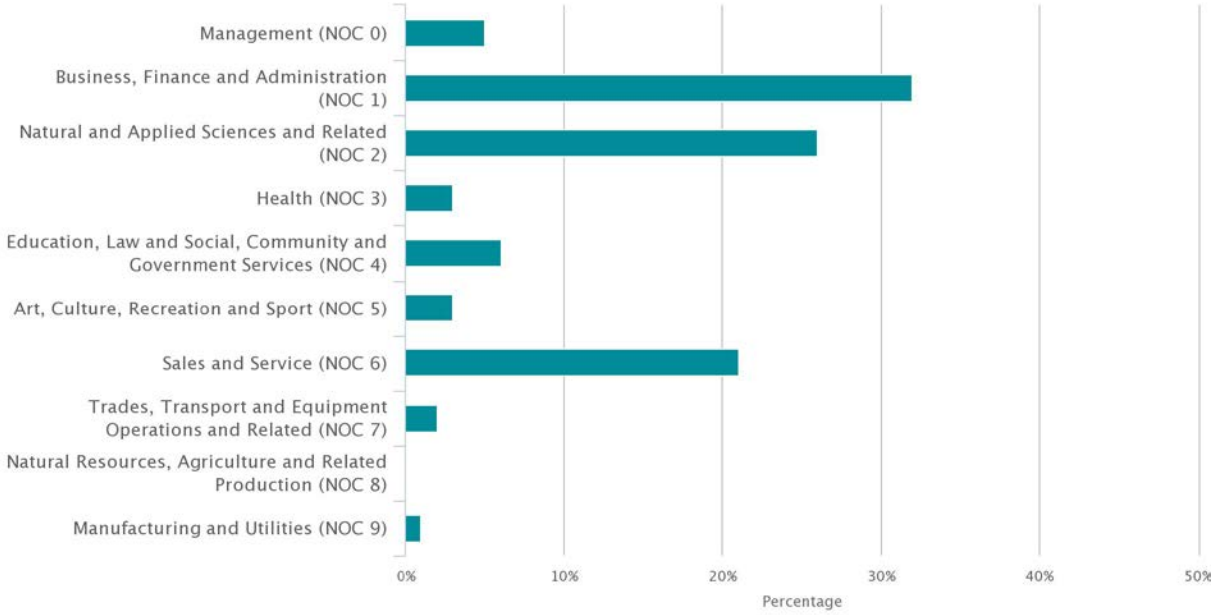


Figure 3 shows that the largest number of job advertisements – almost one-third of all positions – was in occupations in Business, Finance and Administration. Of these 101 job advertisements, the largest segment of jobs (39%) was for administrative positions, either in administrative and regulatory positions or as office administrative assistants. Common job titles included “office administrator,” “administrative assistant,” “program assistant,” “coordinator” and “program coordinator.”

The second most common occupation type was Natural and Applied Sciences and Related Occupations, which represented 26% of our sample. Within this occupation group, over half of the job advertisements (57%) were either systems professionals or technical occupations in computer and information systems. Common job titles included “systems analyst,” “database developer,” “software engineer,” “systems administrator,” “help desk analyst” and “network administrator.”

Jobs in sales and service occupations were the third most commonly advertised positions, accounting for 21% of jobs in our sample of advertisements. Of these 66 job advertisements, just under one-third (30%) were looking for financial sales representatives, and specifically for personal banking officers to work the front lines in Canadian banks and credit unions.

Thinking back to both Benjamin Tal (2012) and ESDC’s (2011) COPS lists of occupations forecasted to face shortages (discussed in *The Great Skills Divide*), it is evident that there is not an overly strong relationship

between their lists of occupational shortages and the occupation types of the positions advertised in our sample. While both Tal and COPS list a number of shortages in the three occupational types most represented in our sample – Business, Finance and Administration; Natural and Applied Sciences and Related; and Sales and Services – these positions do not form the majority of shortages in either list. Instead, both Tal and COPS forecast health occupations to face the most significant shortages, but these occupations represent less than 4% of our sample. This discrepancy most likely points to how different occupations recruit for and fill vacancies. Many of the positions in health occupations (e.g., doctors or nurses) are extensively regulated and job placements are coordinated by organizations that work directly with PSE programs rather than through public job postings.

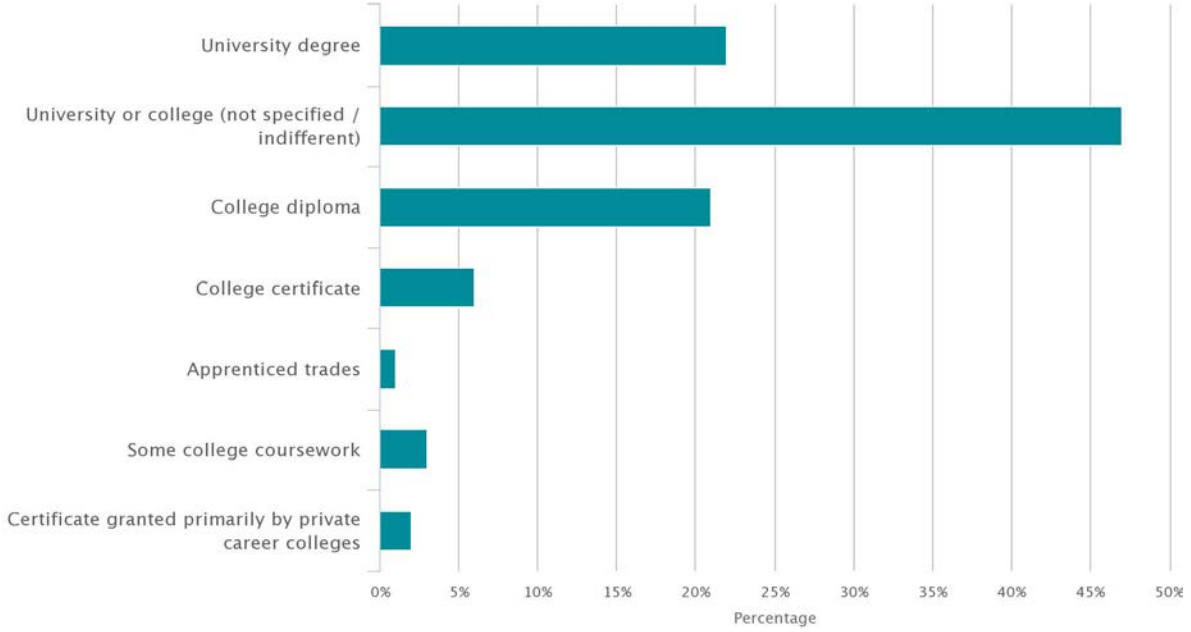
Interestingly, our breakdown of job advertisements by occupational type in Canada aligns quite closely with Carnevale et al.'s (2014) findings on in-demand occupational clusters in the United States. Carnevale et al. found that positions in the managerial/professional office cluster were most frequently advertised (accounting for 33% of positions in our sample), while positions in STEM came second (28%) and sales/office support positions ranked third (14%). Unlike our findings, Carnevale and his team have healthcare professional/technical occupations ranked fourth (at 11%), a finding that may partially be explained by the relative deregulation of the healthcare industry in the US when compared to Canada.

Education

1. Level of PSE

Examining the specified level of education for job advertisements highlighted several trends.

Figure 4: Job Postings by Level of Postsecondary Education



First, almost half of all jobs (47%) asked for a postsecondary degree but were indifferent as to whether or not it was granted by a college or a university. There were two ways in which employers most frequently voiced this requirement. The first was to request that suitable candidates have "postsecondary education in [x field

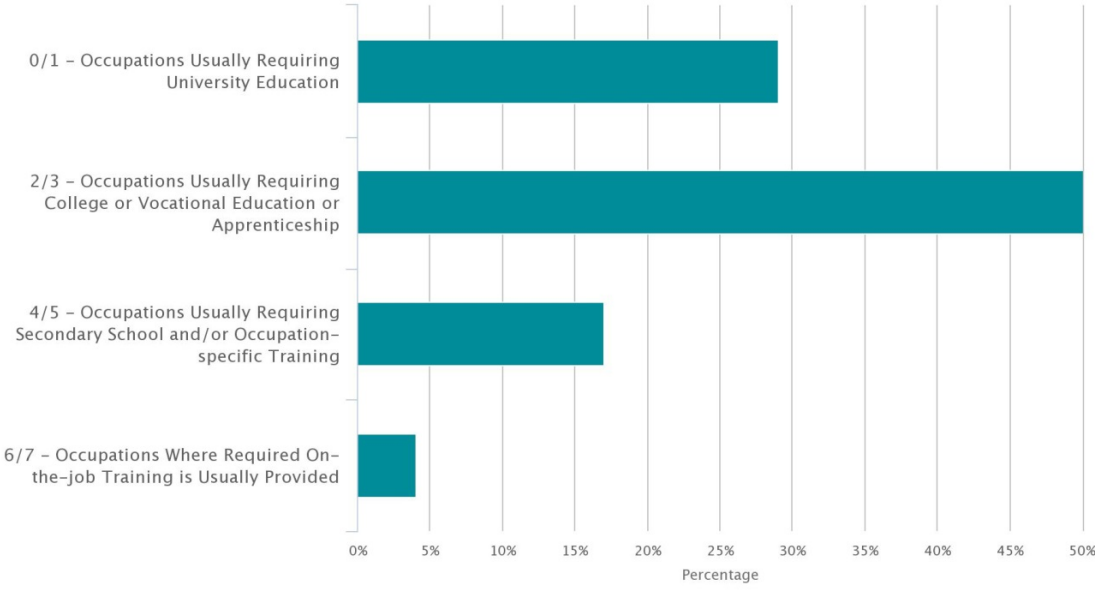
of study]." The second was to request that candidates have "a university degree or college diploma in [x field of study]."

University-specific degrees were requested 22% of the time. These jobs requested "university degrees," "bachelor's degrees" or "undergraduate degrees," often in specified fields. Notably, college diplomas were requested with almost the same frequency (21% of the time). However, once other college credentials are added, such as college certificates, apprenticed trade positions and "some college coursework," this value increased to 31%, surpassing requests for university degrees.

2. NOC Skill Level

We were interested in examining if 'credential creep' was apparent in our job postings. This occurs when employers demand increasingly greater levels of PSE for the same position over time. To assess credential creep, we again used ESDC's (2011) NOC codes, which allow us to determine (through the second digit of the code) the level of education that ESDC expects the suitable candidate for a specific job title to possess.

Figure 5: Job Postings by NOC Skill Level



By matching the level of education normally required for a position (as per the NOC) with the level of education requested in the actual job advertisement, we get a sense of the extent to which employers are seeking "overqualified" employees.

Table 6: Level of PSE Requested in Job Advertisement by NOC Skill Level

NOC Skill Level	Level of PSE Requested: University	University or College (Indifferent)	College Diploma	College Certificate	Apprenticed Trades	Some College Coursework	Certificate (Private)	Total
University Education	36	46	7	3	0	0	0	92
College or Vocational Education/ Apprenticeship	23	82	34	10	3	3	4	159
Secondary School and/or Occupation-specific Training	7	15	24	3	0	3	1	53
On-the-job Training	2	5	1	2	0	2	0	12
Total	68	148	66	18	3	8	5	

The grey squares in Table 6 show the incidence of overlap between the skill level prescribed by NOC coding and the education level actually requested in the job advertisement. In total, 218 of the 316 job advertisements (69%) requested the level of education anticipated by the NOC.

In particular, of the 92 job titles determined by NOC coding to require a university education, 36 of these jobs (39%) actually requested a university-specific credential in the advertisement. However, this number rises markedly if we include job advertisements that did not differentiate between college and university PSE, since a further 46 of the 92 positions (50%) indicated no preference between a university degree and a college credential. If we include the latter category, a total of 89% of the positions expected to be within the NOC's university education category actually requested this level of education in the job advertisement.

Of the 159 job positions determined by NOC coding to normally require college, vocational education or apprenticeship, 54 postings (34%) actually requested one of these credentials. A further 82 job advertisements (51%) would accept either college or university. Altogether, this means that 88% in this NOC category would actually accept college, vocational education or apprenticeship training. On the other hand, only 23 job postings (14.4% of all job advertisements) displayed what could be considered credential creep, requesting a university degree rather than a college/vocational/apprenticeship credential.

Finally, it is striking to observe that a number of jobs that the NOC categorizes as "low-skilled" occupations – occupations deemed to require either secondary school, less than two years of occupation-specific training or training courses, or simply on-the-job training – request extensive PSE experience in the actual job advertisement. Looking at these two "low-skilled" categories, we see a combined total of 54 job positions (82% of jobs classified by NOC as low-skilled) ask for either a university degree, university or college education, or a college diploma.[4] And while this sample is skewed because we only collected job advertisements that explicitly requested some type of postsecondary education, one might expect to find these jobs requesting some college coursework or less rather than full-scale undergraduate degrees or college diplomas.

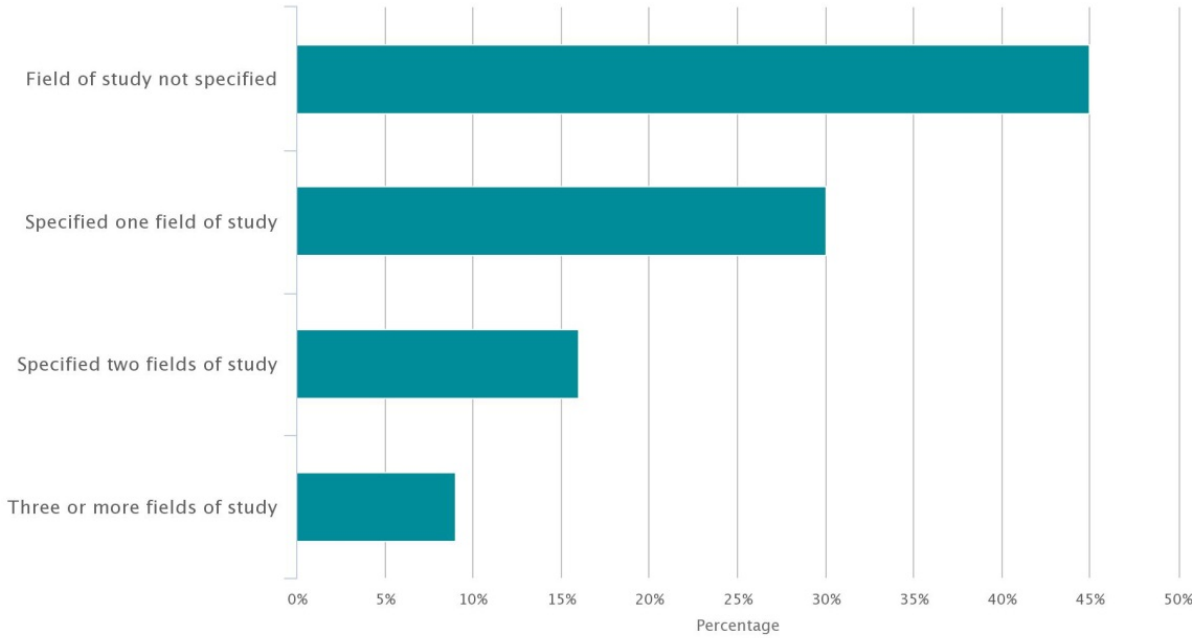
[4] College certificate, apprenticed trades, some college coursework and private certificates were left out, since there is a good deal of murkiness surrounding whether these count as less than two years of occupation-specific training or training courses.

3. Fields of Study

Although all employers in our sample sought candidates with a PSE credential, they varied as to how specific a credential they requested. Just under half of all job postings (45%) did not specify a field of study, requesting instead a general PSE credential like a “university degree” or “college diploma.”

For the 173 job advertisements (55%) that did specify, employers listed between one and six acceptable fields of study. Thus, an employer might request “a university degree in business” or, more broadly, “a university degree in business, statistics, or economics.” Of the 173 job advertisements that did specify, over half (55%) specified only one field. A further 29% specified two fields and 9% specified three fields.

Figure 6: Job Advertisements by Number of Fields of Study



We also captured the number of times each specific field was mentioned across job advertisements.

Table 7: Job Advertisements by Field of Study

Field of Study	Number of Mentions	Percent of Total Field of Study Requests
Business	94	32%
Engineering	38	13%
Formal sciences	25	9%
Architecture and design	18	6%
Computer and telecommunications	17	6%
Trades	14	5%
Natural sciences	10	3%
Social sciences	8	3%
Healthcare sciences	8	3%
Journalism, media studies and communications	10	3%
Office administration	9	3%
Fire, justice/law and security	9	3%
Health, food and medical	9	3%
Humanities	5	2%
Community and social services	7	2%
Education	2	1%
Pubic administration	2	1%
Culinary, hospitality, recreation and tourism	2	1%
Insurance	4	1%
Agriculture	1	0.3%
Library and museum studies	1	0.3%
Performance arts	1	0.3%
Total:	294	100%

As was the case when we disaggregated the job advertisements by occupation type, natural and applied sciences and business again dominate the list of fields of study in demand by employers. Degrees in business, including degrees in business administration, commerce, finance and management, were requested most frequently, in 32% of the cases where a specific field was mentioned. Engineering degrees – civil engineering, mechanical engineering, mining engineering and computer engineering – were the second most commonly requested field of study, accounting for 13% of all specific field of study requests. Formal science degrees were third most requested at 9%, with employers most commonly asking for degrees in computer science, mathematics and statistics.

Some of the 173 job advertisements that requested at least one specific field of study also stated that they would accept a “similar” or “related field” (e.g., university degree in computer science or related discipline).

Table 8: Job Advertisements by Openness to Other Fields of Study

Openness to Other Fields of Study	Number of Mentions	Percent
Open to other or "related" fields	49	28%
Not open to other fields	124	72%
Total:	173	100%

Of the 173 positions that did stipulate a field of study, 28% were open to related or similar disciplines, while the other 72% specified which fields would be suitable for the job position.

One reason why we tracked the openness of employers to candidates with varied disciplinary backgrounds was to test the assumption of many educators that the value of a PSE credential lies primarily in honing essential skills like critical thinking or problem solving rather than in the disciplinary knowledge learned in any particular field of study. Thus, one question to ask is to what extent employers hire university and college graduates because they associate PSE credentials with stronger essential skills, as opposed to hiring candidates with specific disciplinary knowledge. In this regard, the frequency with which employers either did not specify a field of study or were open to candidates with fairly broad disciplinary backgrounds (a combined 61% of the time across all job postings) suggests that employers hire candidates with PSE for reasons that go beyond just the specific disciplinary knowledge of that candidate.

Work Experience

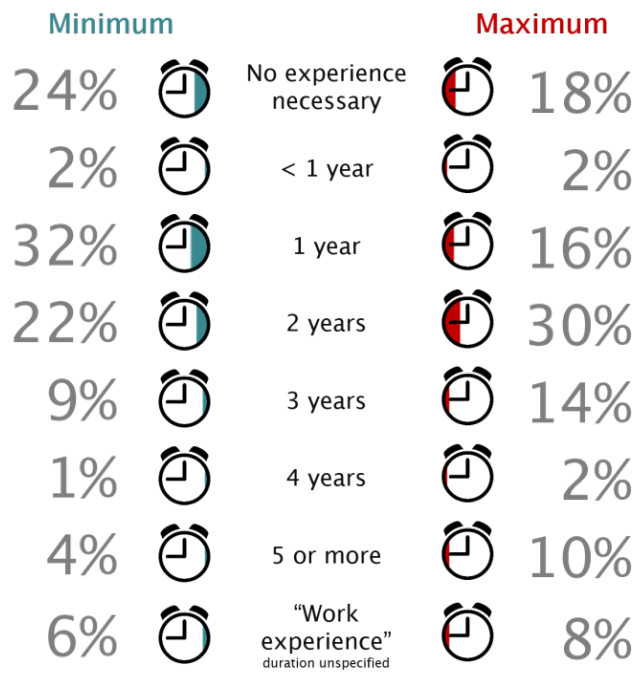
1. Years of Work Experience

The amount of work experience requested by employers for entry-level positions for PSE graduates provides insight into this idea of an "experience gap" – the gap between the number of years of work experience employers expect of recent PSE graduates and the number of years these graduates can reasonably have accumulated upon graduation.

Our research looked at both the minimum and maximum number of years of work experience requested by employers. This allowed us to capture the tendency of employers to specify a range of accepted work experience (e.g., two to five years).[5]

[5] If employers specified one amount (e.g., four years), this number was considered both the minimum and maximum.

Figure 7: Job Advertisements by Minimum and Maximum Years of Work Experience



From Figure 7, it is striking to observe how few of what are ostensibly entry-level positions are interested in candidates without work experience. Less than one-quarter of all employers (24%) stated that zero years[6] was their *minimum* requirement for years of work experience, a number that decreases to 18% when assessed for maximum years of work experience requested.

Also of interest for new PSE graduates is that only five jobs (2%) advertised for candidates with less than one year (but more than zero years) of work experience. This is notable because this category included the type of work experience recent PSE graduates can most easily acquire while in school – summer internship/work experience (requested in two advertisements) and/or co-op experience (requested in one advertisement).

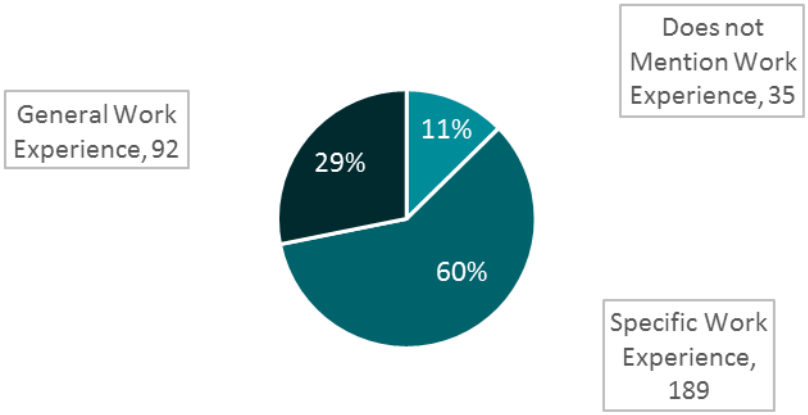
On average, employers that requested work experience asked for a minimum of 1.43 years of work experience and a maximum of 1.99 years of work experience.

2. Type of Work Experience

In addition to specifying the number of years of work experience desired in job candidates, many employers also expected a candidate's work experience to relate directly to the advertised position. In total, 60% of employers wanted job-specific experience (Figure 8).

[6] Jobs that did not mention work experience at all were assumed to be requesting zero years of work experience for both their minimum and maximum.

Figure 8: Job Advertisements by Type of Work Experience



What is perhaps more surprising is that 29% of employers cared only that the job applicant have some number of years of work experience but were unconcerned as to from where came that experience. This raises the question of why employers prefer job applicants with general work experience. Are there certain skills that employers believe candidates with general work experience bring to the workplace that they find to be lacking in recent PSE graduates without this experience? More broadly, why are employers hesitant to employ students right out of PSE, opting instead to seek candidates with work experience? Although not answerable through our content analysis, these questions have important implications for the PSE sector.

Essential Skills

In order to better understand what essential skills matter most to employers when making hiring decisions, we examined how employers articulate, prioritize and rank these skills in job postings.

Figures 9 and 10 show the most frequently requested essential skills, measured by whether or not a skill was mentioned at least once in a job advertisement. Figure 9 also shows the total number of times that each skill was mentioned in all of the 316 job advertisements, as a percent of the total of all mentions of skills (6,322 mentions).

Figure 9: Job Advertisements by Essential Skills

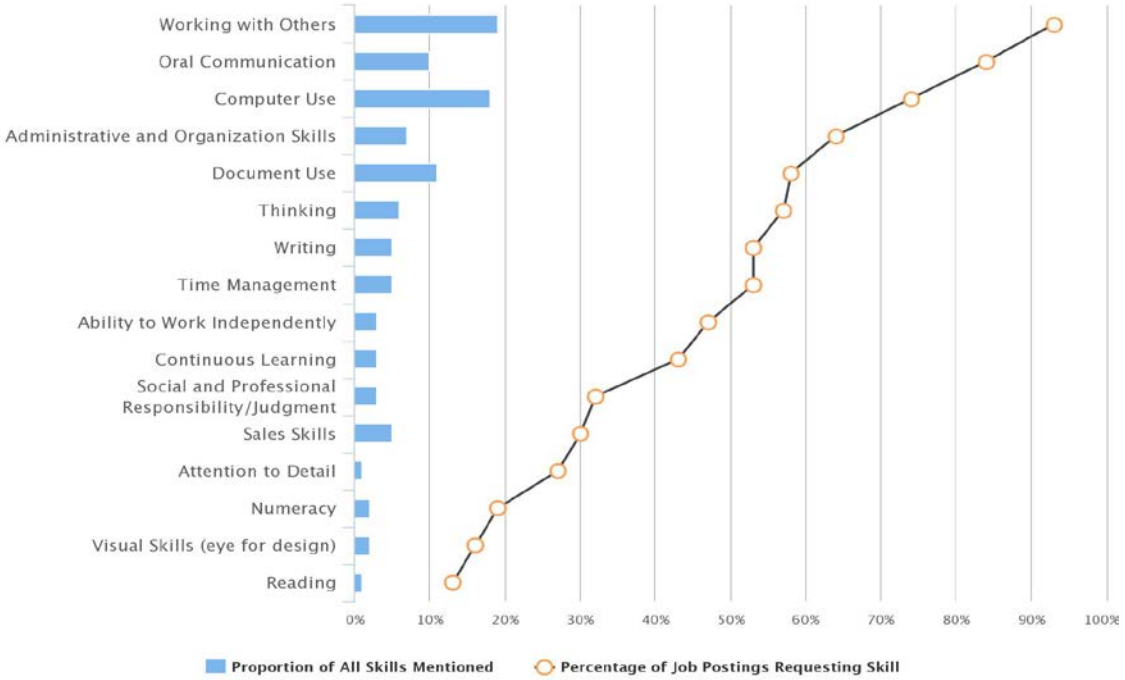
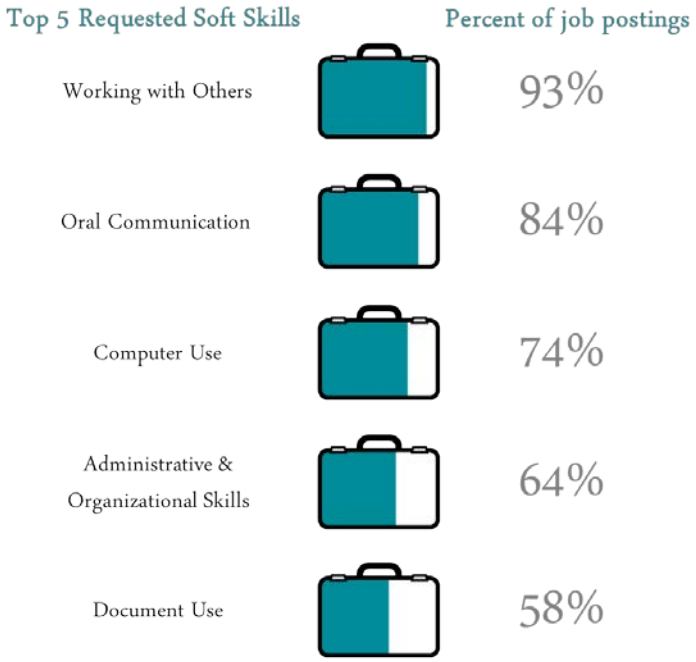


Figure 10: Top 5 Essential Skills Measured by Percentage of Job Postings Requesting Skill



Although this paper will not examine each skill in detail, our comparison of the number of job advertisements in which a skill was mentioned to the total number of times a skill was mentioned leads to several observations worth highlighting.

1. Working with Others

Working with others – defined as interacting with others to complete tasks – was the most frequently requested skill in terms of both the number of job advertisements in which it was requested and its total number of mentions. This skill was sought in 93% of all job advertisements.

Activities and abilities associated with the skill of working with others were requested a total of 1,190 times in the 316 job advertisements, accounting for 19% of all skills requested by employers. Moreover, employers that mentioned the skill of working with others did so an average of 4.03 times per job advertisement.

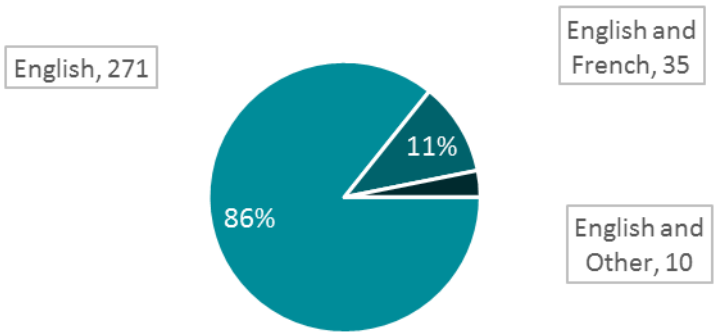
2. Oral Communication

Oral communication – using speech to exchange thoughts and information – was the second most commonly requested skill by number of job advertisements, with 84% of employers requesting this skill.

Although more employers asked for oral communication than any other skill except working with others, they asked for it less frequently; when measured by the number of total mentions of abilities or tasks indicative of oral communication, this skill falls to fourth (with 10% of all mentions), behind working with others, computer use and document use. On average, employers that asked for oral communication skills did so 2.33 times per job advertisement.

It is worth noting that the decision was made to separate requests for French and/or other non-English language fluency out of oral communication, so these requests are not included in the above counts. A separate analysis found that 86% of job advertisements were for English-only positions, 11% were for French bilingual positions and 3% were for other bilingual positions (Figure 15). The latter category included job advertisements requesting Spanish, Korean/Mandarin/Cantonese or Punjabi, Dutch and/or the ability to speak an unspecified “second language.”

Figure 11: Job Advertisements by Languages Requested



3. Computer Use

When measured in terms of the number of job advertisements in which a skill was requested, computer use – using computers and other forms of technology – was the third most frequently mentioned skill, appearing in 74% of all job advertisements. However, when measured using total number of mentions, computer use moved to second most important, constituting 18% of all skills mentioned. On average, employers that listed activities and/or abilities that require computer skills did so 4.72 times per job advertisement.

Table 9: Job Advertisements by Computer Use

Number of Times a Job Advertisement Mentions Computer Use	Number of Job Postings	Total Mentions
0	81	0
1	67	67
2	53	106
3	19	57
4	19	76
5	14	70
6	9	54
7	12	84
8	6	48
9	9	81
10	6	60
11	2	22
12	2	24
13	1	13
14	3	42
15-47	13	306
Total:	316	1110

Table 9 shows that the range of times a job advertisement mentioned “computer use” is much wider than for other skills, with a maximum value of 47 mentions in a single job advertisement. This reflects the fact that postings advertising jobs in computer and information systems – including help desk analysts and technicians, systems administrators, software applications analysts and network analysts – tended to list a number of specific and advanced computer skills. These skills ranged widely, from software development to network or server support, familiarity with specific operating systems, familiarity with specific software, and/or programming and scripting. It was also notable that job advertisements with extensive lists of advanced computer skills often listed little else in terms of other essential skills. At most, one line at the bottom of the job advertisement might diverge from computer skills to request some variation of “good oral and written communication skills.”

To help us differentiate between jobs that required these advanced computer skills and jobs that only required more basic computer use, Table 10 shows the number of job advertisements and total mentions for basic computer skills only. These basic skills include generic “computer skills,” keyboarding skills, emailing and

familiarity with Microsoft Office. Table 10 shows that 47% of employers did not request any basic computer skills. However, this number is deceiving since many of these employers still requested advanced computer use; just under half (45%) of these employers, while listing no basic computer skills, listed advanced computer skill in their job postings. Thus, it should also be observed that 33% of employers requested one basic computer skill, most commonly either emailing or familiarity with Microsoft Office.

Table 10: Job Advertisements by Computer Use (Basic Only)

Number of Times a Job Advertisement Mentions Basic Computer Use	Number of Job Postings	Total Mentions
0	147	0
1	104	104
2	45	90
3	7	21
4	6	24
5	3	15
6	3	18
7	1	7
Total:	316	279

4. Document Use

Document use is defined as “finding, understanding, or entering information (e.g., text, symbols, numbers) in various documents, such as tables or forms” (ESDC, 2013). Although document use was only the fifth most requested skill in terms of number of job advertisements (mentioned 58% of the time), it moves to third when measured by total number of mentions (accounting for 11% of all mentions of skills). On average, employers that mentioned activities and/or abilities associated with document use did so 3.63 times per job advertisement. As previously mentioned, 32% of job advertisements were in business, finance or administration, and many of the mentions of document use referenced administrative tasks like filling out forms, entering data and/or record keeping.

5. Numeracy

Numeracy – using numbers and thinking in quantitative terms to complete tasks – was notable for the infrequency with which employers requested it. Numeracy ranks third from the bottom when measured by the number of job advertisements in which it is included (19%) and accounts for only 2% of all mentions of skills. Moreover, where numeracy was requested, it was mentioned an average of only 1.73 times.

Table 11: Job Advertisements by Numeracy

Number of Times a Job Advertisement Mentions Numeracy	Number of Job Postings	Total Mentions
0	255	0
1	41	41
2	10	20
3	4	12
4	3	12
5	1	5
6	0	0
7	0	0
8	2	16
Total:	316	106

One reason that numeracy appeared infrequently in our job advertisements is that our initial coding of numeracy defined the skill quite narrowly. Based on the definition "thinking in quantitative terms," we focused on abilities and/or tasks that required numerical analysis or evaluation and excluded tasks that were focused on entering numbers in spreadsheets, such as accounting and payroll documentation.[7] When, in an alternate coding scheme, these tasks were considered to be part of numeracy skills, the number of job advertisements in which numeracy is mentioned increased from 61 (19%) to 111 advertisements (35%) and the total number of mentions increased from 106 to 369 (Table 12). For job advertisements in which numeracy was mentioned, the average number of mentions also increased from 1.73 to 3.32. However, although these are considerable increases, numeracy is still left far behind other skills like working with others, oral communication or organization skills.

[7] These abilities and tasks were included in document use.

Table 12: Job Advertisements by Numeracy (Expanded Definition)

Number of Times a Job Advertisement Mentions Numeracy (Expanded Definition)	Number of Job Postings	Total Mentions
0	205	0
1	35	35
2	30	60
3	10	30
4	14	56
5	5	25
6	3	18
7	3	21
8	3	24
9	2	18
10	0	0
11	1	11
12	2	24
13	1	13
14	0	0
15	0	0
16	1	16
17	0	0
18	1	18
Total:	316	369

Specifically Mentioned Skills

In addition to the list of essential skills discussed above, a number of precisely worded skills and attributes recurred throughout the job advertisements. For example, an employer might ask specifically for “entrepreneurial(ism)” or “a positive attitude.” These skills were clearly important to employers but had no obvious home in our list of essential skills. For these skills, we coded only whether or not the job advertisement mentioned the exact term specified in the list of skills in Table 13.

Table 13: Job Advertisements by Other Skills

Specifically Mentioned Skills	Number of Job Advertisements in which Skill is Mentioned	Percent of All Job Advertisements
Results/goal-oriented	43	14%
Energetic	27	9%
Positive attitude	28	9%
Reliable/dependable	25	8%
Flexible	22	7%
Driven	19	6%
Entrepreneurial	15	5%
Quick learner	15	5%
Persistence/determination	12	4%
Ambitious/career-oriented	12	4%
Dynamic	14	4%
Passionate	12	4%
Enthusiastic	14	4%
Confident	8	3%
Hard worker	11	3%
Courteous	8	3%
Sense of humour	7	2%
Follows direction	4	1%
Competitive	3	1%
Resourceful	3	1%

This list of skills gives the reader a snapshot of the wide range of skills valued by employers. There were also a few unusual skill requests, including an employer who asked for “a demonstrated ability to attend work on a regular basis,” another who sought an employee “willing to wear company uniform” and one who detailed that no “prima donnas, mediocrity, excuses, indifference, [or] politics” would be accepted.

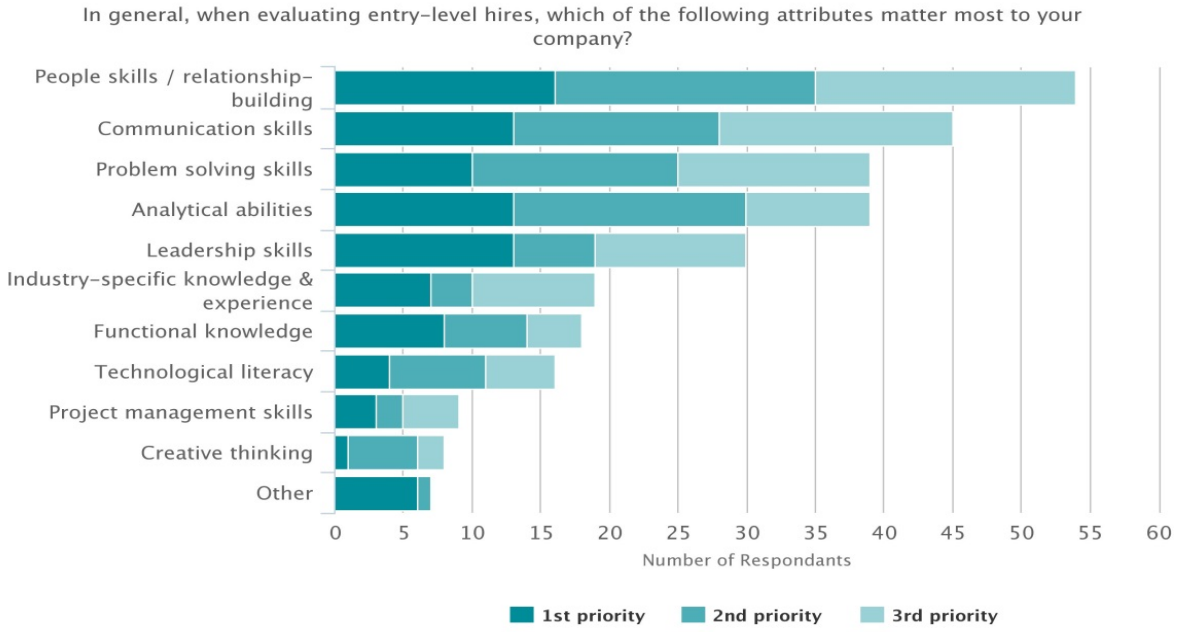
Comparing with Employer Surveys

Figure 9 (see page 28) summarizes how employers ranked each skill, measured both by the percent of job advertisements that listed a skill and by the number of times employers mentioned a skill relative to all other skills.

The question of how employers articulate their demand for skills has guided this study. Given our findings on how employers rank various skills against one another, we can also gain some rough insight into whether or not the relative value they place on each skill in job advertisements aligns with how they rank these skills when asked directly in employer surveys. To do so, we look at how employers rank their demand for skills in

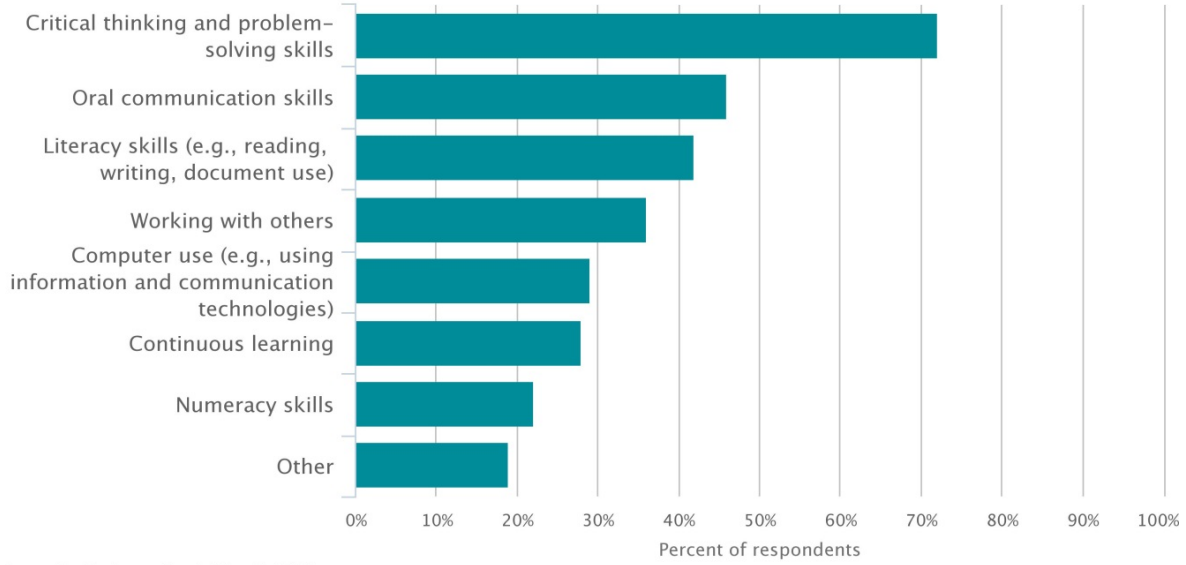
two employer surveys, one conducted by the Canadian Council of Chief Executives (Figure 12; CCCE, 2014) and the other by the Conference Board of Canada (Figure 13; Stuckey & Munro, 2013).

Figure 12: The CCCE's Attributes that Matter Most to Employers when Hiring



Source: Canadian Council of Chief Executives (CCCE, 2014)

Figure 13: The Conference Board of Canada's Essential Skills Gaps



Source: The Conference Board of Canada (2013)

Readers should bear in mind that the two employer surveys list different essential skills, making any comparison inexact. More significantly, the two surveys also ask different questions. While the CCCE survey asks employers which skills matter most to them, the Conference Board surveys is concerned with which skills employers find to be most deficient among current employees (in Ontario). As a result, comparing our results with those of the CCCE tells us if employers are actually asking for the skills they say they most desire in candidates, while a comparison with the Conference Board survey tells us if the skills shortages they say they face in the workplace are important enough to translate into active recruitment of employees based on these skills.

From our comparison of the skills rankings in job advertisements with those from employer surveys, it is striking to observe how important the skill of working with others is to employers. Working with others was the most frequently requested skill in job advertisements when measured both by number of job advertisements and total mentions, and employers ranked "people skills/relationship building" first in the Canadian Council of Chief Executives (CCCE) survey. Moreover, the Conference Board reports that just under 40% of employers are concerned with the ability of their employees to work with others.

Similarly, communication skills were also ranked highly across both job advertisements and the various employer surveys. In job advertisements, oral communication was the second most frequently requested skill and fourth by number of mentions, while the CCCE reports that communication skills are the second most valuable skill to employers[8] and the Conference Board finds oral communication skills to be second most deficient in employees.

Other skills show greater divergence. Both the CCCE and Conference Board surveys suggest that employers place high value on thinking skills, with "problem solving skills" and "analytical skills" the third and fourth most important skills for respondents in the CCCE survey, and "critical thinking and problem-solving skills" ranked first by employers as being deficient in the Conference Board survey. In contrast, our analysis of job advertisements, which grouped these skills (problem solving, analytical skills and critical thinking) under "thinking" skills, found that thinking was only the sixth most frequently mentioned skill in job advertisements. However, while the surveys suggest that employers place greater value and found larger deficiencies on thinking relative to other skills, it does not suggest that more employers value thinking in employer surveys than in job advertisements; 57% of job advertisements mentioned thinking, which is actually higher than the percentage of employers that stated that they value problem solving or analytical abilities in the CCCE survey.

Computer use was one of the most inconsistently ranked skills across job advertisements and employer surveys. Our job advertisement analysis found that computer use was the third most frequently listed skill (mentioned in 74% of job advertisements) and came second in number of mentions. Yet the CCCE survey found that less than 20% of employers listed "technological literacy" as a priority for employers when hiring in entry-level positions, and only about 30% of employers thought that their employees were deficient in computer use skills when asked by the Conference Board.

Finally, numeracy is notable for the infrequency with which it is mentioned both across job advertisements and in employer surveys. It appears only 20% of the time in job advertisements and is not even mentioned in the CCCE survey. While it does appear in the Conference Board's survey of skills deficiencies in current employees, only approximately 20% of employers were concerned with numeracy, making it the lowest ranked skill (with the exception of the "other" category). This finding is puzzling given that occupations that could be classified as STEM (science, technology, engineering and mathematics) jobs – and thus would be expected to require significant numerical abilities – accounted for 26% of our sample. This finding is additionally puzzling because the most recent results from the OECD's PIAAC skills survey show that

[8] Note that the CCCE report combines oral and written communication skills into one category, so we cannot discern specifically which skill employers are requesting.

Canadian adults possess below-average numeracy skills (Statistics Canada, 2013), so we might expect employers to be witnessing numeracy problems in their workplaces.

Conclusion

Few policy issues capture the attention of the media, policymakers and the public in quite the same way as has Canada's skills gap in the past few years. Spurred on by conflicting reports and data, the discussion shows no signs of abating. On the one hand, much of the aggregate labour market data (like wage and vacancy rates), skills projections by ESDC and others, and skills tests like those conducted by the OECD point to confined rather than broad gaps – in certain occupations and/or locations and in some skills (like numeracy) more so than others. On the other hand, employers continue to express that they cannot find employees with the skills they need for their operations.

This begs the question: when Canadian employers say that they cannot find employees with the skills they need for their workforce, to which skills are they actually referring? From our review of the literature in *The Great Skills Divide*, we found that employers tend to mean one of three different things when they talk about skills – education, essential skills or work experience. Unfortunately, these employer concerns have too often been conflated into a single "skills gap" narrative, making it difficult to ascertain if there is a problem, what that problem is and what might be done about it. The current paper thus sought to run a fine comb through the skills gap narrative, separating out the various strands of the debate as they emerged in job advertisements posted by employers looking to fill entry-level positions with skilled workers. We examined what employers look for in recent PSE graduates when it comes to credentials, essential skills and work experience.

Several findings stood out. In terms of education, while all employers in our sample required a PSE credential, almost half of employers were indifferent as to the candidate's specific field of study, possibly indicating that employers equate PSE with stronger broad employability skills rather than simply improved disciplinary knowledge. For work experience, a notable finding was that employers looked for an average of 1.4 to 2 years of work experience for candidates in *entry-level* positions, lending support to the argument made by Cappelli (2012) and others that employers are increasingly evading their responsibility to train new employees, expecting instead that recent graduates come to the workplace having already been trained elsewhere. For essential skills, we found that employers most clearly and frequently expressed that they needed employees who work well with others, communicate effectively orally and possess strong computer skills.

At the core of all of these issues is the relationship between postsecondary institutions and employers in shaping Canada's skilled workforce. If employers need employees with skills like oral communication and the ability to work with others, are these the same skills that we are teaching in PSE? More broadly, what skills should PSE graduates possess when they enter the workforce? Which of these skills are the responsibility of PSE institutions to teach and which are the responsibility of the employer? Answering these questions is beyond the scope of this paper. But one thing seems evident: ensuring that college and university graduates have the right skills for the Canadian labour market will require better labour market alignment, which can only be achieved through the active collaboration of both PSE institutions and employers.

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Bridging the Divide, Part I: What Canadian Job Ads Said

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Executive Summary

Discussions of Canada's so-called 'skills gap' have reached a fever pitch. Driven by conflicting reports and data, the conversation shows no signs of abating. On the one hand, economic indicators commonly used to identify gaps point to problems limited to only certain occupations (like health occupations) and certain provinces (like Alberta) rather than to a general skills crisis. On the other hand, employers continue to report a mismatch between the skills they need in their workplaces and those possessed by job seekers, and to voice concern that the postsecondary system is not graduating students with the skills they need.

For some employers and commentators, the skills gap problem is one involving too few highly skilled workers in the Canadian labour market. For others, it is a problem related to weak essential skills, such as working with others, oral communication and problem solving. Still others use the term "skills gap" to refer to what might better be described as an "experience gap" – a shortage of "work-ready" employees possessing those skills that employers claim can only be acquired through work experience. To address the conflicting views on Canada's skills gap and to argue that a better understanding of Canada's skills problem is hindered by disagreement over what actually constitutes a skills gap, HEQCO recently published *The Great Skills Divide: A Review of the Literature*.

To further explore the skills gap issue, HEQCO also published a two-part analysis of Canadian job advertisements. The current report, *Bridging the Gap, Part I: What Canadian Job Ads Said*, examines the skills employers say they need and how they communicate this need to prospective employees. Through a content analysis of 316 Canadian job advertisements for entry-level positions geared toward postsecondary graduates, this study considers what employers look for in recent postsecondary graduates in terms of credentials, essential skills and work experience. The follow-up report, *Bridging the Gap, Part II: What Canadian Job Ads Produced,* examines survey responses from employers who posted the job advertisements included in the preceding study to explore in detail the outcome of the hiring process (e.g., Was someone hired? What were his or her qualifications? Is the employer satisfied?).

The current report revealed that most employers look for employees with substantial prior experience, even for positions that were advertised as entry-level. Less than one-quarter (24%) of all employers would accept no work experience as a minimum requirement. On average, employers asked for a minimum of 1.4 years and a maximum of 2 years of work experience for entry-level positions, suggesting that the skills gap problem may be as much about experience as skills.

Of the essential skills favoured by employers, we found that employers most clearly and commonly valued employees who could work well with others, who had effective oral communication skills and strong computer skills. And while all employers in our sample requested some form of postsecondary education, almost half of employers (47%) were indifferent as to whether candidates received this credential from a college or university. Finally, the study found that in almost three-quarters of job postings examined, stated educational requirements were aligned with those of Employment and Social Development Canada, which classifies occupations by skill type and educational attainment.

These findings raise important questions for both employers and postsecondary institutions. Do employers prefer job candidates with work experience because they find recent graduates from postsecondary institutions to be ill-prepared for the labour market? Or are employers shirking their responsibilities to train new employees? More broadly, what skills should postsecondary institutions be teaching and what skills should properly be learned through on-the-job training? Answers to these questions will provide new opportunities for groups both on the demand (employers) and supply (postsecondary) sides of the skills gap debate to strengthen alignment between the postsecondary sector and the Canadian labour market.

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Introduction

Canada's "skills gap" has come to dominate both headlines and policy debates. Employers and business representatives report a growing mismatch between the skills they need in employees and those possessed by job seekers. These concerns have fostered suggestions that the postsecondary system is not graduating students with the skills required by the labour market.

But not everyone is convinced. A growing chorus of voices questions whether or not such a gap actually exists in the Canadian economy. Nor is it clear when the skills gap is discussed that commentators have the same phenomenon in mind. Some consider the skills gap problem to result from a lack of postsecondary graduates to meet the impending demand for high-skilled workers, while others see it as a problem of students graduating with the wrong credentials for the labour market. Some suggest that Canadian students have the right credentials, but not the basic essential skills needed by employers. Still others suggest that students have the right skills, but lack the work experience employers demand.

In *The Great Skills Divide: A Review of the Literature*, HEQCO addresses the conflicting views on Canada's skills gap by examining who is saying what and why. Taking a cue from Tyler Meredith's (2014) comment that Canada needs to "refine data collection to better reflect what is happening down below the 35,000 foot altitude perspective of the national labour market" (p. 65), HEQCO adds to the skills gap discussion in the current report through a content analysis of 316 Canadian job advertisements for entry-level positions for postsecondary graduates. The purpose of this analysis is to better understand what skills employers are actually looking for (and saying they cannot find) and how they are articulating their demand for these skills. In doing so, we hope to provide greater clarity to job seekers and employers navigating the job market, to postsecondary institutions tasked with developing Canada's skilled workforce and to policymakers working to ensure that labour markets operate as efficiently as possible.

Aims of this Study

What is striking about the discussion on skills gaps in Canada is that is contains so little agreement as to the extent – or even existence – of such a gap. This should perhaps not be surprising, given the notorious difficulties of both analyzing and predicting labour market behaviour.

The author of this paper is not an economist and so will spare you any attempt at labour market forecasting. Instead, this study aims to add to the skills gap discussion through a content analysis of job advertisements geared toward new postsecondary education (PSE) graduates seeking entry-level positions. Currently, most of our knowledge on skills shortages in Canada comes from employer surveys. This is problematic because employer surveys do not always tell the whole story. Employers may *say* one thing but *do* another, a contrast that can be captured in part by how they advertise the positions they seek to fill.

Canada's perceived skills gap has yet to be investigated through the lens of job advertisements. Carnevale, Jayasundera and Repnikov (2014) recently completed work using online job advertisements to look at the U.S. job market for college graduates, but their analysis was done on a macro level, drawing out broad labour market trends from a sample of almost 2 million job postings. Our research is different both because it examines the Canadian context and, more significantly, because it takes a micro approach to examining job advertisements. We are interested less in general labour market trends and more in the ways in which individual employers approach the recruitment process – what skills and qualities they look for and how they articulate their demand for these attributes in job advertisements.

Job advertisements are a valuable methodological tool in the skills gap debate because they are often the first point of contact with labour markets for job candidates. If the skills listed in the job advertisement do not match a candidate's own self-assessed skill set, they may not apply for that position despite actually being qualified.

An overarching goal of this study is to encourage and strengthen alignment between the PSE and employer sectors. Employer surveys and much of the recent literature on skills gaps adopt the perspective of groups on the demand side of the labour market. Conversely, HEQCO is interested in the supply side, tasked with supporting the postsecondary system that supplies the economy with recent graduates. Unfortunately, there is a tendency for these two sides to operate independently of one another. By looking at job advertisements geared toward new PSE graduates, we examine the demand side from the perspective of the supply side.

Keeping HEQCO's mandate in mind, the following research questions guided this study:

1. What skills are employers seeking across occupations for recent graduates in entry-level positions?
2. What can the PSE sector learn from job advertisements to help it better support its students as they transition into the labour market?

Methodology and Data

Sample

The sample of job advertisements used in this study was collected in the week of January 20, 2014. A total of 316 job advertisements were collected, representing the greatest number of advertisements that could be accessed in our time period.

As mentioned, the goal of this study was to look at the jobs available to recent postsecondary graduates seeking their first (entry-level) job out of PSE. To be included in our sample, a job advertisement thus had to meet the following criteria:

1. It had to require that the applicant have completed some form of PSE.
2. It had to state explicitly that the position was entry-level.

There are three major job search engines that allow for job seekers to search specifically for 'entry-level' positions. As such, these three search engines were used. These search engines are:

1. Monster Canada: http://www.monster.ca
2. Workopolis: http://www.workopolis.com
3. Charity Village: http://www.charityvillage.com

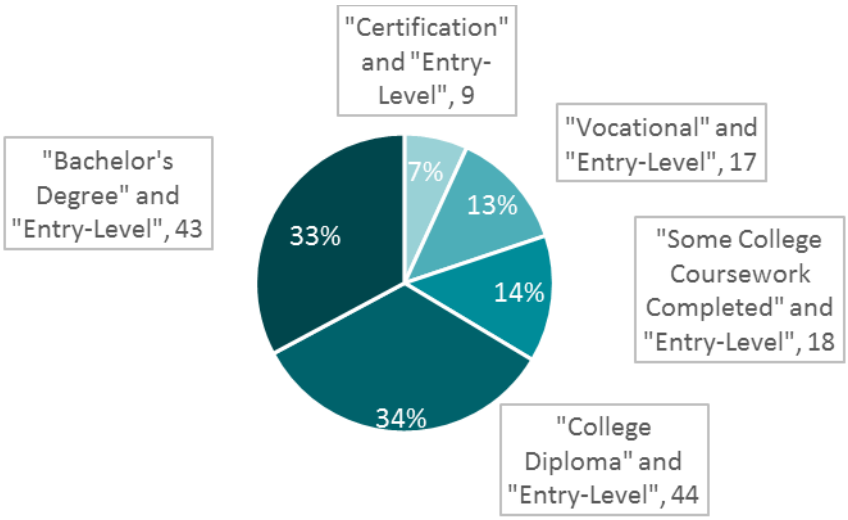
The section that follows will discuss briefly how jobs were collected from each of the three search engines in order to accommodate the minor differences in search categories available for each engine.

Collecting Job Advertisements on Monster Canada

To find advertisements for entry-level jobs requiring PSE, Monster Canada's advanced search function was used. This function allows the user to search by multiple terms at once and returns only jobs that match all selected criteria. For all searches, the "entry-level" classification was selected from a drop-down menu that

lets the user specify “career level.” Monster Canada also has a drop-down menu that lets the user select an “education level.” This study is concerned with PSE graduates entering the labour market, so the cross-selections in Figure 1 were searched.

Figure 1: Job Advertisements Sampled from Monster Canada, by Education Level



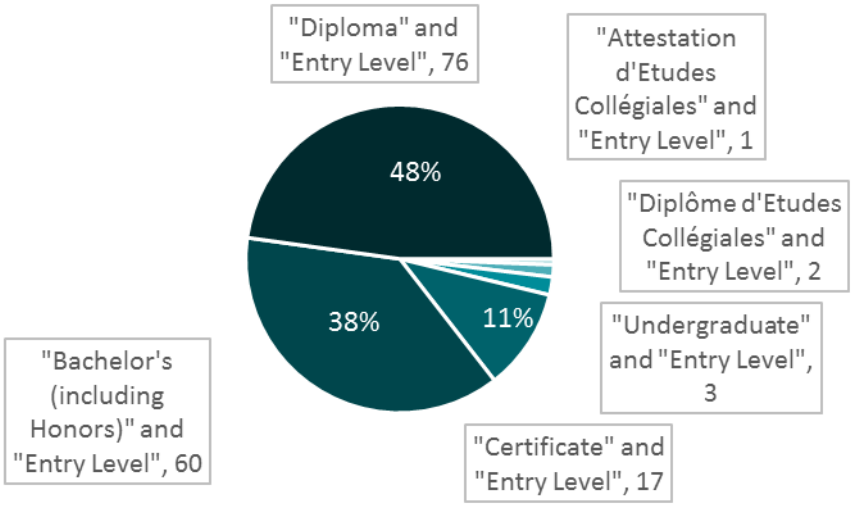
For each cross-selection of keywords, all jobs returned by the search engine at that point in time in January were collected as PDF screen shots. No further job advertisements were collected from Monster Canada subsequent to this point. In total, 131 job advertisements were collected using Monster Canada.

By collecting these educational level categories, the aim was to capture all jobs on the search engine that were open to students seeking entry-level jobs out of PSE. The decision was made to exclude graduate degrees and professional programs, as these degrees tend to be more specialized and it was determined that search engines are not the primary means through which labour market entrants with these credentials find positions. This was reflected by the fact that these search categories returned few if any job positions.

Collecting Job Advertisements on Workopolis

The same approach was used for the Workopolis search engine. Using the advanced search function again, “entry-level” was selected for “career level.” Workopolis has a slightly different list of educational categories, from which the cross-selections in Figure 2 were searched:

Figure 2: Job Advertisements Sampled from Workopolis, by Education Level



As with the Monster Canada search, all jobs returned under these cross-selections were collected. In total, 159 job advertisements were collected using Workopolis.

Collecting Job Advertisements on Charity Village

Job advertisements from Charity Village were collected slightly differently because its advanced search function allows the user to search by career level (e.g., entry-level) but not by education level. Instead, while "entry-level" was again selected for career level, once the search engine had returned its listings for entry-level jobs, education level was then assessed manually. Any job requesting any level of PSE (except for a graduate or professional degree) was retained. Several jobs that "preferred" but did not require PSE were also included.

In total, 26 job advertisements were collected using Charity Village.

Other Criteria for Inclusion/Exclusion of Job Advertisements in the Sample

Once all job advertisements had been collected based on the above criteria, jobs were also included/excluded on the following basis:

- Only jobs written in English were included (this included bilingual advertisements)
- Only jobs for which the position was based in Canada were included
- Duplicate advertisements were eliminated
- Only paid full-time jobs were collected
- Jobs listed by recruiters that did not list a business name were not included. These job ads were excluded because they often lacked information, such as industry type, necessary to our analyses.

Coding and Content Analysis

Upon collection of our sample, a team of three coders analyzed the content of the 316 advertisements. A head coder led the coding team and coded all job advertisements across categories. Two supplementary

coders were used to check the work of the primary coder to ensure that no coding category was coded in its entirety by only one person.

Coding was approached using a directed content analysis approach (Hsieh & Shannon, 2005). This coding strategy involves drawing on existing theories or frameworks to inform initial coding categories. Predetermined codes are thus employed but are expanded as the coding progresses so that "data that cannot be coded are identified and analyzed later to determine if they represent a new category or a subcategory of an existing code" (Hseih & Shannon, 2005, p. 1282). For example, essential skills were coded in this project using a framework of nine essential skills designed by ESDC, but mentions of skills that did not fit within the framework were also collected, eventually forming the basis for another eight skills categories.

Unifying ideas emerging from the job advertisements were ultimately sorted into four categories: position details, formal education, work experience and essential skills. The section that follows briefly discusses each of these categories.

1. Position Details

In order to build a broad profile of the job advertisements in our sample, the following information was collected:

- Name of position
- Company
- Province of job opening
- Occupation type, as determined by the job position's corresponding 2011 National Occupation Classification (NOC) code

National Occupation Classification (NOC) – First Digit

Although many of these categories are self-explanatory, it is worth elaborating on how and why we coded for occupation type. This was done by matching the position titles of the job postings against ESDC's 2011 National Occupation Classification (NOC) system and NOC Occupational Structure.[1] Matching job advertisements to their NOC allows us to sort the advertisements into the following occupation types based on the first digit of the NOC code:

[1] http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/OccupationIndex.aspx

Table 1: NOC Occupation Types (1st Digit)

NOC (1ST Digit)	Occupation Type	NOC (1ST Digit)	Occupation Type
0	Management Occupations	5	Occupations in Art, Culture, Recreation and Sport
1	Business, Finance and Administration Occupations	6	Sales and Services Occupations
2	Natural and Applied Sciences and Related Occupations	7	Trades, Transport and Equipment Operators and Related Occupations
3	Health Occupations	8	Natural Resources, Agriculture and Related Occupations
4	Occupations in Education, Law and Social, Community and Government Services	9	Occupations in Manufacturing and Utilities

1. Formal Education

To get a sense of what PSE credentials were most commonly requested by employers on employment websites, we also coded information pertaining to the formal education requirements for the job posting. For formal education, the following was coded:

- Specified level of education
- Education level (referred to as skill level by ESDC) associated with the job position's NOC code
- Preferred field(s) of study
- Openness to other field(s) of study

Specified Credential

Each job advertisement was coded for the credential that was requested by an employer. A number of keywords were grouped into five education categories. These categories and keywords are:

Table 2: Credential and Common Keywords

Coding Category	Common Keywords
Postsecondary education (non-specific)	"college or university degree;" "degree or diploma;" "university degree or equivalent"
University degree	"university degree;" "bachelor's degree;" "undergraduate degree"
College diploma or degree	"diploma;" "college diploma"
Certificate primarily granted by colleges	"certificate;" "college diploma"
Apprenticed trade positions	"journeyman"
"Some college coursework"	"some college coursework"
Certificate primarily granted by private career colleges/institutions	

National Occupation Classification (NOC) – Second Digit

ESDC's NOC codes were also used to assess educational requirements because the second digit of the job's NOC code tells us what level of education ESDC considers to be normally associated with a job title. This allows us to determine the level of education that ESDC expects a suitable candidate for a position in one of our job advertisements to possess, which can be compared to the level of education actually requested in the advertisement. Possible levels of education are:

Table 3: NOC Skill Types (2nd Digit)

NOC (2nd Digit)	Skill/Education Level
0 and 1	Occupations Usually Requiring University Education
2 and 3	Occupations Usually Requiring College or Vocational Education or Apprenticeship
4 and 5	Occupations Usually Requiring Secondary School and/or Occupation-specific Training
6 and 7	Occupations Where Required On-the-job Training is Usually Provided

Preferred Field of Study

Many job advertisements requested that the degree possessed by the job seeker be in a particular field(s) of study. For example, a job advertisement might ask for "a university degree in communications, public policy or journalism." In order to capture the diversity of fields of study being requested by employers, we counted the mentions of each field. Relying heavily on the University of Toronto's categorization of academic disciplines, Ontario Colleges' classification of college-specific programs[2] and the Ontario Colleges of Trades' classification of trades[3], fields of study were grouped as follows:

1. Humanities
2. Natural sciences
3. Formal sciences
4. Social sciences
5. Agriculture
6. Architecture & design
7. Business
8. Education
9. Engineering
10. Healthcare sciences
11. Journalism, media studies & communications
12. Library & museum studies
13. Public administration
14. Office administration
15. Computer & telecommunications
16. Culinary, hospitality, recreation & tourism
17. Community & social services
18. Fire, justice/law & security
19. Health, food & medical
20. Insurance
21. Trades
22. Performance arts

Openness to Other Fields of Study

While many job advertisements were explicit in requesting candidates with credentials only in specific disciplines, other job advertisements were open to unspecified or "related" fields of study. We coded whether or not an employer was open to a candidate with a non-specified disciplinary background or one outside of that which they requested.

Work Experience

Another common theme emerging from the job advertisements was the mention of work experience. In particular, the following information pertaining to work experience was collected:

- Minimum years of work experience requested
- Maximum years of work experience requested
- Is the type of experience specified or is any type of experience accepted?

Minimum and Maximum Years of Work Experience Requested

Many jobs requested that applicants fall within a range of years of work experience (e.g., three to five years). We coded both the maximum and minimum numbers of years requested to capture these ranges.

Is the type of experience specified or is any type of experience accepted?

Some employers wanted job-specific experience (e.g., an employer seeking an administrative assistant might ask for two years of work experience as an administrative assistant), while others considered any experience in a workplace to be sufficient. These job advertisements simply asked for some number of years of "work experience." It was noted whether a job advertisement asked for the former or the latter.

[2] http://www.ontariocolleges.ca/findprogram
[3] http://www.collegeoftrades.ca/about/trades-in-ontario

Essential Skills

One of the most difficult details to capture in the coding was the immense diversity of essential skills requested by employers in the job advertisements. To try to translate this diversity into something more manageable, we used ESDC's (2013) categorization of essential skills as a springboard. ESDC's list of essential skills comprises nine skills considered to be fundamental to "work, learning and life." These nine skills are reading, document use, numeracy, writing, oral communication, working with others, thinking, computer use and continuous learning (Table 4).

We wanted our coding to portray the relative value employers place on each of these skills, which we determined would best be approximated if we coded each job advertisement for the number of times an activity listed in that job advertisement required an essential skill rather than simply whether or not that skill appeared at all. For example, if a job advertisement listed main duties for that position as including "reading and writing project briefs and reports" and then later listed "good written communication" as a required skill, the advertisement would be coded as having two mentions of writing and one mention of reading.

A number of keywords emerged that helped determine if information listed in the job advertisement fit into one or more of the essential skill categories. Table 4 lists some of these common keywords.

Table 4: ESDC's Essential Skills Definitions and Common Keywords

Essential Skill	ESDC Definition	Common Keywords
Reading	Understanding materials written in sentences or paragraphs (e.g., letters, manuals)	gathering information; compiling information; reviewing literature; researching; extracting content
Document Use	Finding, understanding or entering information (e.g., text, symbols, numbers) in various documents, such as tables or forms	providing documentation; filling in forms; verifying reports; documenting activity; data entry; transcribing; record keeping; payroll documentation; accounting documentation
Numeracy	Using numbers and thinking in quantitative terms to complete tasks	producing statistics; forecasting; analyzing data; modelling; metrics and analytics; evaluating data; economic analysis
Writing	Communicating by arranging words, numbers and symbols on paper or a computer screen	developing materials; producing or preparing written documents; editing; written communications; spelling and grammar; developing content; writing emails
Oral Communication	Using speech to exchange thoughts and information	verbal communication; telephoning; delivering presentations; greeting people; teaching and training; responding to inquiries
Working with Others	Interacting with others to complete tasks	interpersonal skills; customer service skills; teaching and training; leadership; negotiating; collaborating; networking; coordinating with

Essential Skill	ESDC Definition	Common Keywords
Thinking	Finding and evaluating information to make rational decisions or to organize work	innovative; analytical; problem solving; investigating; assessing; critical thinking; making recommendations; evaluating; developing strategies; developing policies and proposals
Computer Use	Using computers and other forms of technology	proficiency in Microsoft Word; website coordination; typing; social media; managing online databases; computer skills; emails; IT management; database development; software use; programming; IT service desk
Continuous Learning	Participating in an ongoing process or improving skills and knowledge	initiative; willingness to learn; adaptable; likes challenge; constant learner

Throughout the coding process, a number of themes emerged from the job advertisements that did not fit within EDSC's characterization of essential skills. These skills (based on associated keywords) were coded into the following categories:

Table 5: Other Skills Appearing in Job Advertisements and Common Keywords

Essential Skill	Common Keywords
Administration and Organization Skills	administration; organizational skills; logistical coordination; clerical skills; day to day coordination; help plan events
Sales Skills	ability to sell; sales skills; meet sales quotas; convert sales leads; brand marketing; solicitation skills
Attention to Detail	attention to detail; detail oriented; high degree of accuracy; meticulous
Time Management	time management; multitasking; punctual; work in a fast paced environment; work under pressure
Ability to Work Independently	self-motivated; work independently; work unsupervised
Social Responsibility, Professional Responsibility and Judgment	professionalism; strong sense of judgment; maintains confidentiality; mature; political engagement; concern for environment; integrity; values
Visual Skills (eye for design)	design skills; visual design; print design; communicate through design; prepare drawings; read drawings
Other Skills	(see below)

The “other skills” category was used to collect a number of terms that appeared frequently in advertisements but that had no obvious place in the delineated coding categories. These terms were: persistence/determination; reliable/dependable; flexible; driven; entrepreneurial; results/goal oriented; dynamic; confident; hard worker; quick learner; passionate; energetic; enthusiastic; positive attitude; follows direction; courteous; competitive; resourceful; and sense of humour. For each of these terms, it was noted whether or not they appeared (on a yes/no basis) in a given job advertisement.

Inter-observer reliability

With the exception of the essential skills coding, the information collected from the job advertisements – such as province, PSE requested, years of work experience – was coded into finite categories. For these sections, the head coder defined the codes, which were employed by both the head and second coder in coding these categories in their entirety. The head coder then checked their codes against the codes of the secondary coder, adjusting the data to account for misassigned codes. Misassigned codes were found to be the result of error rather than disagreement between coders.

The coding of essential skills was more complex because it required more subjective decision-making. As such, ensuring inter-observer reliability was paramount. Due to the time-intensiveness of the process, the essential skills section was coded primarily by one coder, so a second coder was used for “check-coding” (Scott, 1955) of a random sample of the advertisements. Starting with the randomly selected fourth job advertisement in the sample, the second coder coded every twentieth job advertisement. In doing so, they relied on an extensive list of keywords (a sample of which are listed above) prepared by the head coder. The findings of the head coder and second coder were then compared, with agreed upon discrepancies reconciled and non-agreement documented. Inter-observer reliability was calculated using Cohen’s Kappa coefficient, a statistical measure of inter-rater agreement. Cohen’s Kappa is considered a more robust measurement of inter-observer reliability than simple percent agreement because it accounts for the agreement that occurs by chance (Carletta, 1996). Reliability for the essential skills coding in this report was determined to be 0.88 (88%). While there is some disagreement as to how to interpret the Kappa statistic, Landis and Koch (1977) consider a Kappa of 0.81 to 1.00 to be “almost perfect”, while Krippendorff (1980) more conservatively considers a Kappa of 0.80 or greater to represent “good reliability.”

Study Limitations

There are several limitations that arise from both this study’s sampling methodology and its use of content analysis.

Sampling Limitations

It is important to recognize that online job postings do not fully reflect actual labour markets (Carnevale et al., 2014). Only certain types of employers advertise vacancies using online job search engines. Because of the cost associated with advertising on these search engines, it is likely that these websites are more commonly frequented by large businesses. Other employers may not advertise at all, choosing instead to rely on separate networks to do their hiring. For example, it has been observed that ‘white collar’ jobs are more commonly advertised online than are ‘blue collar’ positions (Carnevale et al., 2014). However, since the skills gap narrative stems in part from employers saying that they cannot find suitable candidates to fill their jobs, we would hope to see employers using all available avenues to recruit employees.

At the same time, job descriptions are often carefully crafted by human resource departments, particularly in large workplaces, and may reflect specific HR concerns more so than the preferences of the actual hiring unit. Other concerns include the fact that not all positions are advertised externally, while other positions are only advertised because union rules stipulate open competition, even though the employer has already found an internal candidate.

In the case of Charity Village, this search engine only posts jobs from non-profit organizations, so jobs in this sector are over-represented. However, only 8% of jobs in our sample were collected using Charity Village. Despite these limitations, online job databases provide valuable information on labour market demand as they are used extensively by both employers and job seekers (Carnevale et al., 2014). Of all mediums available for disseminating information on job openings, job postings on major search engines like Monster or Workopolis likely also reach the largest audience and are thus particularly useful in examining how employers maximize their chances of finding an employee with the hard-to-find skills they require.

Coding Limitations

A second set of limitations emerges when trying to extract information on skills demand from advertisements. Job advertisements may list any number of skills, ranked in no particular order. For this reason, we coded not only whether a skill was mentioned but also the number of times the job referenced activities relating to each skill. However, there is no guarantee that frequent mentions of a skill mean that that particular skill matters most to an employer.

At the same time, it is impossible in many job advertisements to discern whether the skills listed are required skills or merely preferred ones. Conversely, the fact that a skill is not listed does not mean that it is not important to employers. The very opposite may be true – an employer seeking a software developer may make infrequent mention of “computer use skills” because they consider these skills to be so fundamental to the job as to be assumed to be self-evident to the applicant.

Several researchers have furthermore acknowledged that skills listed in job advertisements may suffer from being inconsistently defined, so that two employers may interpret what appears to be the same skill on paper very differently (Gallivan, Truex & Kvasny, 2004).

Another common problem was the poor quality of job advertisements. It was not unusual to find job advertisements that were riddled with spelling mistakes, missing words, contradictions and/or generally confusing statements. These problems were at times significant enough to impede the ability of the coder to assess the content of the job advertisements accurately.

Finally, although this content analysis of job advertisements was useful in identifying the skills demanded by the Canadian labour market, it falls short in its inability to tell us anything about the job advertisement’s outcome. Did the employer find an employee with suitable skills? Why or why not? There may be a variety of reasons why an employer did not hire a candidate who fit the job advertisement, none of which will be possible to identify in this study. For example, candidates may be interviewed, none of whom possess the skills in demand. Or, despite the availability of candidates with the skills listed in the job advertisement, employers may hire a candidate with a different skillset. Another potential outcome is that the employer hired a candidate with the skillset demanded in the job advertisement but that the skills listed in the job advertisement were not really necessary for the day-to-day work of the successful candidate (Harper, 2012). All of these outcomes point to different root causes of Canada’s real or perceived skills gap, but none of them can be identified through this content analysis. However, many of these questions will be explored in *Bridging the Divide, Part II: What Canadian Job Ads Produced*.

Findings

Occupational Type

Using the NOC code associated with each job position, we tracked the distribution of job advertisements across occupation type.

Figure 3: Job Postings by Occupation Type

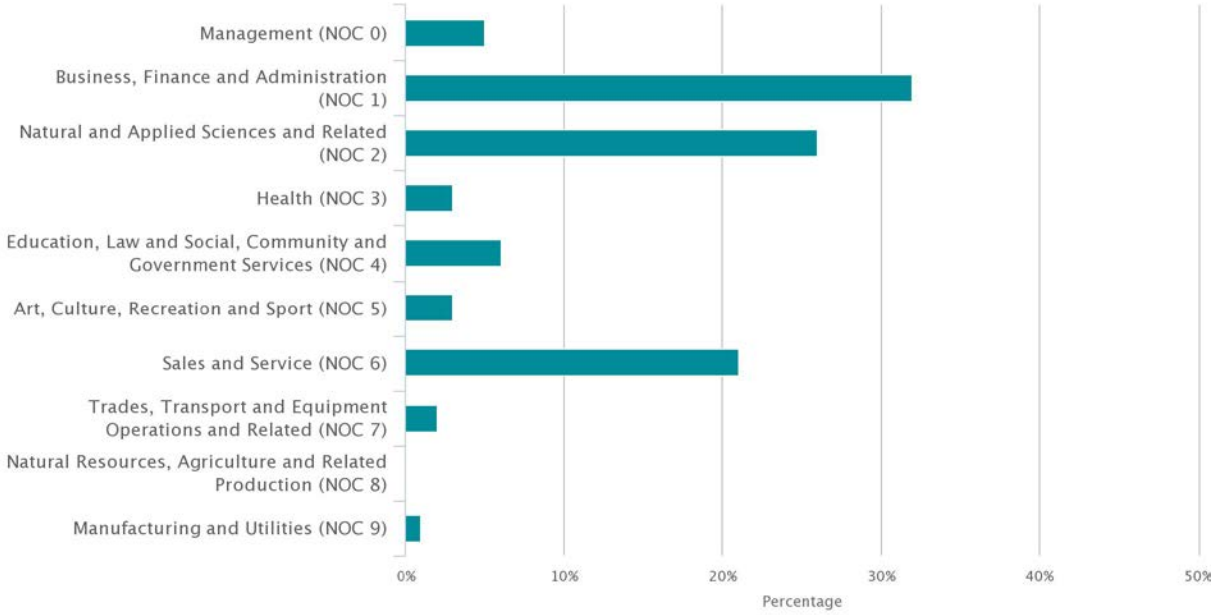


Figure 3 shows that the largest number of job advertisements – almost one-third of all positions – was in occupations in Business, Finance and Administration. Of these 101 job advertisements, the largest segment of jobs (39%) was for administrative positions, either in administrative and regulatory positions or as office administrative assistants. Common job titles included “office administrator,” “administrative assistant,” “program assistant,” “coordinator” and “program coordinator.”

The second most common occupation type was Natural and Applied Sciences and Related Occupations, which represented 26% of our sample. Within this occupation group, over half of the job advertisements (57%) were either systems professionals or technical occupations in computer and information systems. Common job titles included “systems analyst,” “database developer,” “software engineer,” “systems administrator,” “help desk analyst” and “network administrator.”

Jobs in sales and service occupations were the third most commonly advertised positions, accounting for 21% of jobs in our sample of advertisements. Of these 66 job advertisements, just under one-third (30%) were looking for financial sales representatives, and specifically for personal banking officers to work the front lines in Canadian banks and credit unions.

Thinking back to both Benjamin Tal (2012) and ESDC’s (2011) COPS lists of occupations forecasted to face shortages (discussed in *The Great Skills Divide*), it is evident that there is not an overly strong relationship

between their lists of occupational shortages and the occupation types of the positions advertised in our sample. While both Tal and COPS list a number of shortages in the three occupational types most represented in our sample – Business, Finance and Administration; Natural and Applied Sciences and Related; and Sales and Services – these positions do not form the majority of shortages in either list. Instead, both Tal and COPS forecast health occupations to face the most significant shortages, but these occupations represent less than 4% of our sample. This discrepancy most likely points to how different occupations recruit for and fill vacancies. Many of the positions in health occupations (e.g., doctors or nurses) are extensively regulated and job placements are coordinated by organizations that work directly with PSE programs rather than through public job postings.

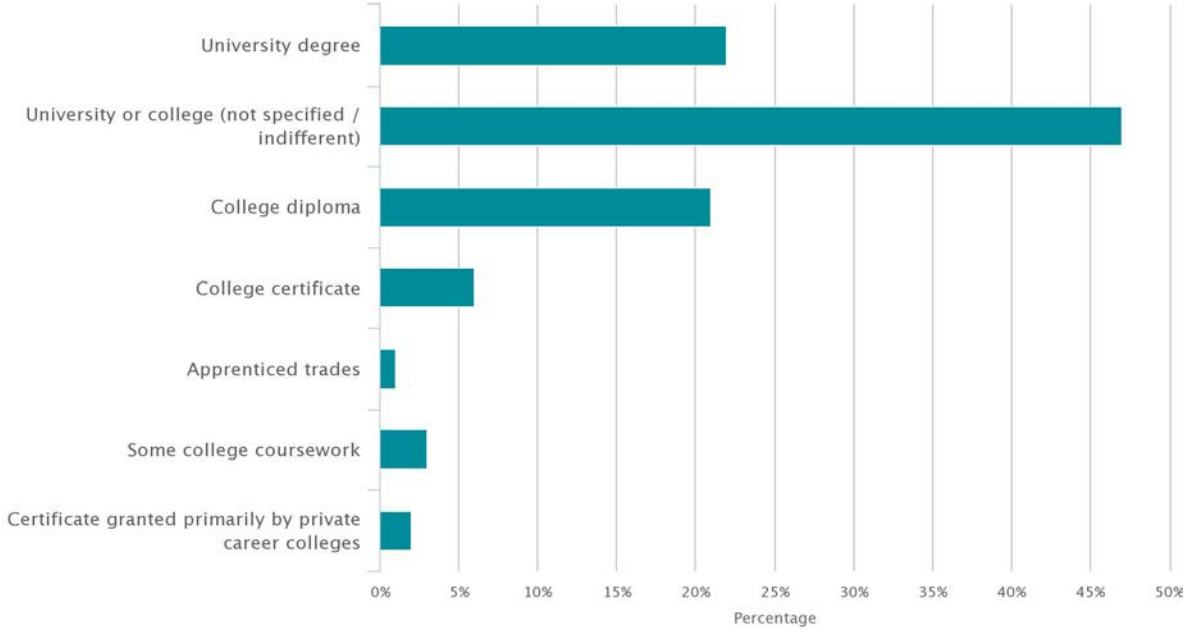
Interestingly, our breakdown of job advertisements by occupational type in Canada aligns quite closely with Carnevale et al.'s (2014) findings on in-demand occupational clusters in the United States. Carnevale et al. found that positions in the managerial/professional office cluster were most frequently advertised (accounting for 33% of positions in our sample), while positions in STEM came second (28%) and sales/office support positions ranked third (14%). Unlike our findings, Carnevale and his team have healthcare professional/technical occupations ranked fourth (at 11%), a finding that may partially be explained by the relative deregulation of the healthcare industry in the US when compared to Canada.

Education

1. Level of PSE

Examining the specified level of education for job advertisements highlighted several trends.

Figure 4: Job Postings by Level of Postsecondary Education



First, almost half of all jobs (47%) asked for a postsecondary degree but were indifferent as to whether or not it was granted by a college or a university. There were two ways in which employers most frequently voiced this requirement. The first was to request that suitable candidates have "postsecondary education in [x field

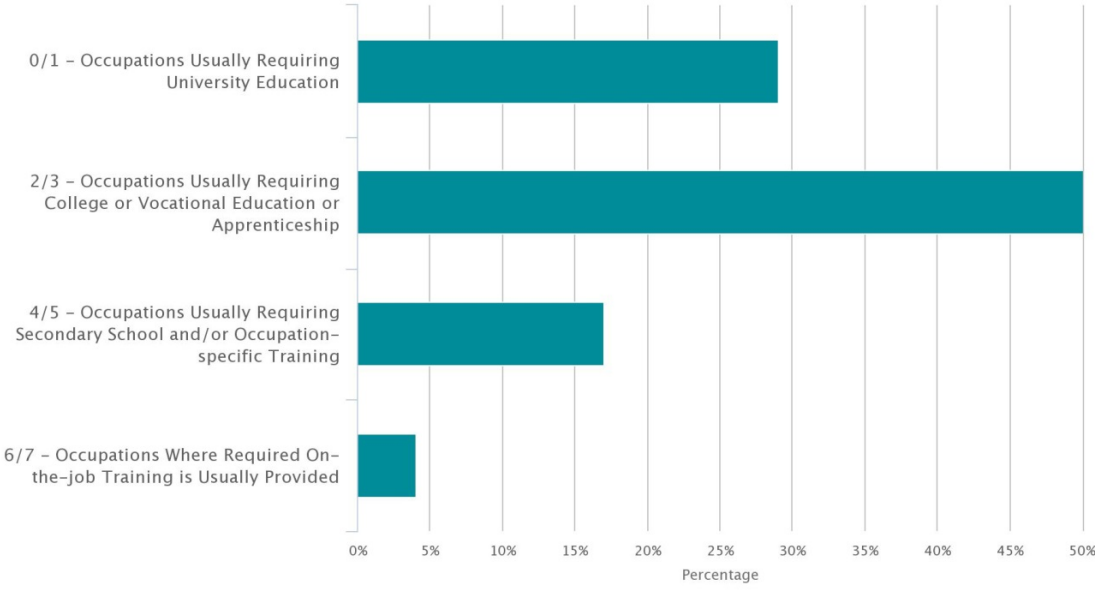
of study]." The second was to request that candidates have "a university degree or college diploma in [x field of study]."

University-specific degrees were requested 22% of the time. These jobs requested "university degrees," "bachelor's degrees" or "undergraduate degrees," often in specified fields. Notably, college diplomas were requested with almost the same frequency (21% of the time). However, once other college credentials are added, such as college certificates, apprenticed trade positions and "some college coursework," this value increased to 31%, surpassing requests for university degrees.

2. NOC Skill Level

We were interested in examining if 'credential creep' was apparent in our job postings. This occurs when employers demand increasingly greater levels of PSE for the same position over time. To assess credential creep, we again used ESDC's (2011) NOC codes, which allow us to determine (through the second digit of the code) the level of education that ESDC expects the suitable candidate for a specific job title to possess.

Figure 5: Job Postings by NOC Skill Level



By matching the level of education normally required for a position (as per the NOC) with the level of education requested in the actual job advertisement, we get a sense of the extent to which employers are seeking "overqualified" employees.

Table 6: Level of PSE Requested in Job Advertisement by NOC Skill Level

NOC Skill Level	Level of PSE Requested: University	University or College (Indifferent)	College Diploma	College Certificate	Apprenticed Trades	Some College Coursework	Certificate (Private)	Total
University Education	36	46	7	3	0	0	0	92
College or Vocational Education/ Apprenticeship	23	82	34	10	3	3	4	159
Secondary School and/or Occupation-specific Training	7	15	24	3	0	3	1	53
On-the-job Training	2	5	1	2	0	2	0	12
Total	68	148	66	18	3	8	5	

The grey squares in Table 6 show the incidence of overlap between the skill level prescribed by NOC coding and the education level actually requested in the job advertisement. In total, 218 of the 316 job advertisements (69%) requested the level of education anticipated by the NOC.

In particular, of the 92 job titles determined by NOC coding to require a university education, 36 of these jobs (39%) actually requested a university-specific credential in the advertisement. However, this number rises markedly if we include job advertisements that did not differentiate between college and university PSE, since a further 46 of the 92 positions (50%) indicated no preference between a university degree and a college credential. If we include the latter category, a total of 89% of the positions expected to be within the NOC's university education category actually requested this level of education in the job advertisement.

Of the 159 job positions determined by NOC coding to normally require college, vocational education or apprenticeship, 54 postings (34%) actually requested one of these credentials. A further 82 job advertisements (51%) would accept either college or university. Altogether, this means that 88% in this NOC category would actually accept college, vocational education or apprenticeship training. On the other hand, only 23 job postings (14.4% of all job advertisements) displayed what could be considered credential creep, requesting a university degree rather than a college/vocational/apprenticeship credential.

Finally, it is striking to observe that a number of jobs that the NOC categorizes as "low-skilled" occupations – occupations deemed to require either secondary school, less than two years of occupation-specific training or training courses, or simply on-the-job training – request extensive PSE experience in the actual job advertisement. Looking at these two "low-skilled" categories, we see a combined total of 54 job positions (82% of jobs classified by NOC as low-skilled) ask for either a university degree, university or college education, or a college diploma.[4] And while this sample is skewed because we only collected job advertisements that explicitly requested some type of postsecondary education, one might expect to find these jobs requesting some college coursework or less rather than full-scale undergraduate degrees or college diplomas.

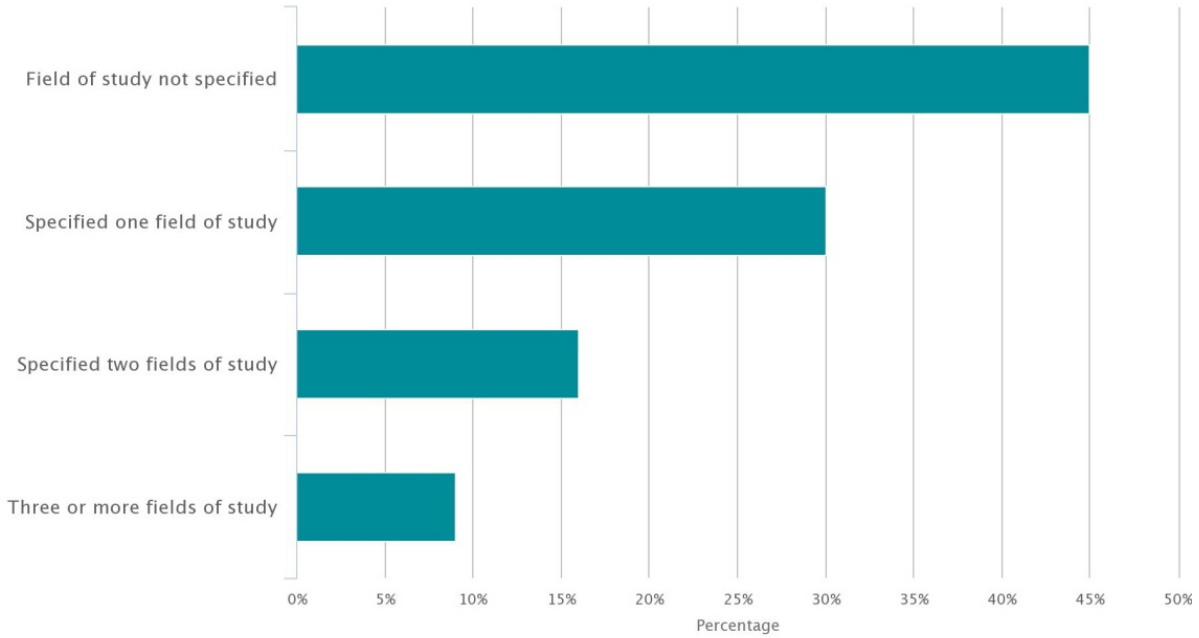
[4] College certificate, apprenticed trades, some college coursework and private certificates were left out, since there is a good deal of murkiness surrounding whether these count as less than two years of occupation-specific training or training courses.

3. Fields of Study

Although all employers in our sample sought candidates with a PSE credential, they varied as to how specific a credential they requested. Just under half of all job postings (45%) did not specify a field of study, requesting instead a general PSE credential like a “university degree” or “college diploma.”

For the 173 job advertisements (55%) that did specify, employers listed between one and six acceptable fields of study. Thus, an employer might request “a university degree in business” or, more broadly, “a university degree in business, statistics, or economics.” Of the 173 job advertisements that did specify, over half (55%) specified only one field. A further 29% specified two fields and 9% specified three fields.

Figure 6: Job Advertisements by Number of Fields of Study



We also captured the number of times each specific field was mentioned across job advertisements.

Table 7: Job Advertisements by Field of Study

Field of Study	Number of Mentions	Percent of Total Field of Study Requests
Business	94	32%
Engineering	38	13%
Formal sciences	25	9%
Architecture and design	18	6%
Computer and telecommunications	17	6%
Trades	14	5%
Natural sciences	10	3%
Social sciences	8	3%
Healthcare sciences	8	3%
Journalism, media studies and communications	10	3%
Office administration	9	3%
Fire, justice/law and security	9	3%
Health, food and medical	9	3%
Humanities	5	2%
Community and social services	7	2%
Education	2	1%
Pubic administration	2	1%
Culinary, hospitality, recreation and tourism	2	1%
Insurance	4	1%
Agriculture	1	0.3%
Library and museum studies	1	0.3%
Performance arts	1	0.3%
Total:	294	100%

As was the case when we disaggregated the job advertisements by occupation type, natural and applied sciences and business again dominate the list of fields of study in demand by employers. Degrees in business, including degrees in business administration, commerce, finance and management, were requested most frequently, in 32% of the cases where a specific field was mentioned. Engineering degrees – civil engineering, mechanical engineering, mining engineering and computer engineering – were the second most commonly requested field of study, accounting for 13% of all specific field of study requests. Formal science degrees were third most requested at 9%, with employers most commonly asking for degrees in computer science, mathematics and statistics.

Some of the 173 job advertisements that requested at least one specific field of study also stated that they would accept a “similar” or “related field” (e.g., university degree in computer science or related discipline).

Table 8: Job Advertisements by Openness to Other Fields of Study

Openness to Other Fields of Study	Number of Mentions	Percent
Open to other or "related" fields	49	28%
Not open to other fields	124	72%
Total:	173	100%

Of the 173 positions that did stipulate a field of study, 28% were open to related or similar disciplines, while the other 72% specified which fields would be suitable for the job position.

One reason why we tracked the openness of employers to candidates with varied disciplinary backgrounds was to test the assumption of many educators that the value of a PSE credential lies primarily in honing essential skills like critical thinking or problem solving rather than in the disciplinary knowledge learned in any particular field of study. Thus, one question to ask is to what extent employers hire university and college graduates because they associate PSE credentials with stronger essential skills, as opposed to hiring candidates with specific disciplinary knowledge. In this regard, the frequency with which employers either did not specify a field of study or were open to candidates with fairly broad disciplinary backgrounds (a combined 61% of the time across all job postings) suggests that employers hire candidates with PSE for reasons that go beyond just the specific disciplinary knowledge of that candidate.

Work Experience

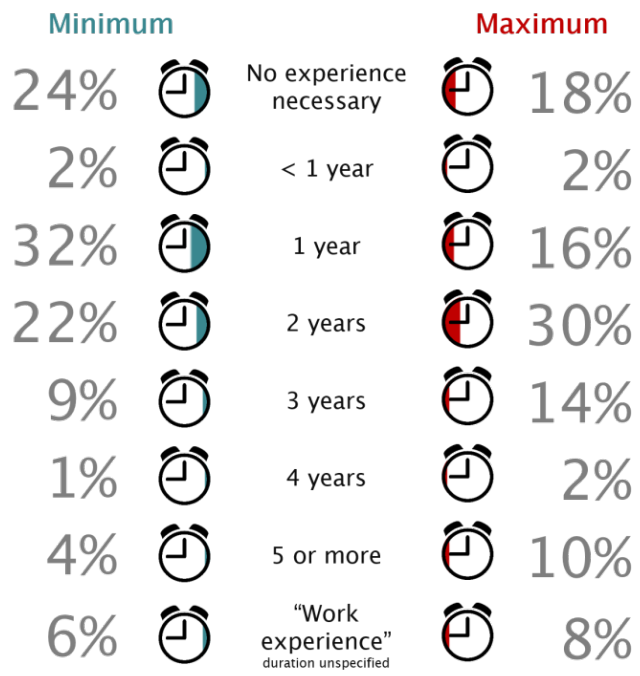
1. Years of Work Experience

The amount of work experience requested by employers for entry-level positions for PSE graduates provides insight into this idea of an "experience gap" – the gap between the number of years of work experience employers expect of recent PSE graduates and the number of years these graduates can reasonably have accumulated upon graduation.

Our research looked at both the minimum and maximum number of years of work experience requested by employers. This allowed us to capture the tendency of employers to specify a range of accepted work experience (e.g., two to five years).[5]

[5] If employers specified one amount (e.g., four years), this number was considered both the minimum and maximum.

Figure 7: Job Advertisements by Minimum and Maximum Years of Work Experience



From Figure 7, it is striking to observe how few of what are ostensibly entry-level positions are interested in candidates without work experience. Less than one-quarter of all employers (24%) stated that zero years[6] was their *minimum* requirement for years of work experience, a number that decreases to 18% when assessed for maximum years of work experience requested.

Also of interest for new PSE graduates is that only five jobs (2%) advertised for candidates with less than one year (but more than zero years) of work experience. This is notable because this category included the type of work experience recent PSE graduates can most easily acquire while in school – summer internship/work experience (requested in two advertisements) and/or co-op experience (requested in one advertisement).

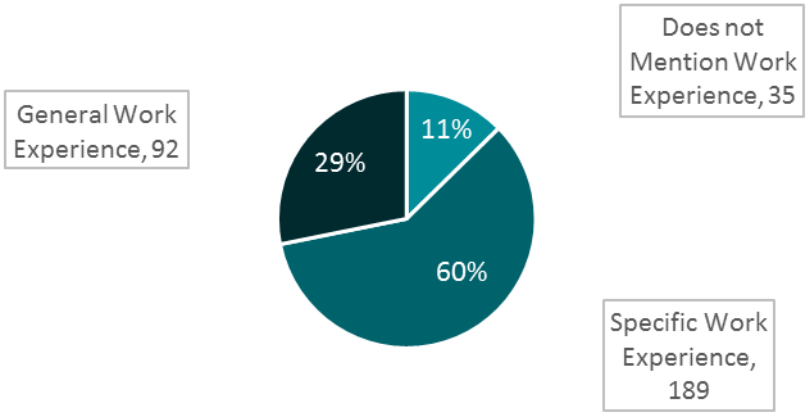
On average, employers that requested work experience asked for a minimum of 1.43 years of work experience and a maximum of 1.99 years of work experience.

2. Type of Work Experience

In addition to specifying the number of years of work experience desired in job candidates, many employers also expected a candidate's work experience to relate directly to the advertised position. In total, 60% of employers wanted job-specific experience (Figure 8).

[6] Jobs that did not mention work experience at all were assumed to be requesting zero years of work experience for both their minimum and maximum.

Figure 8: Job Advertisements by Type of Work Experience



What is perhaps more surprising is that 29% of employers cared only that the job applicant have some number of years of work experience but were unconcerned as to from where came that experience. This raises the question of why employers prefer job applicants with general work experience. Are there certain skills that employers believe candidates with general work experience bring to the workplace that they find to be lacking in recent PSE graduates without this experience? More broadly, why are employers hesitant to employ students right out of PSE, opting instead to seek candidates with work experience? Although not answerable through our content analysis, these questions have important implications for the PSE sector.

Essential Skills

In order to better understand what essential skills matter most to employers when making hiring decisions, we examined how employers articulate, prioritize and rank these skills in job postings.

Figures 9 and 10 show the most frequently requested essential skills, measured by whether or not a skill was mentioned at least once in a job advertisement. Figure 9 also shows the total number of times that each skill was mentioned in all of the 316 job advertisements, as a percent of the total of all mentions of skills (6,322 mentions).

Figure 9: Job Advertisements by Essential Skills

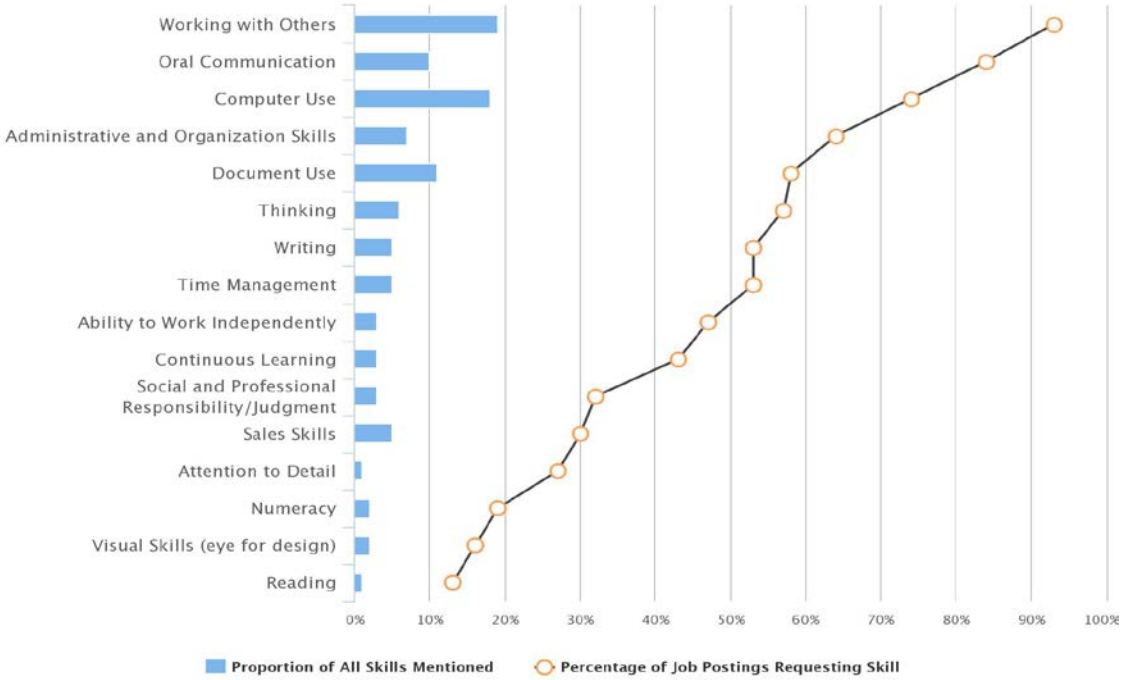
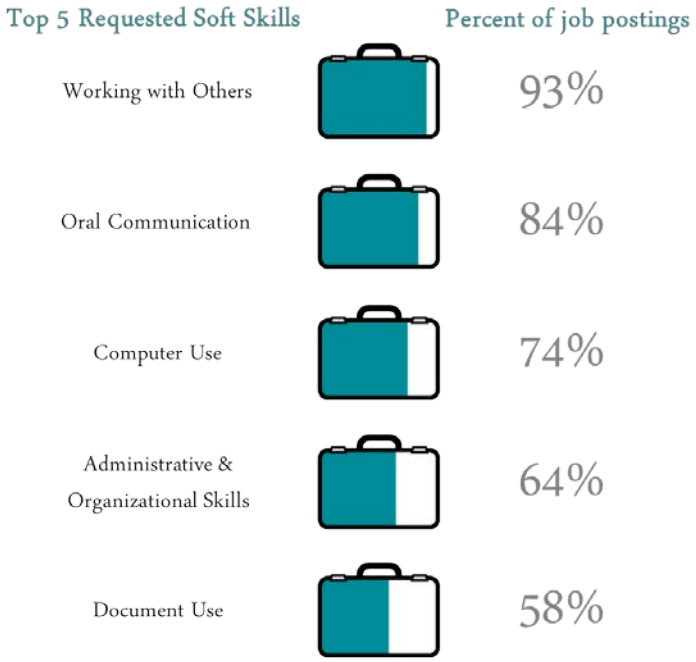


Figure 10: Top 5 Essential Skills Measured by Percentage of Job Postings Requesting Skill



Although this paper will not examine each skill in detail, our comparison of the number of job advertisements in which a skill was mentioned to the total number of times a skill was mentioned leads to several observations worth highlighting.

1. Working with Others

Working with others – defined as interacting with others to complete tasks – was the most frequently requested skill in terms of both the number of job advertisements in which it was requested and its total number of mentions. This skill was sought in 93% of all job advertisements.

Activities and abilities associated with the skill of working with others were requested a total of 1,190 times in the 316 job advertisements, accounting for 19% of all skills requested by employers. Moreover, employers that mentioned the skill of working with others did so an average of 4.03 times per job advertisement.

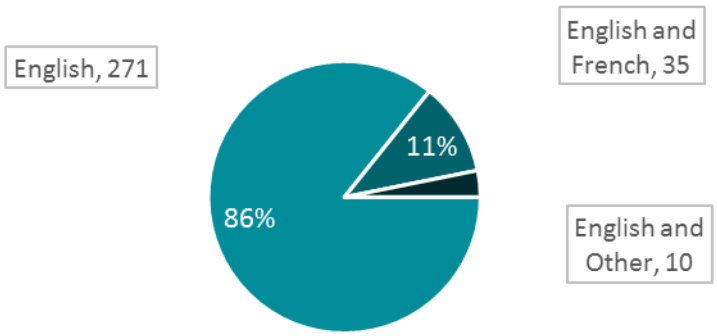
2. Oral Communication

Oral communication – using speech to exchange thoughts and information – was the second most commonly requested skill by number of job advertisements, with 84% of employers requesting this skill.

Although more employers asked for oral communication than any other skill except working with others, they asked for it less frequently; when measured by the number of total mentions of abilities or tasks indicative of oral communication, this skill falls to fourth (with 10% of all mentions), behind working with others, computer use and document use. On average, employers that asked for oral communication skills did so 2.33 times per job advertisement.

It is worth noting that the decision was made to separate requests for French and/or other non-English language fluency out of oral communication, so these requests are not included in the above counts. A separate analysis found that 86% of job advertisements were for English-only positions, 11% were for French bilingual positions and 3% were for other bilingual positions (Figure 15). The latter category included job advertisements requesting Spanish, Korean/Mandarin/Cantonese or Punjabi, Dutch and/or the ability to speak an unspecified “second language.”

Figure 11: Job Advertisements by Languages Requested



3. Computer Use

When measured in terms of the number of job advertisements in which a skill was requested, computer use – using computers and other forms of technology – was the third most frequently mentioned skill, appearing in 74% of all job advertisements. However, when measured using total number of mentions, computer use moved to second most important, constituting 18% of all skills mentioned. On average, employers that listed activities and/or abilities that require computer skills did so 4.72 times per job advertisement.

Table 9: Job Advertisements by Computer Use

Number of Times a Job Advertisement Mentions Computer Use	Number of Job Postings	Total Mentions
0	81	0
1	67	67
2	53	106
3	19	57
4	19	76
5	14	70
6	9	54
7	12	84
8	6	48
9	9	81
10	6	60
11	2	22
12	2	24
13	1	13
14	3	42
15-47	13	306
Total:	316	1110

Table 9 shows that the range of times a job advertisement mentioned “computer use” is much wider than for other skills, with a maximum value of 47 mentions in a single job advertisement. This reflects the fact that postings advertising jobs in computer and information systems – including help desk analysts and technicians, systems administrators, software applications analysts and network analysts – tended to list a number of specific and advanced computer skills. These skills ranged widely, from software development to network or server support, familiarity with specific operating systems, familiarity with specific software, and/or programming and scripting. It was also notable that job advertisements with extensive lists of advanced computer skills often listed little else in terms of other essential skills. At most, one line at the bottom of the job advertisement might diverge from computer skills to request some variation of “good oral and written communication skills.”

To help us differentiate between jobs that required these advanced computer skills and jobs that only required more basic computer use, Table 10 shows the number of job advertisements and total mentions for basic computer skills only. These basic skills include generic “computer skills,” keyboarding skills, emailing and

familiarity with Microsoft Office. Table 10 shows that 47% of employers did not request any basic computer skills. However, this number is deceiving since many of these employers still requested advanced computer use; just under half (45%) of these employers, while listing no basic computer skills, listed advanced computer skill in their job postings. Thus, it should also be observed that 33% of employers requested one basic computer skill, most commonly either emailing or familiarity with Microsoft Office.

Table 10: Job Advertisements by Computer Use (Basic Only)

Number of Times a Job Advertisement Mentions Basic Computer Use	Number of Job Postings	Total Mentions
0	147	0
1	104	104
2	45	90
3	7	21
4	6	24
5	3	15
6	3	18
7	1	7
Total:	316	279

4. Document Use

Document use is defined as “finding, understanding, or entering information (e.g., text, symbols, numbers) in various documents, such as tables or forms” (ESDC, 2013). Although document use was only the fifth most requested skill in terms of number of job advertisements (mentioned 58% of the time), it moves to third when measured by total number of mentions (accounting for 11% of all mentions of skills). On average, employers that mentioned activities and/or abilities associated with document use did so 3.63 times per job advertisement. As previously mentioned, 32% of job advertisements were in business, finance or administration, and many of the mentions of document use referenced administrative tasks like filling out forms, entering data and/or record keeping.

5. Numeracy

Numeracy – using numbers and thinking in quantitative terms to complete tasks – was notable for the infrequency with which employers requested it. Numeracy ranks third from the bottom when measured by the number of job advertisements in which it is included (19%) and accounts for only 2% of all mentions of skills. Moreover, where numeracy was requested, it was mentioned an average of only 1.73 times.

Table 11: Job Advertisements by Numeracy

Number of Times a Job Advertisement Mentions Numeracy	Number of Job Postings	Total Mentions
0	255	0
1	41	41
2	10	20
3	4	12
4	3	12
5	1	5
6	0	0
7	0	0
8	2	16
Total:	316	106

One reason that numeracy appeared infrequently in our job advertisements is that our initial coding of numeracy defined the skill quite narrowly. Based on the definition "thinking in quantitative terms," we focused on abilities and/or tasks that required numerical analysis or evaluation and excluded tasks that were focused on entering numbers in spreadsheets, such as accounting and payroll documentation.[7] When, in an alternate coding scheme, these tasks were considered to be part of numeracy skills, the number of job advertisements in which numeracy is mentioned increased from 61 (19%) to 111 advertisements (35%) and the total number of mentions increased from 106 to 369 (Table 12). For job advertisements in which numeracy was mentioned, the average number of mentions also increased from 1.73 to 3.32. However, although these are considerable increases, numeracy is still left far behind other skills like working with others, oral communication or organization skills.

[7] These abilities and tasks were included in document use.

Table 12: Job Advertisements by Numeracy (Expanded Definition)

Number of Times a Job Advertisement Mentions Numeracy (Expanded Definition)	Number of Job Postings	Total Mentions
0	205	0
1	35	35
2	30	60
3	10	30
4	14	56
5	5	25
6	3	18
7	3	21
8	3	24
9	2	18
10	0	0
11	1	11
12	2	24
13	1	13
14	0	0
15	0	0
16	1	16
17	0	0
18	1	18
Total:	316	369

Specifically Mentioned Skills

In addition to the list of essential skills discussed above, a number of precisely worded skills and attributes recurred throughout the job advertisements. For example, an employer might ask specifically for “entrepreneurial(ism)” or “a positive attitude.” These skills were clearly important to employers but had no obvious home in our list of essential skills. For these skills, we coded only whether or not the job advertisement mentioned the exact term specified in the list of skills in Table 13.

Table 13: Job Advertisements by Other Skills

Specifically Mentioned Skills	Number of Job Advertisements in which Skill is Mentioned	Percent of All Job Advertisements
Results/goal-oriented	43	14%
Energetic	27	9%
Positive attitude	28	9%
Reliable/dependable	25	8%
Flexible	22	7%
Driven	19	6%
Entrepreneurial	15	5%
Quick learner	15	5%
Persistence/determination	12	4%
Ambitious/career-oriented	12	4%
Dynamic	14	4%
Passionate	12	4%
Enthusiastic	14	4%
Confident	8	3%
Hard worker	11	3%
Courteous	8	3%
Sense of humour	7	2%
Follows direction	4	1%
Competitive	3	1%
Resourceful	3	1%

This list of skills gives the reader a snapshot of the wide range of skills valued by employers. There were also a few unusual skill requests, including an employer who asked for “a demonstrated ability to attend work on a regular basis,” another who sought an employee “willing to wear company uniform” and one who detailed that no “prima donnas, mediocrity, excuses, indifference, [or] politics” would be accepted.

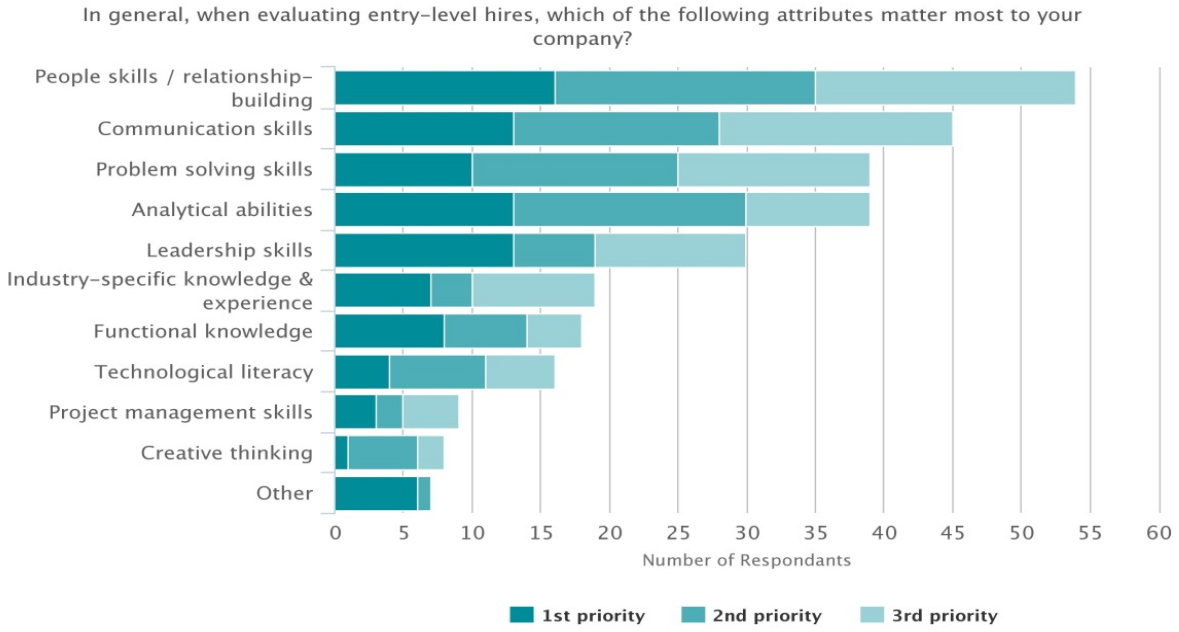
Comparing with Employer Surveys

Figure 9 (see page 28) summarizes how employers ranked each skill, measured both by the percent of job advertisements that listed a skill and by the number of times employers mentioned a skill relative to all other skills.

The question of how employers articulate their demand for skills has guided this study. Given our findings on how employers rank various skills against one another, we can also gain some rough insight into whether or not the relative value they place on each skill in job advertisements aligns with how they rank these skills when asked directly in employer surveys. To do so, we look at how employers rank their demand for skills in

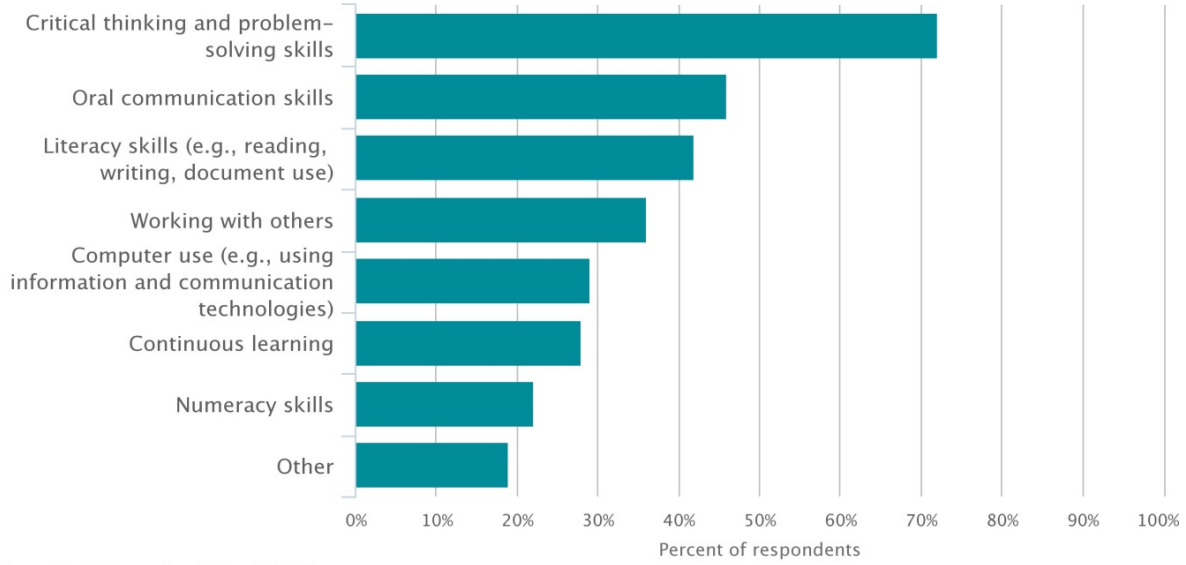
two employer surveys, one conducted by the Canadian Council of Chief Executives (Figure 12; CCCE, 2014) and the other by the Conference Board of Canada (Figure 13; Stuckey & Munro, 2013).

Figure 12: The CCCE's Attributes that Matter Most to Employers when Hiring



Source: Canadian Council of Chief Executives (CCCE, 2014)

Figure 13: The Conference Board of Canada's Essential Skills Gaps



Source: The Conference Board of Canada (2013)

Readers should bear in mind that the two employer surveys list different essential skills, making any comparison inexact. More significantly, the two surveys also ask different questions. While the CCCE survey asks employers which skills matter most to them, the Conference Board surveys is concerned with which skills employers find to be most deficient among current employees (in Ontario). As a result, comparing our results with those of the CCCE tells us if employers are actually asking for the skills they say they most desire in candidates, while a comparison with the Conference Board survey tells us if the skills shortages they say they face in the workplace are important enough to translate into active recruitment of employees based on these skills.

From our comparison of the skills rankings in job advertisements with those from employer surveys, it is striking to observe how important the skill of working with others is to employers. Working with others was the most frequently requested skill in job advertisements when measured both by number of job advertisements and total mentions, and employers ranked "people skills/relationship building" first in the Canadian Council of Chief Executives (CCCE) survey. Moreover, the Conference Board reports that just under 40% of employers are concerned with the ability of their employees to work with others.

Similarly, communication skills were also ranked highly across both job advertisements and the various employer surveys. In job advertisements, oral communication was the second most frequently requested skill and fourth by number of mentions, while the CCCE reports that communication skills are the second most valuable skill to employers[8] and the Conference Board finds oral communication skills to be second most deficient in employees.

Other skills show greater divergence. Both the CCCE and Conference Board surveys suggest that employers place high value on thinking skills, with "problem solving skills" and "analytical skills" the third and fourth most important skills for respondents in the CCCE survey, and "critical thinking and problem-solving skills" ranked first by employers as being deficient in the Conference Board survey. In contrast, our analysis of job advertisements, which grouped these skills (problem solving, analytical skills and critical thinking) under "thinking" skills, found that thinking was only the sixth most frequently mentioned skill in job advertisements. However, while the surveys suggest that employers place greater value and found larger deficiencies on thinking relative to other skills, it does not suggest that more employers value thinking in employer surveys than in job advertisements; 57% of job advertisements mentioned thinking, which is actually higher than the percentage of employers that stated that they value problem solving or analytical abilities in the CCCE survey.

Computer use was one of the most inconsistently ranked skills across job advertisements and employer surveys. Our job advertisement analysis found that computer use was the third most frequently listed skill (mentioned in 74% of job advertisements) and came second in number of mentions. Yet the CCCE survey found that less than 20% of employers listed "technological literacy" as a priority for employers when hiring in entry-level positions, and only about 30% of employers thought that their employees were deficient in computer use skills when asked by the Conference Board.

Finally, numeracy is notable for the infrequency with which it is mentioned both across job advertisements and in employer surveys. It appears only 20% of the time in job advertisements and is not even mentioned in the CCCE survey. While it does appear in the Conference Board's survey of skills deficiencies in current employees, only approximately 20% of employers were concerned with numeracy, making it the lowest ranked skill (with the exception of the "other" category). This finding is puzzling given that occupations that could be classified as STEM (science, technology, engineering and mathematics) jobs – and thus would be expected to require significant numerical abilities – accounted for 26% of our sample. This finding is additionally puzzling because the most recent results from the OECD's PIAAC skills survey show that

[8] Note that the CCCE report combines oral and written communication skills into one category, so we cannot discern specifically which skill employers are requesting.

Canadian adults possess below-average numeracy skills (Statistics Canada, 2013), so we might expect employers to be witnessing numeracy problems in their workplaces.

Conclusion

Few policy issues capture the attention of the media, policymakers and the public in quite the same way as has Canada's skills gap in the past few years. Spurred on by conflicting reports and data, the discussion shows no signs of abating. On the one hand, much of the aggregate labour market data (like wage and vacancy rates), skills projections by ESDC and others, and skills tests like those conducted by the OECD point to confined rather than broad gaps – in certain occupations and/or locations and in some skills (like numeracy) more so than others. On the other hand, employers continue to express that they cannot find employees with the skills they need for their operations.

This begs the question: when Canadian employers say that they cannot find employees with the skills they need for their workforce, to which skills are they actually referring? From our review of the literature in *The Great Skills Divide*, we found that employers tend to mean one of three different things when they talk about skills – education, essential skills or work experience. Unfortunately, these employer concerns have too often been conflated into a single "skills gap" narrative, making it difficult to ascertain if there is a problem, what that problem is and what might be done about it. The current paper thus sought to run a fine comb through the skills gap narrative, separating out the various strands of the debate as they emerged in job advertisements posted by employers looking to fill entry-level positions with skilled workers. We examined what employers look for in recent PSE graduates when it comes to credentials, essential skills and work experience.

Several findings stood out. In terms of education, while all employers in our sample required a PSE credential, almost half of employers were indifferent as to the candidate's specific field of study, possibly indicating that employers equate PSE with stronger broad employability skills rather than simply improved disciplinary knowledge. For work experience, a notable finding was that employers looked for an average of 1.4 to 2 years of work experience for candidates in *entry-level* positions, lending support to the argument made by Cappelli (2012) and others that employers are increasingly evading their responsibility to train new employees, expecting instead that recent graduates come to the workplace having already been trained elsewhere. For essential skills, we found that employers most clearly and frequently expressed that they needed employees who work well with others, communicate effectively orally and possess strong computer skills.

At the core of all of these issues is the relationship between postsecondary institutions and employers in shaping Canada's skilled workforce. If employers need employees with skills like oral communication and the ability to work with others, are these the same skills that we are teaching in PSE? More broadly, what skills should PSE graduates possess when they enter the workforce? Which of these skills are the responsibility of PSE institutions to teach and which are the responsibility of the employer? Answering these questions is beyond the scope of this paper. But one thing seems evident: ensuring that college and university graduates have the right skills for the Canadian labour market will require better labour market alignment, which can only be achieved through the active collaboration of both PSE institutions and employers.

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Bridging the Divide, Part II: What Canadian Job Ads Produced

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Executive Summary

Media and policy commentary have focused lately on Canadian employers' apparent inability to find employees with the desired labour market skills. To explore this issue further, HEQCO reviewed and summarized the current discourse surrounding a "skills gap" in *The Great Skills Divide: A Review of the Literature* and conducted an analysis of Canadian job advertisements geared toward recent postsecondary graduates in *Bridging the Divide, Part I: What Canadian Job Ads Said*. In the latter publication, 316 job advertisements for entry-level positions requiring postsecondary education were examined to ascertain the education credentials, work experience and essential skills employers were seeking. To follow-up on *Bridging the Divide, Part I*, the current report analyzes survey responses from 103 employers that posted job advertisements included in the preceding study. In particular, employers were asked if they had filled the advertised position or, if not, the reasons for being unable to find someone to hire. Those employers that had filled the position were also asked about the successful candidates' qualifications and performance on the job so far.

The large majority of employers (84%) hired someone for the advertised position. Among the successful applicants, almost two-thirds (63%) had more than the maximum number of years of work experience outlined in the job advertisement. Specifically, for these entry-level positions, 59% of hired applicants had three or more years of work experience and 25% had more than five years. Employers' apparent preference for prior work experience was also reflected in the finding that insufficient work experience was most commonly (53%) provided as a reason for not filling the advertised position.

When asked to rate the importance of a range of essential skills for their hiring decisions, employers reported little variability among them, with almost all skills perceived as important. Furthermore, in almost all cases, the reported importance of a skill did not correlate with the proportion of times that skill was requested in the job advertisement. Nonetheless, 86% of employers were generally satisfied with the employees that they had hired and 90% of employers believed that their new employee possessed the necessary skills for the job. Thus, a large majority of employers found employees and these employees were meeting or exceeding their expectations.

Though small in scope, the findings from this study suggest that college and university graduates have the right skills for the labour market. However, given the considerable work experience possessed by the new hires, one may be left wondering if the successful applicants were actually recent graduates. Similarly, a few other thoughts come to mind in light of the findings related to work experience: what skills did these applicants develop in postsecondary and what skills did they develop on the job? Are employers hiring candidates with substantial previous work experience for entry-level positions because they are unwilling to train employees, or are employers coveting a set of skills that they do not think can be developed in postsecondary education? Now that the majority of Canadian adults possess a postsecondary education, is substantial work experience the primary factor that distinguishes a successful job applicant from an unsuccessful one?

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Introduction

Canada's so-called "skills gap" has taken centre stage in the media and among policymakers. Discussion of the issue often implicates Canada's postsecondary system, with employers and business leaders voicing concern that the system is not graduating students with the skills needed by the labour market. However, labour market observers and employers remain divided as to the extent – or even the existence – of such a gap. To summarize the current discourse surrounding the issue of a skills gap, HEQCO recently published *The Great Skills Divide: A Review of the Literature*. To add to the commentary on this topic by examining the skills employers desire and how they communicate this to prospective employees, HEQCO also published *Bridging the Divide, Part I*: *What Canadian Job Ads Said*, which analyzed online job advertisements geared toward recent Canadian postsecondary graduates. Following up on the latter publication, the current report analyzes survey responses from employers that posted the job advertisements included in the original analysis to find out how the hiring process unfolded.

Readers should note that this report is best understood as a continuation of *Bridging the Divide, Part I*. In response to the concerns voiced by employers that they are struggling to find employees with the necessary qualifications – whether it be education credentials, work experience or essential skills – the first report asked: how are employers communicating to prospective employees the skills that matter to them in making hiring decisions? The analyses conducted in this original report provided a better understanding of how employers articulate and value credentials, work experience and essential skills in the hiring process. For example, it was found that less than one-quarter of employers (24%) were open to hiring a candidate without work experience, despite advertising "entry-level" positions. Another finding from this report was that the three essential skills most frequently requested by employers in job advertisements were the ability to work with others, oral communication skills and computer skills.

Bridging the Divide, Part I added to the discussion about how to better align postsecondary skills with the Canadian labour market, but also left several questions unanswered: what was the outcome of the job advertisement? Did the employer struggle to find someone with the skills needed for the position or did the employer find the employee they were looking for? How did the qualifications of the successful applicant compare to those outlined in the job advertisement?

To answer these questions, a follow-up survey was created for the employers that posted the 316 job advertisements included in the original analysis. Using a call centre to administer the survey, these employers were asked if they had filled the advertised position, what skills had mattered most in making the hire and if they were satisfied with their new employee.

The following section of this report provides a detailed description of the survey methodology used to gather data from employers and is followed by an analysis and discussion of the findings. The employer survey was designed to assess the same skills categories – credentials, work experience and essential skills – examined in *Bridging the Divide, Part I*, so the results from the two studies are presented in juxtaposition.[1] Directly comparing the information provided in the job advertisement to the employer survey provided insight into the 'recruited for' versus 'hired' applicant.

[1] Readers interested in gaining a more comprehensive understanding of the methods used and findings revealed in *Bridging the Divide, Part I*: *What Canadian Job Ads Said* should refer to the publication here.

Methodology

The goal of this survey was to examine how the hiring process progressed beyond the posting of the job advertisements included in *Bridging the Divide, Part I*. Specifically, the following questions were investigated:

1. Did the employer fill the position?
2. How did the successful applicant's qualifications compare to the qualifications outlined in the job advertisement?
3. To what extent did an applicant's postsecondary credential matter to the employer's hiring decision?
4. To what extent did an applicant's work experience matter to the employer's hiring decision?
5. What essential and/or soft skills mattered to the employer when making the hiring decision?

Survey Instrument

The survey used in this study was developed by researchers at HEQCO and the consultant team at the research firm R. A. Malatest & Associates. It consisted of 23 questions, was designed to take approximately 10 minutes to fill out and could be completed by telephone or online.[2]

The survey was organized into four parts meant to mirror the information collected in the previous job advertisement analysis. Part I opened with basic questions regarding the hiring process used by the employer to fill (or not fill) the advertised position. Part II asked the employer about the postsecondary education (PSE) of the employee they hired and if education factored into their hiring decision. Part III asked about the applicant's prior work experience and if work history factored into the success of the applicant. Part IV asked the employer what skills were important in the hiring decision and if the employee they hired had the necessary skills for the position they filled.

The survey made extensive use of dichotomous (yes/no) questions, some of which also made available an "other" answer. Questions about the importance of specific qualifications – credentials, work experience and essential/soft skills – to the hiring decision used either a three-point or a five-point Likert-type scale.

Survey Administration

The survey was conducted by R. A. Malatest & Associates, using their in-house Computer Assisted Telephone Interview (CATI) and Computer Assisted Web Interview (CAPI) systems.[3] Malatest's team of interviewers received general training on surveying techniques and CATI/CAPI systems, as well as training specific to this study.

Respondents were solicited initially through a formal mailed letter from HEQCO, which was sent out during the second week of April 2014. This letter was intended to serve as a response rate enhancement tool. The letter contained an explanation of HEQCO's research to date on skills gaps, a link to the online survey and instructions for booking a telephone interview (should they prefer).

Phone calls began the week of April 21, 2014 and ran until July 9, 2014 (12 weeks total). Respondents who neither completed nor refused the survey were contacted a maximum of 15 times via phone (based on Malatest's observations from previous survey research that few completions are achieved after this many attempted contacts).

[2] To view the complete survey, see Appendix A.
[3] CATI is a surveying approach in which phone interviews are conducted by an interviewer using a script generated by a software application. CAPI technology is used to conduct online surveys.

The telephone survey took approximately 10 minutes to complete on average, while the online survey took approximately nine minutes to complete.[4] To encourage participation, respondents were given the option of entering a draw to win an iPad Air or of nominating a charity to receive a donation of $600. Respondents who were unable to accept incentives as per company policy could choose to opt out completely.

Survey Respondents

In total, 103 of the 316 employers that posted job advertisements included in *Bridging the Divide, Part I* completed the follow-up survey – a response rate of one-third (33%). The majority (58%) of these employment opportunities were located in Ontario, although six other provinces were represented. More specifically, 41% of the job placements were located in Toronto, 11% in Edmonton, 8% in each of Vancouver and Calgary, 7% in Ottawa-Gatineau and 3% in Montreal (see Table 1).

Table 1: Location of Job Placement

Location of Job Placement	Number of Jobs	Percentage of Total Jobs
Toronto	42	41%
Edmonton	11	11%
Vancouver	8	8%
Calgary	8	8%
Ottawa-Gatineau	7	7%
Montreal	3	3%
Hamilton	2	2%
Kitchener-Cambridge-Waterloo	2	2%
London	2	2%
Kelowna	2	2%
Kingston	1	1%
Saskatoon	1	1%
Winnipeg	1	1%
Outside census metropolitan area	13	13%
Total	**103**	**100%**[5]

Using the 2011 National Occupation Classification (NOC), 35% of the job opportunities included in the current follow-up study would be categorized as business, finance and administration occupations; 26% as natural and applied sciences and related occupations; 16% as sales and service occupations; and 11% as occupations in education, law and society or community and government services. The remaining occupation classifications can be viewed in Table 2.

[4] Several outliers (greater than 30 minutes) were removed when calculating the average completion times for the online survey. As time is recorded whenever a web browser is left open, there were instances where the online completion time was longer than the maximum completion time for a telephone survey.
[5] Throughout the report, percent totals may not add up to 100 due to rounding.

Table 2: Type of Occupation as Outlined by the 2011 NOC

Type of Occupation	Number of Jobs	Percentage of Total Jobs
Business, Finance and Administration	36	35%
Natural and Applied Sciences and Related Occupations	27	26%
Sales and Service	16	16%
Education, Law and Society, Community and Government Services	11	11%
Health	6	6%
Art, Culture, Recreation and Sport	3	3%
Management	3	3%
Manufacturing and Utilities	1	1%
Total	**103**	**100%**

Most online job advertisements were not explicit as to who within the company was hiring, so the specific manager and/or organizational unit to which the advertised position would report often had to be tracked down. In all cases, Malatest endeavoured to speak with the manager who most closely oversaw the advertised position. However, this was not always possible and the survey was most often completed by a representative from the organization's human resources department. A direct manager completed 25% of the surveys, while an HR representative completed 75% of the surveys. As displayed in Table 3, most survey respondents (78%) completed the survey over the telephone, while the remainder (22%) completed the survey online.

Table 3: Mode of Survey Completion

Survey Mode	Number of Employers	Percentage of Total Employers
Online	23[a]	22%
Telephone	80	78%
Total	**103**	**100%**

[a] Of the 23 respondents who completed the survey online, 13 did so only after being contacted by Malatest via telephone.

Data Analyses

The employer survey responses were mainly analyzed and summarized using descriptive statistics. However, more advanced statistical analyses were used in a few cases to address particular questions; these procedures are identified accordingly within the Findings section. Specifically, Spearman's rank-order correlation test was used to measure the strength of association between a number of select variables and Wilcoxon's signed-rank test was conducted to compare the median difference between importance of education and importance of work experience in the hiring process. Because the goal of this paper was to examine the hiring process as a whole, responses from the employer survey were compared to the job advertisement information reported in *Bridging the Divide, Part I*.

Limitations

A primary concern with this study is the issue of selection bias. *Bridging the Divide, Part I* only analyzed job advertisements that required some form of PSE, were designated as entry-level and were posted online during the week of January 20, 2014 on one of three search engines (i.e., Monster Canada, Workopolis and

Charity Village). This original sample consisted of 316 job advertisements but only 103 of these employers completed the follow-up survey. Though geographic location and occupation type have been summarized to provide some information on the survey respondents, it is difficult to determine how representative the respondents are of the original sample and, more broadly, the Canadian labour market at large.

Additionally, although the intention was to compare the specific qualifications regarding education, work experience and soft/essential skills outlined in the job advertisement to those possessed by the hired applicant, PSE data are limited in the findings below. The survey item that addressed the specific PSE credential(s) of the hired applicant was ambiguous, so the employer responses were not valid. However, it was still possible to analyze how important the employee's educational background was to the employer's hiring decision.

Furthermore, a wide range of essential and soft skills emerged as being important to employers in the initial job advertisement analysis. Mindful that longer surveys discourage completion, the current survey only asked about the top 10 and the bottom three skills that mattered to employers. When employers were asked if a specific skill (e.g., writing skills) was needed for the position they had advertised, it was also not possible to ensure that each employer understood writing skills to mean the same thing. While the survey provided brief definitions of each skill (e.g., writing was defined as, "communicating by arranging words, numbers and symbols on paper or a computer screen"), these definitions were brief and left room for interpretation. Moreover, even where a shared understanding of what constitutes a specific skill existed, an employer may not have been able to assess accurately the importance of that skill to the position in question.

Another important limitation of this research was that an HR representative for the company completed the survey more often than the employee's direct manager (75% versus 25%, respectively). Presumably, it would have been better to gather information from the employee's direct manager rather than an HR representative because the manager works more closely with the employee on a daily basis and is therefore a better judge of his or her skillset.

Findings

Filling the Position

Employers received an average of 80 applications[6] and interviewed an average of seven potential candidates[7], with three employers opting not to interview anyone from their pool of applicants. As a result of these interviews, 84% of employers hired an applicant, 14% of employers did not hire anyone and 2% of employers reported that the hiring was still in progress or the position was no longer needed (see Table 4).

Table 4: Status of the Hiring Process for the Advertised Position

Did you fill the advertised position?	Number of Employers	Percentage of Total Employers
Yes	87	84%
No	14	14%
Hiring in process/Role no longer required	2	2%
Total	**103**	**100%**

[6] One employer reported that he or she received 1,072 applications. This number was greater than three standard deviations above the mean and was removed from the reported average.
[7] One employer reported that he or she interviewed 100 applicants. This outlier was greater than three standard deviations above the mean and was removed from the reported average.

Among employers that hired someone, 86% said that they were happy with the employee they chose. A further 12% of employers considered it too early to judge (or were otherwise unwilling to make an assessment) and only 2% of employers said they were not satisfied with the employee they hired (see Table 5).

Table 5: Employers' Satisfaction with the Hired Applicants

Generally, are you satisfied with the employee you hired?	Number of Employers	Percentage of Total Employers
Yes	75	86%
No	2	2%
Unable to comment/Too early to tell	10	12%
Total	**87**	**100%**

Taken together, these results suggest that most employers were able to fill the advertised position and were able to do so with a candidate they believed to be well suited to the job. The following sections of this paper will delve more deeply into the qualifications that mattered most to employers in assessing and hiring applicants. These findings will be compared to those from *Bridging the Divide, Part I.*

Previous Work Experience

In *Bridging the Divide, Part I*, all of the job advertisements that were analyzed explicitly stated that the position was entry-level. It was thus striking to observe in the job advertisement analysis that three-quarters of the 316 employers required previous work experience. However, because employers can set as high a standard as they want when advertising a position, job advertisements may be geared toward the ideal candidate. Therefore, the follow-up survey asked employers to indicate how many years of work experience the hired applicant actually possessed.

Of the 316 employers that posted job advertisements analyzed in the previous report, 83 responded to the survey questions on work experience. As displayed in Table 6, hired applicants most frequently had three to five years of previous work experience (34%), followed by one to two years (27%), more than five years (25%) and less than one year (13%). Only 1% of hired applicants lacked work experience, despite the fact that all of the positions were advertised as entry-level.

Comparing the number of years of work experience of the hired applicants to the advertised minimums, 20% of employers hired someone whose years of work experience matched the minimum amount outlined in the advertisement and 10% of employers hired someone who had less work experience than the requested minimum. The large majority (70%) of employers hired an employee who had more work experience than the advertised minimum.

Similarly, as shown in Table 6, employers overwhelmingly hired applicants who had even more work experience than the requested maximum. Only 14% of successful applicants had less than one year of work experience, while 29% of advertisements outlined that the maximum work experience was less than one year. Furthermore, 18% of job ads specified that three or more years of work experience was acceptable but, in reality, 59% of successful applicants had more than three years of employment experience. In fact, 63% of employers hired an applicant who had more years of work experience than the maximum outlined in the job posting, while only 11% of employers hired someone with less experience than the maximum. The remaining 26% of employers hired someone who matched the maximum work experience qualification.

Table 6: Years of Work Experience of the Hired Applicants Compared to the Minimum and Maximum Years of Work Experience Requested in the Job Advertisements

	Hired Applicant	Advertised Minimum	Advertised Maximum
No work experience	1 (1%)	23 (28%)	17 (21%)
Less than 1 year of work experience	11 (13%)	5 (6%)	7 (8%)
1 to 2 years of work experience	22 (27%)	49 (59%)	44 (53%)
3 to 5 years of work experience	28 (34%)	6 (7%)	14 (17%)
More than 5 years of work experience	21 (25%)	0 (0%)	1 (1%)
Total	83 (100%)	83 (100%)	83 (100%)

While it is evident that most employers hired employees with substantial previous work experience, these numbers do not definitively indicate whether or not employers *preferred* candidates with more work experience over those with less. Without having knowledge on the entire pool of applicants from which the successful candidate was selected, it is not possible to answer this question. However, to assess to some extent what role work experience played in the hiring process, employers were asked how important the applicant's previous work experience was to their hiring decision. As displayed in Table 7, most employers considered work experience to be central to their hiring outcome, with 66% of employers reporting that past work experience was "very important" to their decision. A further 29% of employers considered work experience to be "somewhat important," while only 6% deemed it "not important."

Table 7: The Importance of Past Work Experience to Employers' Hiring Decisions

How important was the employee's past work experience in your hiring decision?	Number of Employers	Percentage of Total Employers
Not important	5	6%
Somewhat important	25	29%
Very important	57	66%
Total	87	100%

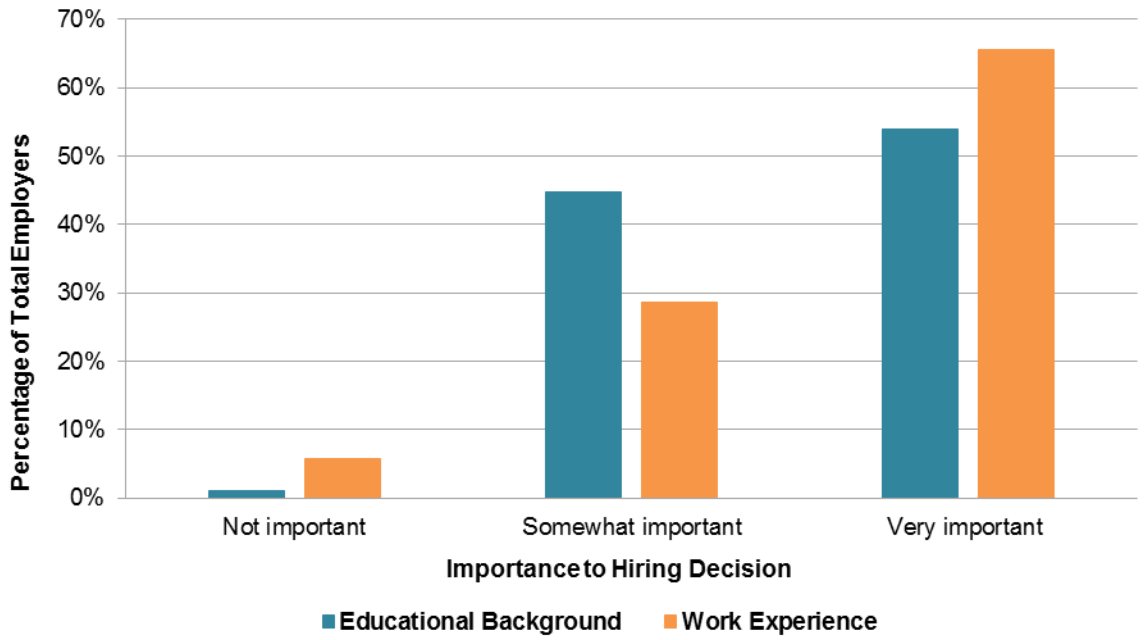
Analyses also revealed a statistically significant positive relationship[8] between the importance of work experience to an employer and the number of years of work experience possessed by the hired applicant. This association suggests that the more an employer valued work experience, the more likely they were to hire someone with a greater number of years of previous employment. Alternatively, this correlation could indicate that the greater work experience the hired applicant possessed, the more value the employer placed on his or her past employment. Either way, more work experience and the value placed on this work experience by employers went hand-in-hand.

Though the hired applicants' specific education credentials are not included in this report, employers were asked to rate how important the employee's educational background and past work experience were in the hiring decision. On the one hand, more employers considered work experience (66%) rather than educational background (54%) to be "very important" to their hiring decision; on the other hand, more employers considered educational background (45%) rather than work experience (33%) to be "somewhat important" to

[8] $r_s(81) = .48$, $p < .01$

their hiring decision (see Figure 1). A Wilcoxon signed-rank test was performed and failed to reject the null hypothesis that work experience and educational background were equally important in the hiring decision.[9]

Figure 1: The Importance of Educational Background and Work Experience to Employers' Hiring Decisions



Essential and "Soft" Skills

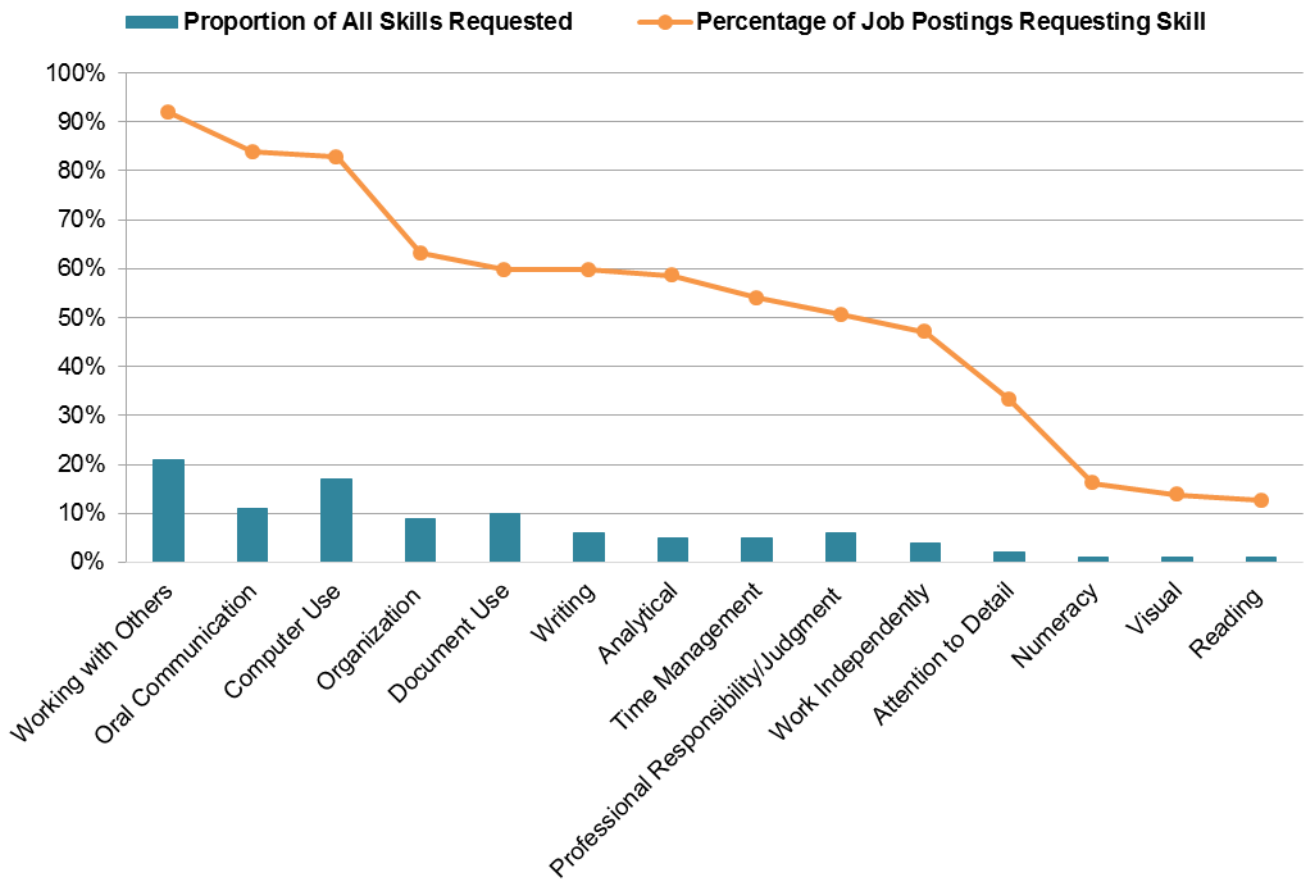
In *Bridging the Divide, Part I*, essential or "soft" skills were measured using two different methods. First, the presence or absence of a skill in each job advertisement was measured using a yes/no variable. Second, the relative importance of a specific skill was measured using a calculation of the proportion of times each skill was mentioned as a product of all skill mentions. For example, using this second measurement technique, if writing skills (or activities requiring writing skills) were mentioned four times, oral communication skills were mentioned twice and computer skills were mentioned twice, writing skills would be assigned a value of 50% and oral communication and computer skills would each be assigned a value of 25%. By both measures, the same five skills emerged in *Bridging the Divide, Part I* as being most frequently requested: working with others, oral communication, computer use, document use and administration/organization skills.[10]

Among employers that responded to the follow-up survey, these same five skills ranked highest, albeit in a slightly different order depending on the measure used. The line in Figure 2 indicates the percentage of total employers in the sample that mentioned a skill in their advertisement: working with others (92%), oral communication (84%), computer use (83%), organizational skills (63%) and document use (60%). The bars in Figure 2 represent the average proportion of times a skill was mentioned in the job advertisements as a product of all skill mentions: working with others (21%), computer use (17%), oral communication (11%), document use (10%) and organizational skills (9%).

[9] $z = -.76$, $p = .45$

[10] Employment and Skills Development Canada's (ESDC) list of essential skills was used to create an initial list of skills, but other skills that frequently appeared in the job advertisements and did not fit into these categories were also coded. Of the five skills listed here, only administrative/organizational skills is not considered an essential skill by ESDC.

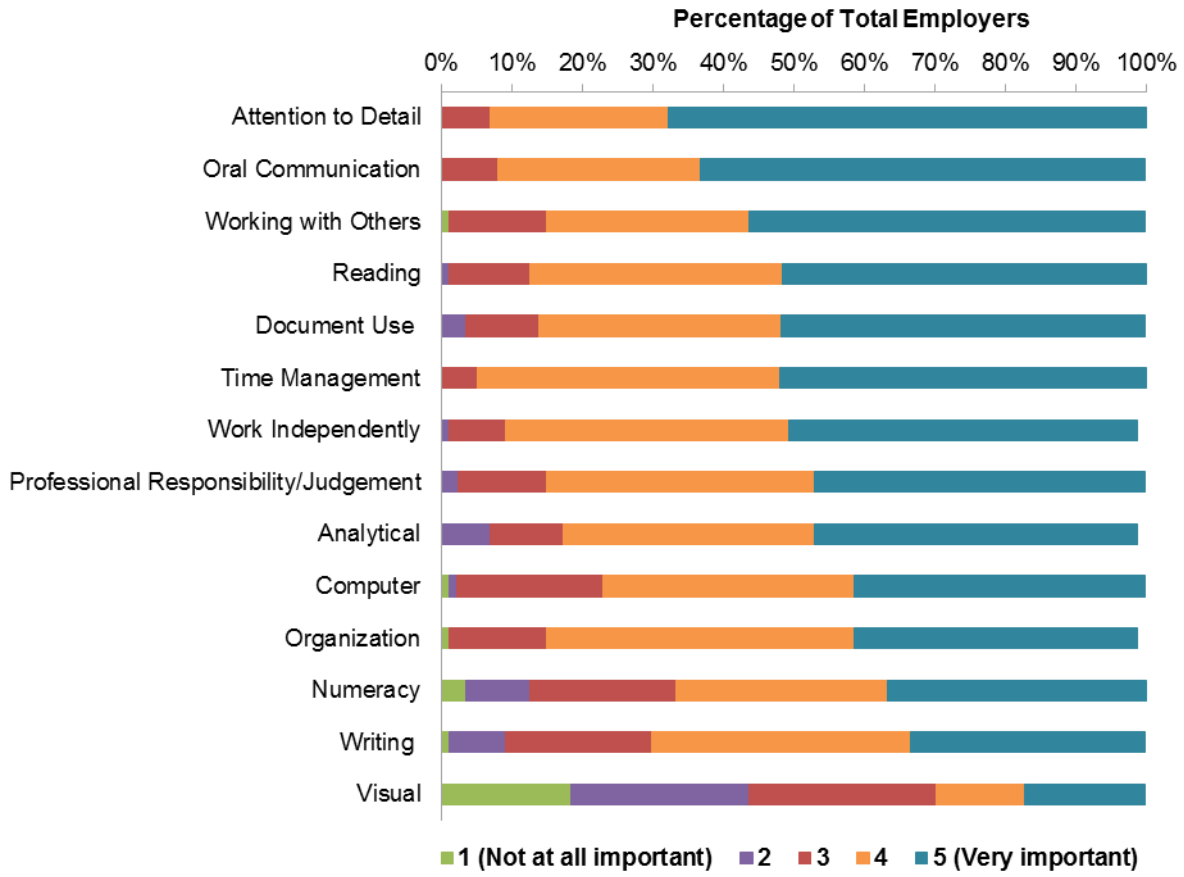
Figure 2: Essential and/or Soft Skills Included in the Job Advertisements as a Percentage of all Job Postings and as a Proportion of all Skills Requested



To examine the extent to which these various skills factored into the hiring decision, employers were asked to rate on a scale from 1 (not at all important) to 5 (very important) how essential each skill was to the position for which they were hiring.

When considering how many employers rated a skill as “very important,” Figure 3 shows that attention to detail was most highly rated by 68% of employers. Next, two skills that were among the most frequently represented in the job advertisements, oral communication and working with others, were rated as “very important” by 63% and 56% of employers, respectively. Reading, document use and time management tied for fourth, with 52% of employers ranking each of these skills as “very important.” Nonetheless, Figure 3 makes clear that there was limited variability in how employers rated each skill. With the exception of visual skills, all skills were considered important (i.e., rated 4 or 5) by at least two-thirds (67%) of employers.

Figure 3: The Importance of Various Essential/Soft Skills to the Advertised Position as Reported by Employers[11]



To compare these results with the findings from *Bridging the Divide, Part I,* correlations between the number of times an employer mentioned a skill in a job advertisement relative to other skills and the employers' rated importance of a skill were tested. In general, the number of times a skill was mentioned in an advertisement (as a proportion of total mentions) did not correlate with the employer's reported importance for that skill. In only two cases – computer use and document use – was a significant and positive association found.[12]

It may be tempting to interpret the absence of a relationship between the skills employers advertised and the skills that mattered to them in the hiring process to mean that the employers did not advertise the skills that they actually wanted in an employee. While this may be part of the story, the low variability in how employers rated each skill in the survey – with employers rating almost all skills as important – likely plays a larger role in explaining the general lack of correlation. Perhaps employers considered almost all skills to be important to their hiring decision because they did not have a clear idea of what skills mattered most to the position they

[11]Due to rounding, bars may not add up to 100%.
[12]The correlation between proportion of times computer use skills was mentioned and reported importance of computer use skills was of moderate strength ($r(84) = .46$, $p < .01$). The correlation between proportion of times document use skills was mentioned and reported importance of document use skills was statistically significant but weak ($r(84) = .23$, $p = .03$).

were filling. Or perhaps explicitly asking employers to rank, as opposed to rate, various skills would have elicited more information regarding the relative importance of skills.

It is also worth noting that even if the lack of correlation represents a disconnect between the skills employers advertised and those on which they based their hiring decisions, this mismatch did not seem to prevent employers from finding employees with the skills that they needed. When employers were asked if the applicant they hired had the necessary skills for the position, the overwhelming majority of employers (90%) reported that the employee they hired possessed the required skills. Only 8% of employers were unsatisfied with the skillsets of their employees, while 2% of employers said they did not know or that it was too early to tell (refer to Table 8).

Table 8: Extent to Which the Hired Applicants' Skills Match the Skills Required for the Position

Does the employee you hired have the necessary skills for the position?	Number of Employers	Percentage of Total Employers
Yes	78	90%
No	7	8%
Don't know/Too early to tell	2	2%
Total	87	100%

Employers that did not Fill the Position

The 14 employers that did not hire an applicant were asked to identify the reason(s) for this decision using the options in Table 9. Employers that did not hire an applicant most frequently cited too little work experience (57%), while a further 36% said that applicants lacked the required soft skills and 29% said that applicants lacked the required education.

Table 9: Reasons Employers Did not Hire an Applicant to Fill the Advertised Position

Why were you unable to fill this position?	Number of Employers	Percentage of Total Employers
Applicants did not have enough work experience	8	57%
Applicants did not have the required "soft skills"	5	36%
Applicants did not have the required education	4	29%
Other	5	36%

Among the eight employers that identified not enough work experience as a reason for not hiring, none of them indicated "no work experience" as an acceptable minimum in their job advertisement and only two of them requested a minimum of less than one year of work experience.[13]

While only five employers selected lack of soft skills as a reason for not hiring, all 14 employers that did not hire someone were asked to identify what soft skills (if any) were missing among the applicants. Oral communication skills were reported as missing most frequently (7 employers), followed by professional responsibility and judgment skills (6 employers), the ability to work independently (4 employers) and computer

[13] Of the remaining six employers that did not hire someone due to a lack of work experience, three requested a minimum of one to two years of work experience, two requested three to five years and one requested five or more years.

skills (3 employers).[14] The rest of the skills mentioned were identified as missing by only one or two employers.

Among the four employers that reported that applicants did not have the required education, one of these employers advertised for a college diploma, two employers advertised for a university degree in a specific field (physical therapy and any quantitative field) and the final employer requested an accredited certificate in sonography. For two of these four positions, additional registration/certification with a particular professional association was also required.

Considering that only 14 out of 103 employers did not find a suitable candidate, it is unwise to pinpoint patterns and draw broad conclusions based on this sample. However, most notable is that not enough work experience was the most common reason provided for not hiring even though these jobs were all categorized as entry-level. Nonetheless, what can be concluded confidently from this limited sample is that few employers actually failed to find a successful job applicant.

Conclusions: What about that skills gap?

The notion that employers cannot find employees with the skills necessary to succeed in the labour market has dominated media and policy narratives. Reports of a “skills gap” often draw support from employers’ broad perceptions that their workplaces suffer from a shortage of skilled workers (e.g., Canadian Chamber of Commerce, 2012; Stuckey & Munro, 2013). Rather than relying on these sweeping statements, this report looked for skills deficiencies at a more micro level by examining the process by which employers advertise and fill individual job openings in their firms. Specifically, this study focused on positions designated as entry-level that required some form of PSE.

The current study determined that not only were most employers (84%) able to find someone to hire, they hired applicants with whom they are generally satisfied (86%). Among these successful applicants, almost two-thirds (63%) had more than the maximum number of years of work experience outlined in the entry-level job advertisement. More precisely, the majority (59%) of hires had three or more years of previous employment and 25% of hires had even more than five years of work experience. Interestingly, employers’ high demands for work experience may be one reason why not enough work experience was most commonly (53%) provided as an explanation by the 14 employers that did not hire.

When employers were asked to rate the importance of a range of essential or “soft” skills to their hiring decisions, almost all skills were believed to be important. Likely due to the limited variability in these responses, the importance of most skills did not correlate with the proportion of times that skill was requested in the job advertisement. However, 90% of employers reported that their new employee possessed the necessary skills for the job. This finding suggests that college and university graduates have the right skills for the Canadian labour market, but given the sizeable work experience of this study’s sample, it begs the question: what skills did the applicants develop during their time in the PSE sector and what skills did they develop during their time in the workforce?

While small in scope, the observations from this study suggest that Canada’s alleged skills gap may be just that – an allegation that warrants further evidence. However, as outlined in *The Great Skills Divide*, the “skills gap” is a multifaceted issue and, even if no widespread gap is evident, gaps may exist in certain occupations and/or locations and in some skills but not others. Although it is not appropriate to make strong nationwide conclusions based on this study’s limited sample size, the current findings provide a valuable, evidence-

[14] Recall that oral communication and computer skills appeared in the top five skills featured in the job advertisements.

based contribution to the narrative on the skills gap within Canada. On the discouraging side of things, the entry-level positions analyzed were generally filled by people with more work experience than was expected. Without information on the entire pool of applicants, it cannot be confidently concluded that employers favoured applicants with substantial work experience over those without. However, this finding is relevant to the discussion on employers not wanting to train entry-level employees (e.g., Cappelli, 2012). Further to this point, employers that could not find a suitable candidate to hire were most likely to report not enough work experience as the explanation, which mirrors Cappelli's (2012) assertion that employers across the Americas are twice as likely to blame difficulty filling positions on a lack of experience than on a lack of soft skills. Perhaps, in the past, a PSE credential indicated to Canadian employers that a job applicant had the necessary set of skills to succeed in the workplace, but with a (climbing) PSE attainment rate of almost 60%[15] (OECD, 2012), is it possible that previous work experience has become the new indicator of "work-ready" skills?

[15] For adults in Canada between the ages of 25 and 44 (OECD, 2012).

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