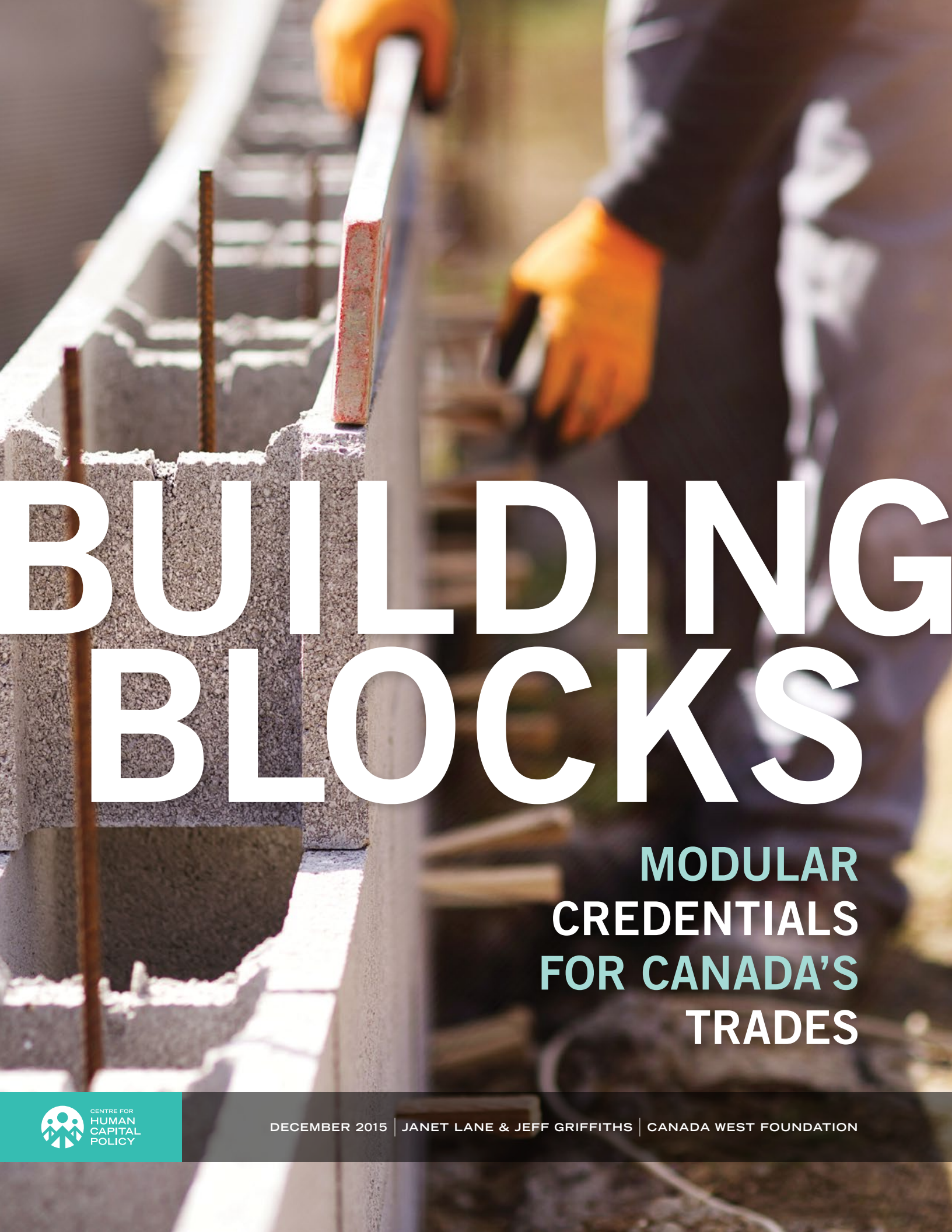

BUILDING BLOCKS

MODULAR CREDENTIALS FOR CANADA'S TRADES

CENTRE FOR HUMAN CAPITAL POLICY

DECEMBER 2015 | JANET LANE & JEFF GRIFFITHS | CANADA WEST FOUNDATION

CANADA WEST FOUNDATION

The Canada West Foundation focuses on the policies that shape the West's quality of life. Through our evidence-based research and commentary, we provide practical solutions to vexing public policy challenges. For more than 40 years, we have been a passionate advocate for western Canada.

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CENTRE FOR HUMAN CAPITAL POLICY

The Centre for Human Capital Policy focuses on the economic importance of a skilled and productive workforce to Canada's current and future prosperity and supports policies that will enable western Canadians to reach their potential.

Canada's trades training system needs rebuilding.

Only about four in 10 apprentices complete the program and receive their certificate of qualification. Certified journeypersons are critical to the Canadian economy; they are the highest, broadest skillset holders in the trades. The apprenticeship system has produced many highly skilled and competent journeypersons who are the backbone of their respective industries. Nevertheless, there are hundreds of thousands of people working in the trades without any kind of formal government issued credential.

Many people without formal credentials are doing perfectly well in the trades workforce, however:

- The system has no mechanism for recognizing competent people who are working in perfectly good careers that do not require up to four years of preparation and training.
- There are no credentials that support labour mobility below the journeyperson level.
- It is difficult for people working in one trade to move into a related trade (e.g. plumber to pipefitter) even when they have gained many of the required skills.

The rest of the world has shifted or is shifting to a modular, competency-based model. This is a system where people are credentialed for specific competencies (e.g. blueprint reading, trouble shooting, safe work practices) and can stack these credentials together to qualify for different trades.

The modular approach has tremendous advantages. It:

- provides individuals with assurance that they have the skills to perform well in their careers
- delivers people with more required skills into the workforce faster and cheaper
- gives employers practical information on what people can actually do
- allows greater labour mobility geographically (nationally and internationally)
- dramatically improves mobility between trades, which creates benefits for individuals and the economy
- challenges the training system to become more focused on delivering required competencies.

To shift to this model, the trades training sector needs to:

01

ACCELERATE THE EFFORTS OF EARLY ADOPTERS OF A COMPETENCY-BASED APPROACH TO TRADES TRAINING AND CREDENTIALING.

02

ACCELERATE THE CREATION OF COMPETENCY-BASED PATHWAYS BETWEEN THE TRADES.

03

INVITE ALL STAKEHOLDERS, ESPECIALLY UNIONS, TO BE PART OF THE MOVE TOWARDS COMPETENCY-BASED TRAINING AND CREDENTIALING.

04

DEVELOP A NATIONAL COMPETENCY FRAMEWORK FOR THE SKILLED TRADES.

MODULAR COMPETENCY-BASED *model*

* *A system where people are credentialed for specific competencies and can stack these credentials together to qualify for different occupations.*

A MODULAR, COMPETENCY-BASED SYSTEM HAS THESE ADVANTAGES:

Assures workers have the **right skills** to perform well

Skilled workers enter the workforce **faster, cheaper**

Gives employers **practical** hiring information

Greater **labour mobility** geographically

Greater **mobility** between trades

A more **focused** training system

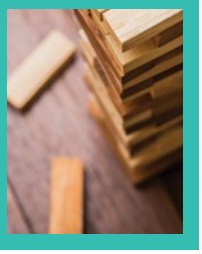
THE TRADES TRAINING SECTOR NEEDS TO:

Speed up efforts of early adopters

Accelerate competency-based pathways

Include all stakeholders – especially unions

Develop a national framework



CANADA'S TRADES TRAINING SYSTEM NEEDS REBUILDING

BACKGROUND
CANADA'S TRADES TRAINING SYSTEMS

The objective of Canada's trades training system is to deliver the skilled trades workforce our economy needs and to provide individuals with opportunities for well-paid work that suits their talents. For the more than 100 designated trades, the journeyperson credential is the only skill certification available. It can require as many as four years to complete and requires a significant commitment from employers, other training providers (colleges, technical institutes and unions) and government funding. In light of the low completion rates and the high number of uncertified workers in the field, it is reasonable to ask if it is working for Canada.

What we want from our workforce training and certification system is people with the right skills to do the jobs requiring those skills. Our skills training system should:

a) provide individuals with assurance that they have acquired the skills needed to do their job and that these skills will be recognized by employers;

b) provide employers with assurance that workers have the specific skills to do their work competently and safely;

c) minimize the time and cost of training for individuals, employers and the educational system; and

d) maximize mobility of employees between regions and industries to reduce both unemployment and labour shortages in a constantly changing economy.

THE PATHWAY TO BECOMING A JOURNEYPERSON

Apprenticeship

Apprenticeship is the most direct pathway towards journeyperson certification, the traditional goal for anyone wishing to have a successful career in the trades. In Canada, apprenticeships are available for more than 100 occupations – most in the construction and industrial trades. There are a few service trades, too, including chef, automotive and hairdressing. There are hundreds of thousands of apprentices in Canada. And every year, tens of thousands graduate as certified journeypersons. In 2012, the last year for which statistics are available, there were 444,672 apprentices and 41,481 certifications through apprenticeship.[1]

While apprenticeship is itself a learning journey, the original journeypersons were people who had been indentured to a master of their trade, had learned for years, and then been deemed by the associated guild to have become competent to practise their trade. Journeypersons traveled beyond their master's workshop to set up their own practice. They worked to create their own "masterpiece" and became a master – and in turn, competent to train their own apprentices.

Today, in Canada, apprentices enter their trade by securing a job with an employer willing to train them as an apprentice and registering with the local apprenticeship training authority.

IN 2012, THERE WERE

444,672

APPRENTICES & 41,481 CERTIFICATIONS THROUGH APPRENTICESHIP

60%

OF APPRENTICES IN THE BUILDING TRADES ARE UNION MEMBERS

Apprentices progress through up to four years of training, depending on the trade. Their hours of learning-through-work are documented in a training record or logbook, and are signed by the employer who is responsible for ensuring the apprentice is learning the hands-on portion of the trade. Eighty per cent of the training is on the job under the supervision of a journeyperson. The other 20 per cent is usually classroom-based training, at a college or union training facility. This technical training is provided either in blocks of time (of up to 12 weeks) or in shorter bursts, sometimes as often as one day per week.

In most jurisdictions, apprentices take an exam to qualify for the next level at the end of each training period. When all the required training hours are complete, they become eligible to take the provincial qualifying exam and become certified as a journeyperson.

Since 1959, the Red Seal designation has been earned by people who completed the number of hours required to become a journeyperson, and who passed (with a mark of 70 per cent or higher) the Red Seal exam for their trade. These four-hour, multiple-choice exams are offered in 57 trades and qualify a tradesperson to practise their trade in any jurisdiction in the country. In 2014, 26,936 apprentices took the Red Seal exams. The pass rate overall was 78 per cent.[2] In some jurisdictions, the Red Seal exams are the qualifying exams for the trades. In others, the province or territory sets its own qualifying exams and tradespeople can opt to write both sets of exams if they wish to receive a Red Seal endorsement.

Trade qualifiers

A total of 56,913 new journeyperson certifications were registered 2012. The 15,432 people who were not certified through the apprenticeship system were certified through what is known as the trade qualifier route.[3] On this path, people learn their trade on the job and through various technical training pathways, and then challenge the qualifying exams. Immigrants with trade experience or qualifications will most often take this route to becoming qualified to work in Canada.

Although many people are successful in becoming journeypersons through this route, trade qualifiers are less likely to pass the Red Seal exams than apprentices (62 per cent pass compared to 78 per cent).[4]

Canada's apprenticeship systems

We do not have one apprenticeship system in Canada – in reality we have 13 similar systems, each with individual differences. Within Canada's apprenticeships systems, some apprenticeships in some trades and in some jurisdictions require the completion of Grade 12 to enter; others require Grade 10. Carpentry, for example, requires completion of Grade 10 in Alberta, Ontario and B.C., but Grade 12 in Atlantic Canada, Manitoba and Saskatchewan.

There is also considerable variation in the number of hours of on-the-job experience required to write the certifying exams. Apprenticeships for most trades are nominally four years long, but some trades require only two or three. The median number of required hours is 6,000, but the range

THE ROLE OF UNIONS
IN APPRENTICESHIP TRAINING

No discussion of the Canadian apprenticeship systems would be complete without emphasizing the role of unions. Canada's Building Trades Unions report that 60 per cent of apprentices in the building trades are union members. Unions in the industrial trades are also heavily involved in training apprentices. Some unions have invested heavily in their apprentices and have built state-of-the-art facilities in which they provide technical training that meets or exceeds that which is provided through college programs.

Unions are involved in both the training and employment elements of apprenticeship, as they supply both journeypersons and apprentices to their contracted workplaces. In construction occupations, they dispatch workers to multiple employers through their union halls. In industries that are predominantly project-based, unions can move their workers between employers as projects end. Because of the range of employers that unions supply to, they are also more able to ensure that apprentices learn all facets of their trade on the job.

is from 1,620 to 12,000, depending on the trade and the jurisdiction. For those who become certified, the average time to complete is about 150 per cent of the nominal duration of the program.[5] However, B.C. does not count an apprentice as completed if they take longer than six years to finish, so B.C.'s completion rate may, in the long run, be higher than the 45 per cent it reports.

Recently, there has been movement to harmonize the apprenticeship systems across trades. In Atlantic Canada, five building trades are being harmonized across the region.[6] The goal is to create harmony among the entrance requirements and the number of hours on the job required to write the qualifying exams. Similarly, the New West Partnership in western Canada requires employers in B.C., Alberta and Saskatchewan to recognize the credentials of each other's certified journeypersons and apprentices.[7] In summer 2015, the members of the Council of the Federation (composed of Canada's 13 provincial and territorial premiers) signed a protocol that ensures mobility of all apprentices across the country, by recognizing their provincial apprenticeship training.[8] In the summer of 2015, the Forum of Labour Market Ministers recognized the efforts of the Red Seal Program to harmonize apprenticeship training, with 10 to be harmonized by September 2016, and 30 by 2020.[9]

In Canada, the provincial and territorial industry training authorities have designated some trades as "compulsory trades." In the compulsory trades, either journeypersons or apprentices in the trade must do the work. Only journeypersons are considered qualified to train apprentices in the on-the-job portion of the training program of a compulsory trade.[10] Trades which are not deemed compulsory are referred to as voluntary trades, where, according to the province or territory's regulations, people other than journeypersons or apprentices may do the work. Both voluntary and compulsory trades are included in the interprovincial Red Seal Program. In August 2009, the Forum of Labour Market Ministers updated the mobility provisions in the Agreement on Internal Trade. These provisions were meant to assure that "a worker certified for a regulated occupation in one province or territory will, upon application, be certified for that occupation anywhere it is regulated in Canada."[11] The Red Seal Program, of course, was mandated to do that for everyone who has a Red Seal certificate.

The Canadian Apprenticeship Forum estimates that only about 20 per cent of the employers who employ journeypersons participate as employers of apprentices.[12] In most jurisdictions, there are ratios of 1:1 or 1:2 (journeypersons:apprentices) which restrict the number of apprentices an employer can hire. Some jurisdictions enforce more restrictive ratios, up to 5:1 for some trades, on the next apprentices to be hired by an employer. These two factors can make it difficult to access an apprenticeship. One-third of trades' employers hire people who are neither apprentices nor journeypersons. Provincial and federal governments have made efforts to increase the number of apprenticeships available by providing cash and wage subsidy incentives to employers. The push to increase the number of available apprenticeships is ongoing. However, even with a larger number of registered apprentices over the last two decades, as will be shown later in this report, there has not been an equivalent increase in the number of journeypersons.

AT

40%

COMPLETION RATES FOR APPRENTICESHIP ARE POOR

Apprentices are required to work closely with, and learn on-the-job skills from, journeypersons. Ensuring a steady flow of journeypersons to act as workplace mentors for apprentices is crucial. Ultimately, without enough journeypersons, trades training as it is handled would come to a standstill.

COMPLETION RATES FOR APPRENTICESHIP ARE POOR (ABOUT 40%) AND FALLING

While every year thousands of men and women register as apprentices in Canada, for decades only about half of them completed their program.[13] In fact, for apprentices who registered since the early 2000s, recent data shows only about 40 per cent have become journeypersons.[14]

The provinces and territories vary in their methods of keeping statistics on apprenticeship completion, so it can be difficult to determine exactly what the success rate is. B.C. reported a completion rate of 43 per cent in 2011, and included all apprentices in its statistics.[15] On the other hand, in 2013, Alberta claimed a 77 per cent completion rate but only included in its statistics apprentices who had finished first year.[16] Statistics Canada reports on the number of apprentices and the number of people certified as journeypersons but not the completion rates.

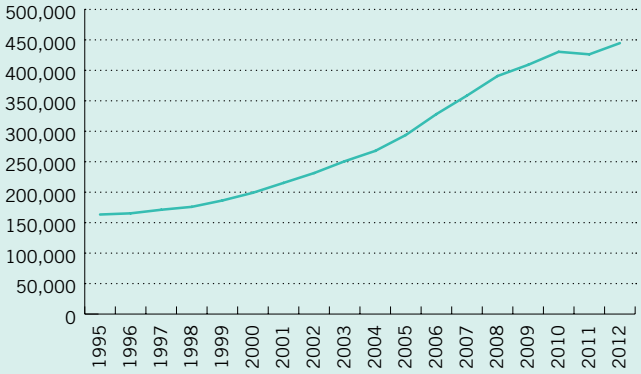
The National Apprenticeship Survey, last completed in 2007, identifies three classes of apprentices besides those who are active: completers, long-term continuers and discontinuers.[17] Long-term continuers may be in their apprenticeship for as long as 10 years. Ten per cent of apprentices stay in the program for 10 or more years.[18] Some never finish their certification. Though they may qualify for the final exams, some choose not to take them.

The numbers

Efforts to attract more people into the growing opportunities in the trades have succeeded. There has been a large increase in the number of people entering the trades as apprentices. However, the number of apprenticeships has been increasing more than the number of journeyperson certifications through apprenticeship. Figure 1 shows the large increase in total apprenticeship registrations and Figure 2 the comparatively smaller increase in the number of annual journeyperson certifications, between 1995 and 2012. Registrations have gone up 172 per cent since a low point in 1995, but apprentice completions have only increased 145 per cent in that time period. The completion rate of apprentices is falling. The number of people certifying through trade qualification is also falling relative to apprenticeship – up only 51 per cent. For more numbers, see Appendix 1.

THERE HAS BEEN A RAPID INCREASE IN THE NUMBER OF APPRENTICES

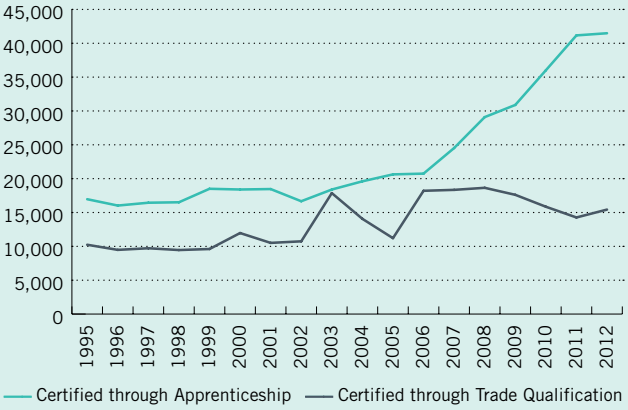
FIGURE 1: TOTAL REGISTERED APPRENTICES



Source: Statistics Canada CANSIM Tables

THE INCREASE IN THE NUMBER OF JOURNEYPERSON CERTIFICATIONS IS COMPARATIVELY SMALLER

FIGURE 2: JOURNEYPERSON CERTIFICATIONS



Source: Statistics Canada CANSIM Tables

We are attracting more people into apprenticeships but a smaller percentage of them are actually becoming certified journeypersons.

Obviously, questions arise as to why apprenticeship has such low completion rates.

Other post-secondary education students have more pathways to completion

Although non-apprentices also discontinue college or university programs, other types of post-secondary completion rates are higher than apprenticeships.

While completion within the first five years is low, in the end, 82 per cent of college students and 90 per cent of university students complete some form of post-secondary education (PSE).

A 2008 study showed that:

"Five years after entering PSE (post-secondary education), graduation rates from the first program are 56.5 per cent for college students and 52.1 per cent for university students, but these rates rise to 73.1 and 69.4 per cent, respectively, when switchers [to other programs or institutions] and leavers who subsequently return to school and graduate are included."[19]

IN THE 2006 CENSUS, ONLY

34%

OF THE PEOPLE WORKING IN THE TRADES WERE CERTIFIED JOURNEYPERSONS

Leavers from PSE programs who subsequently return and complete a different program are considered a success – at least to their new institution. Glenn Feldham, President of the Northern Alberta Institute of Technology (NAIT), has pointed out that 25 per cent of NAIT's entering students have some form of university education. In contrast, no one keeps track of the success of apprentices who do not complete their journeyperson certificate or switch to a different trade.

We have a more granular and more modular way of measuring success in the other aspects of our post-secondary systems – certificates, two-year diplomas, three-year diplomas, associate degrees, bachelor degrees, graduate certificates, master's degrees, PhDs. Yet, there is only one measure for apprenticeship, the journeyperson ticket.

There are many different reasons for non-completion

There are many documented reasons for non-completion of post-secondary education. For apprenticeship, there are reasons that relate to the kind of work and employers, some that relate to the learner and others that are harder to detect from the results of the surveys of apprenticeship non-completers but which are understood anecdotally to be common.[20] For instance, there is some evidence that a fear of failure in exams is a reason that is not always reported. Another reason is that it may be detrimental for the apprentice to complete their training – their job may not be available at the higher wage further training would demand. For more about some of the reasons apprentices do not complete, see Appendix 2.

The value of completion

Completing the requirements of an apprenticeship and taking the qualifying exams to become a certified journeyperson creates three potential benefits: higher wages, better job security and increased job opportunities.[21] People who complete their journeyperson ticket earn a wage premium. Apprentice wages are usually set within a jurisdiction as a percentage of the average journeyperson wages by either the governing industry training authority or the prevalent industry association, council or union. Collective bargaining agreements that contain higher wage levels supersede these set wages. Depending on the jurisdiction, first-year apprentices can earn between 45 per cent and 60 per cent of the full wage and the amount increases; people in the last half of their fourth year can make up to 95 per cent of a journeyperson's wage.[22] That said, within Canada, apprentices' wages vary considerably, as do journeypersons' wages, reflecting local conditions.

Laporte and Mueller, in a 2012 paper, reported that for those who were employed, apprenticeship completers who took their certification exams earned an average of 25 per cent more than apprentices who discontinued their program and did not take certification exams.[23] For those who complete their training but do not take certification exams, their wages are, on average, about 12 per cent lower than those who certify. Another study showed median wages for completers in 2007 to be $27 per hour versus $20 for discontinuers.[24] This same study showed other benefits to completers, including an 88 per cent employment rate compared to 80 per cent for discontinuers, and they were also more likely (four per cent more) to hold permanent jobs.

With all the attendant benefits that come with becoming certified as a journeyperson, many people still voluntarily choose not to complete their program. Apprenticeship is a tool – one of several – that allows people to improve their lives and develop needed skills. While as discussed above, we need a steady stream of new journeypersons in our workforce, it appears that not all apprentices need to complete their learning program. While the number of completions is a metric that can and should be tracked, perhaps just as important a question is, "What happens to the people who do not complete?"

NON-COMPLETION DOES NOT NECESSARILY MEAN A LACK OF COMPETENCE

Not finishing an apprenticeship does not mean that an individual cannot work any longer in their trade. Many still do. In the 2006 Census, only 34 per cent of the people working in the trades were certified journeypersons. Only half of them had become certified through the apprenticeship system.

Some of the remaining 66 per cent were apprentices, and the others were neither apprentices nor certified journeypersons. Apprenticeship systems are usually designed to produce well-rounded generalists capable of doing a broad scope of jobs within the trade. However, some jobs in some trades-related occupations are much more specialized. These jobs may not need a full apprenticeship to learn, nor do they necessarily need a fully certified journeyperson to do them. This is especially true in the construction trades, and specifically in residential construction.

Some jobs do not require a fully certified journeyperson

The scope of many jobs has been narrowed over time. A case in point is in the carpentry trade. While framing and concrete forming are part of the overall scope of a carpenter's trade, someone with specialized training that is less than that required for a full carpenter's certification can complete these tasks. In fact, a journeyperson carpenter, with all the capability that the designation suggests, is more likely to be the supervisor or general contractor than the person who hammers two-by-fours together to frame a house. The same holds true in other trades as well. Jobs in these specialized sub-sections within a larger trade are often filled by people who are neither apprentices nor journeypersons (except where the trade is considered compulsory), but who have the necessary skills.

Employers who have steady work for people who do not require a journeyperson's certificate, may have no incentive to support the apprenticeship program, especially when the work is plentiful, and losing an employee for two months for technical training would impact the bottom line. For example, new home construction is often the work of teams of specialized people who sub-contract to the home builder and perform the various tasks on a piecework basis. In this highly competitive and cost-conscious field, while it might be ideal to have journeypersons on the job, the reality is that to keep costs down, the work is often done by people who are neither journeypersons nor apprentices. This does not mean, however, that they are any less competent to perform the specific tasks of their job.

SUMMARY

The literature and news media have been preoccupied with the number of individuals who do or do not complete an apprenticeship and receive a journeyperson's credential. While there is a lot of variation in how different jurisdictions measure completions, half or less of the people who start an apprenticeship receive a journeyperson's credential. This is presented as evidence of a failed, or at best flawed, system.

Such a conclusion presupposes that the institution of apprenticeship is an end unto itself, the purpose of which is to produce journeypersons. But apprenticeship is a learning journey.

It may be impossible to determine what happens to people who discontinue an apprenticeship, as all the required data does not exist. Our all-or-nothing apprenticeship system loses track of people's competencies unless they are attached to a journeyperson's certificate of qualification. There is no good way of quantifying the incremental competence of individuals as they progress through the system. Meanwhile, other post-secondary programs have stratified qualification models (e.g. associates, bachelor, master's and doctoral degrees). There is a need to institute something similar for the trades.

In Section 2.0, we outlined our goals for the trades training system. While the system is working towards these goals, it fails to meet them fully:

a) It does not provide individuals with assurance that they have acquired the skills needed to do their job, nor that the skills they do have will be recognized by employers – unless they have a journeyperson's ticket. For the hundreds of thousands of people working in the trades without that certification, there is no easily transmitted proof of their competence.

b) Conversely, it also does not provide employers with assurance that workers have the specific skills to do their work competently and safely. Even a journeyperson's ticket does not provide assurance that a potential new hire has actual experience in particular tasks.

c) If the apprenticeship training system minimized the time and cost of training for individuals and employers and the benefits outweighed the costs, simple economics would suggest that more apprentices would complete the training.

d) Given worker shortages in some regions, and skills shortages throughout the workforce, the system does not meet the mobility goal. When the economy is undergoing temporary slowdowns and especially during structural changes, employees without credentials can be captive to their existing employers. Even worse, they can be unemployable despite vacancies in other regions or sectors because they have no assurance that their experience will be transferable to new employers.

Our recommended solution – a competency-based training and assessment system, with modular, stackable competencies – would mitigate these issues.

BUILDING A BETTER TRADES TRAINING SYSTEM

COMPETENCE SHOULD BE CREDENTIALED

There is a growing body of evidence supporting the effectiveness of competency-based and modular certification. Modular certification provides a credential for distinct competencies, based on tasks required in an occupation. Competencies are stackable vertically into higher level jobs, and horizontally into different occupations. Pilot projects have been conducted in Canada, and there are numerous jurisdictions around the world that have adopted this model.[25]

COMPETENCY

Competency relates to the level of responsibility and autonomy in the way an individual applies skill and knowledge on the job. It describes a proven ability to use knowledge, skills and personal, social and/or methodological abilities for specific tasks. In an occupational context, this usually means demonstrating the application of skills and knowledge to specific tasks while demonstrating adherence to specific standards for safety, quality and productivity. Competency in this sense is in the context of a specific job or field of work.

The highest level of competency is the capacity to apply knowledge and skill to solving new problems in new situations and contexts. It represents a broader application of critical thinking and problem solving, in addition to task-based competency to create solutions in new situations that an individual has never encountered before.

Trades work is changing

In the past, skilled trades represented discrete skills and there was a pretty clear distinction between them.

This has changed over the years. For example, a 2012 comparison of national occupational analyses for 15 Red Seal occupations, professional truck drivers and power/stationary engineers found that there was a great deal of bleed-over between occupations.[26] This mirrors field observations. There is a convergence between what used to be discrete occupations. As well, new occupations (most of which are not recognized as trades) are emerging. The mechatronics technician that is so prized in the plant maintenance environment, combines the competencies of instrumentation technicians, industrial electricians and millwrights.

While we have seen a blurring of the traditional demarcation lines between the trades, we have also seen increasing levels of specialization and segmentation within the trades, particularly with respect to particular employers or particular workplaces. This has led to one of the author's assertion that "nobody is their job description… and credentials as we've traditionally known them are becoming meaningless."[27]

All of this points to the increasing modularization and segmentation of occupations, a larger degree of commonality of core skills and the need for mechanisms to document, verify and provide recognition for the myriad skills and competences that the economy requires – without regard to which occupation owns them.

ONE PILOT PROGRAM RESULTED IN

10X

THE NUMBER OF CERTIFIED COMPETENT WORKERS

Strengthening the Red Seal

A move to competency-based assessment

The Red Seal Program has historically used a multiple-choice exam as the capstone verification prior to the awarding of a Certificate of Qualification to journeypersons in the 57 designated Red Seal trades.

Recognizing the need for a stronger brand for their designation, and in light of changing workforce demands, beginning in 2008, the "Strengthening the Red Seal" program piloted a number of initiatives. These included multiple forms of assessment (including demonstrations of competence) and revised occupational standards, which are more modular and competency-based.[28]

This move to modular "units of competency" and competency-based skills demonstrations for the awarding of Red Seal credentials was piloted for a limited number of occupations, and could be expanded to others.[29] Preliminary results seem to support the viability of these changes. In particular, "Candidates faced with challenges – such as learning disabilities, language and cultural challenges, and foreign-trained workers – found the multiple forms of assessment to be both beneficial and accessible."[30] To maintain standards and fairness, each form of assessment must be equivalent to all others; they must measure the same things, and a score on one form of assessment must be the equivalent to the same score on a different form of assessment. In addition, all assessment pathways must be open to all potential candidates. *(See Note 59 for more on reliability and fairness.)*

The power of a competency-based approach

The real power of a revised approach to certification for all trades may be realized if it is applied to modular credentials that are then stackable along the path to the full certification.

Competency-based credentialing on a modular basis will expedite the establishment of comprehensive skills/competencies/qualifications frameworks – a critical component in building a robust and flexible workforce development system. When similar or related competencies can be compared across numerous occupations, and at various levels within a framework, more effective bridging and laddering, and "career path" strategies can result. The EU has taken this approach with the European Qualifications Framework, which is designed to "make national qualifications more readable to promote workers' and learners' mobility, and facilitating their lifelong learning across Europe."[31]

While many benefits of this approach accrue to all stakeholders, they are sorted below according to how they meet our stated goals.

Assurance for individuals

Studies have shown the benefits of competency-based and modular approaches to learners. In particular, Bell and Mitchell (2000) compared competency-based and traditional cohort-based learning for refrigeration mechanic vocational training and noted that the competency-based approach "… has distinct technical/competency, learning, and philosophical (i.e., theory/practical integration) advantages."[32] Because they did not separate theory from

practice, the competency-based learners were found to have a much better understanding of why they performed tasks in particular ways than the traditional learners. They were also much more inclined to seek the knowledge they needed to understand why and what they were doing, rather than learning only by rote. An additional strength of the competency-based program, "… includes the chance for students to receive credit for verifiable competencies they have developed through previous life experience."[33]

One B.C.-based agency – Go2HR – introduced a tiered, three-level competency system for the occupation of cook, with Level 3 being the equivalent to the Red Seal for the occupation.[34] They developed modules of competency to meet the needs of different employers in the culinary industry. Go2HR developed the curriculum to teach to the different levels, and put evaluation processes in place. Skills modules are stacked vertically so that people can move up the levels. To advance up the levels, the learners have to both broaden and deepen their skills; it is not possible to receive a higher level of certification as, say, a pastry chef without also acquiring other skills as well. This is normal for cooks and chefs – while they may specialize in a particular area, they all have a broad understanding of the culinary arts and a broad range of skills. In the piloting of this approach, competencies of the trainees were verified against this tiered approach, and the result was a ten-fold increase in the number of individuals with verified competencies supported by a recognized credential. The more interesting statistic though, is that the proportion of individuals at the highest level, corresponding to the Red Seal, remained essentially the same at around 25 per cent. Making lower level credentials available was not a disincentive to completion of the top level.

What this points to is that in this particular industry, and for this particular family of competences, there is a great deal of occupational segmentation and corresponding differences in the mix of skills required. It also indicates the acceptance in the industry, employers and workers alike of a staged or laddered system that more closely represents the needs of the various sectors. There are jobs available that demand the modularized skills at all three levels of certification. The approach taken by Go2HR did not alter the standards for the Red Seal journeyperson certification; rather, they permitted the recognition of narrower packages of competency that corresponded to industry needs.

In a true competency-based training, assessment and credentialing system, individuals can gain the competencies they need, and be assessed on their competencies no matter where and how they learned them. Receiving a credential for those competencies provides the holder with proof of their capacity to do the required tasks of jobs for which they apply. The assurance that comes from knowing 'they can,' and being able to show proof 'they can' is invaluable.

For individuals, a recognized credential permits mobility within their industry, and allows laddering to other credentials if desired. A competency-based credential can be awarded at an earlier stage in their learning, advancing that mobility.

RATIOS AS HIGH AS

1:5

APPRENTICES TO JOURNEYPERSONS
LIMIT PARTICIPATION BY SMALLER FIRMS

Assurance for Employers

For employers, modular credentialing simplifies the screening and selection process for hiring and reduces the risk of a "bad hire." Employers who have identified the competencies they need for a particular job can advertise and screen on the basis of those competencies. Job interviews become more about the fit of the individual for the particular workplace, rather than an exercise in determining if the previous experience has provided opportunity to develop the required skills.

Another advantage of a competency-based approach is the potential to attract smaller or more specialized employers into the workforce development system. As evidenced in the culinary field, developing apprentices to a recognized credential (less than the full journeyperson credential) that more closely matches the employer's requirements can result in a significant increase in participation rates for employers, and a corresponding increase in credentials awarded.

Minimize time and costs of training

This competency-based training approach is working in other jurisdictions around the world. In Australia for instance, they report that, "… Competency based progression is a crucial strategy for alleviating skills shortages as it has the potential to deliver fully qualified tradespeople into the workforce sooner."[35]

For government and industry groups, competency-based credentialing offers a needed mechanism for tracking labour market skill requirements. This then permits better decision making and more efficient and effective allocation of finite resources for developing required competences.

Modular, stackable credentials, arranged in a career pathway framework, help training providers and educators tailor their offerings to articulated industry requirements. This increased focus has cost and time benefits for the trainee, the employer and the training provider alike. Modular credentials reduce the time and cost to earn a specific credential. Employees and employers can add modular requirements as they become needed or desired.

Maximize mobility

Some credentialed competencies could be stackable horizontally across related occupations (carpenter and cabinet maker, or automotive service technician and heavy duty equipment mechanic, for example) and thus could provide an effective mechanism for identifying gaps and customizing learning for individuals who wish to migrate from one trade to another, or acquire additional credentials.

By making it easier for individuals to move across trades, or even sectors, modular competencies remove barriers to mobility as labour demand shifts due to technological or economic changes. Reducing barriers to mobility geographically will reduce friction in labour markets – reducing both unemployment and skills shortages. Modularization could therefore lead to a more effective, efficient and mobile workforce development system.

A national competency framework for the trades is the ultimate goal of a move to modular, stackable competencies. Such a framework would facilitate full labour mobility across trades, sectors and the country. One huge benefit would be that competencies could be compared to those in frameworks from other countries and regions. In light of the labour transfers that will become more common under new

AN EXAMPLE OF

MODULAR COMPETENCIES

Blueprint reading

Blueprint reading is a competency that is common across many of the construction and mechanical trades. Electricians, carpenters, millwrights, plumbers, sheet metal workers, pipefitters and others all use blueprints in their work. While each of these trades has its own special terminology, the basic competency to understand blueprints crosses them all.

Developing a common modular credential for the competency of blueprint reading, applicable across multiple trades and occupations has the potential to lower training and curriculum costs (one module for many occupations) while improving transferability and mobility and creating "pan-occupational" credentials.

international trade agreements, this will increase Canada's opportunities to compete in the globally competitive marketplace for labour.

Other examples of stackable credentials

The Go2HR example from B.C. is hardly unique. Other occupations in other industries have similar stories, although often these occur outside of the current apprenticeship structure. One good, pan-Canadian example of tiered or vertically stacked credentials can be found in transportation, where different classes of licensing are used to authorize different types of professional driving with different responsibilities, competency requirements and equipment operation.

In Alberta, for example, the top level in this hierarchy is Class 1, which allows professional truck drivers to operate "semi" vehicles (as well as most other vehicles for hire or personal use), with Class 2 authorizing operation of buses with more than 24 passengers, Class 3 authorizing commercial driving of a multi-axle "straight" truck (cargo only), Class 4 authorizing the operation of taxis and small buses (up to 24 passengers), and Class 5 denoting non-commercial driving of a two-axle vehicle (see table in Appendix 2).

The system works well, is replicated and enjoys reciprocity in all the provinces, responds to the industry need for different types of credentialing for different types of driving, and satisfies the regulatory authority that public safety is being protected. An individual can have a successful career at any of the commercial levels, and there is nothing to impede an individual from achieving one level then moving to another level if they have the desire and the necessary competence.

The aviation industry is similar. While the top credential is the Airline Transport Pilot (ATP), not all professional pilots reach that level, nor is there any need for them to do so. Individuals are employed as commercial pilots with air carriers either as a stepping-stone to the ATP or as an end in itself. *(See Appendix 2.)*

Ratios in a competency-based system

Apprenticeship ratios, which limit the number of apprentices per journeyperson, (1:1 is common but ratios can be as high as 1:5 apprentices to journeypersons) are controversial. In some jurisdictions, they represent a significant barrier to increasing the number of apprentices and limit the participation of smaller enterprises in the apprenticeship process.[36] Two of the stated rationales for apprenticeship ratios are the need to ensure the safety of the apprentice on the job site, and the need to ensure that apprentices receive proper training.[37]

In a true competency-based system, ratios become irrelevant as long as the individual supervising the training is both competent in the skill being trained and employs appropriate methods and techniques for transferring skills and knowledge to another person. In a truly competency-based system, the trainer would not necessarily need to be a journeyperson – in fact, more experienced apprentices would be able (and would gain significant benefits in their own vocational training) to supervise and train less experienced apprentices. Anecdotally, we have heard that this happens now, but it is done covertly as a means of avoiding potential financial and regulatory consequences if the ratio rules are not followed.

Modular, stackable credentials are working around the world

Modular, stackable credentials, awarded on the basis of demonstrated competency, are gaining popularity in other jurisdictions. In the U.S., they form the cornerstone of the National Institute for Metalworking Skills (NIMS) modular, competency-based apprenticeship scheme.[38] They are gaining traction in other industries and jurisdictions as well, including Australia, South Korea, India, Singapore, China and the EU, all of which are moving toward modular, stackable credentials that are recognized internationally.[39] In the U.S., the Department of Labor's Employment and Training Administration has recommended that state and local workforce agencies "encourage training providers to modularize curricula into chunked curriculum" and "smaller units, each of which is stackable and linked to other modules that culminate in an industry-recognized credential."[40] In fact, our research failed to come up with any cases where a jurisdiction moved toward modular, stackable credentialing, and then later reverted to the system in use previously.

Some of Canada's provinces are experimenting with changing their apprenticeship systems. B.C. made some major changes in 2003-4. One of the more controversial changes was to remove the designation of compulsory trade – and the ratios of journeypersons to apprentices. The province implemented a system of regulations that reflects a move to competency-based licensing from compulsory journeyperson certification. The results in B.C., to date, need to be better understood. Ontario's changes, only a few years old, are under review. Appendix 4 has more information on some provincial changes to apprenticeship systems.

CONCLUSIONS & RECOMMENDATIONS

The time-honoured system of apprenticeship is alive in Canada, but it is not, in all ways, well. The role of journeypersons in our economy is vital. They are both the most highly trained and skilled of our trades workforce and are responsible to provide the hands-on training for the next generation of people in their trade. Ensuring that there are enough journeypersons in the trades is therefore critically important. The fact that a smaller percentage of the increasingly large number of new apprentices actually completes the training program and become certified journeypersons is cause for concern. More must be done to ensure the removal of any systemic barriers to their success. However, there will always be some people who do not complete the program because they are able to work in jobs that do not require a journeyperson certificate.

The modular and competency-based approaches pioneered in B.C., and tested by the Canadian Council of Directors and Apprenticeship (CCDA) through the Strengthening the Red Seal Program initiative, follow practices proven in other jurisdictions to result in better outcomes (economic and skills) for individual workers, employers, government and educators alike.

Canada's trades workforce would be served well by a system that certifies modular competencies that are stackable both vertically into higher level jobs, and horizontally into new and different jobs. This would allow the people in jobs that do not require full journeyperson status to achieve a credential for what they do well. If properly implemented, this system would also provide pathways for people to grow, change and adapt to new realities within the trades. Such a system would increase mobility for tradespeople and assist them to become skilled in the new, more cross-discipline occupations that are being developed.

One argument against competency assessment is that it can be costly. However, there is a software solution that allows for remote verification of competency. This software has shown its early adopters a significant reduction in costs, and increased effectiveness and flexibility.[41]

The overall workforce development system should follow the example of the trades system and focus on certifying competencies. A focus on training and assessing for competence helps create the kind of flexible, innovative and productive workforce that the economy needs to face not only current challenges (which we can identify), but also the challenges that will arise in an unknown and unknowable future.

The recommendations from this paper are:

01

ACCELERATE THE EFFORTS OF EARLY ADOPTERS OF A COMPETENCY-BASED APPROACH TO TRADES TRAINING AND CREDENTIALING.

Pilot testing in the Red Seal Program has proved the concept and the organization is determined to expand the use of competency-based assessment across more of their trades. They are not moving quickly, however, and we recommend that they shorten their horizon. To achieve this, the CCDA will need to engage with industry and provincial apprenticeship authorities to expand on the tests that were

conducted and move to rapid implementation across more jurisdictions. There is no need to "reinvent the wheel" – other jurisdictions have moved in this direction before us, and we can make use of the lessons from their experience.

Assessment through competencies will increase the relevancy of the Red Seal designation among stakeholders and support the positioning of the designation as a verified standard of excellence. Only certifying people who have proved their competence will ultimately improve the professional image of the trades.

The Red Seal is an overarching national program that relies on provincial/territorial implementation and execution. Competency-based credentialing should be extended to other occupations in addition to those covered by the Red Seal Program, and for more trades than those in the Red Seal qualification (some provinces recognize upwards of 130 separate trades) so that the benefits of the approach can be felt across a broader spectrum.

02

ACCELERATE THE CREATION OF COMPETENCY-BASED PATHWAYS BETWEEN THE TRADES.

Competency-based training pathways will allow tradespeople to move between the once-siloed but increasingly converging trades, and to move on in their learning and become journeypersons if that is their end goal. Overall, this leads to a more flexible, more adaptable workforce development system that is better able to meet the needs of the economy, and may reduce the phenomenon of "jobs without people, people without jobs."

The mechanisms to do this are in place – the Go2HR organization is a perfect example, and other examples exist for other occupations in Canada and around the world. Stakeholders need to examine closely the work underway in the U.S. (our largest trading partner) in this regard. It is also critical to avoid the "not made here" paradigm that seems to pervade our systems; good ideas from other jurisdictions give us a fine platform for reform that we should not discount.

03

INVITE ALL STAKEHOLDERS, ESPECIALLY UNIONS, TO BE PART OF THE MOVE TOWARDS COMPETENCY-BASED TRAINING AND CREDENTIALING.

Labour unions, which are a major force in the training and employment of tradespeople, should take advantage of the opportunity to be one of the leaders in the movement towards competency-based training, assessment and certification. Too often in the past, organized labour has been on the sidelines in this discussion. The real and vital role that unions, and in particular the construction unions, must play as representatives of the skilled workers that these reforms are championing has been discounted. A non-partisan, multi-stakeholder (including unions) approach will ensure that the right reforms are made the right way, for the benefit of all.

Provincial apprenticeship authorities in consultation with industry associations are well-positioned to take leadership in the expansion of the use of competences in Red Seal and non-Red Seal trades training, as they work closely with other stakeholders in the apprenticeship training system. They have access to, and influence on, trades development in post-secondary systems as well as labour and industry training and qualification programs. Training and assessing for competences recognizes prior learning, which avoids duplication of training which can in turn make it shorter and perhaps less costly. As major funders and supporters, these government authorities have a vested interest in ensuring the efficiency and effectiveness of apprenticeship systems.

04

DEVELOP A NATIONAL COMPETENCY FRAMEWORK FOR THE SKILLED TRADES.

The Red Seal and other early adopters of a competency-based approach are approaching the change from an individual trade perspective. A national competency framework for all the skilled trades would provide harmonization of trades credentialing across the country. Not only would pan-Canadian labour mobility be enhanced – so would pan-occupational mobility. It would allow for the recognition of competencies that are common across trades, (blueprint reading, for example). An automotive repair technician in Nova Scotia would be recognized as having some of the competencies required to become a heavy duty mechanic in B.C.

The world is becoming more open to labour transfers through new international trade agreements. Other countries and regions, notably the EU, have frameworks of competencies for their trades. Canada, needs to build its own framework. Credentialling to a national framework that can be compared to other frameworks that are in place across the globe, will ensure Canadians have the opportunities to take advantage of these new trade agreements. A national framework will also allow for faster integration of immigrants with skilled trades experience into the Canadian workforce.

APPENDIX 1

TABLE 2: APPRENTICE REGISTRATIONS AND JOURNEYPERSON CERTIFICATIONS

	1995	2000	2007	2012
Registered apprentices	163,370	199,074	358,555	444,672
% increase in number of apprentices 1995-2012				172%
Certifications through apprenticeship	16,965	18,399	24,525	41,481
Certifications as % of apprenticeship registrations	10.4%	9.24%	6.8%	9.32%
% increase in certifications through apprenticeship 1995 – 2012				145%
Certifications through trade qualification	10,239	11,967	18,345	15,432
% increase in certifications through trade qualification				50.7%
Total new journeyperson certificates	27,207	30,363	42,867	56,913
% increase in total certifications 1995 – 2012				109%
% Certificates through apprenticeship	62.4%	60.6%	57.2%	72.9%
% Certificates through trade qualification	37.6%	39.4%	42.8%	27.1%
Total certifications as a % of total apprentice registrations	16.65	15.25	11.96	12.80
Change in % of new certifications compared to total registrations 1995 – 2012				(23.1%)

Source: Author calculations; Statistics Canada CANSIM Tables 477-0072, 477-0055

APPENDIX 2

Truck Drivers

It is entirely possible to have a long and successful career as a truck driver without ever getting to the top level – some jobs simply do not require it.

ALBERTA DRIVERS' LICENSE CLASSES

Class	Pre-requisite	Privileges	Restrictions	Additional Endorsements
5	*None*	Permits an operator to drive: A two-axle single motor vehicle, excluding a motorcycle A two-axle motor vehicle towing a trailer with one or more axles, if the trailer is not equipped with airbrakes A recreational vehicle or any combination of a recreational vehicle and a trailer, if the trailer has not more than two axles and is not equipped with airbrakes A moped Class 1, 2, 3, 4 and 6 type vehicles, for learning only	No holder of a Class 5 operator's licence shall operate a motor vehicle: That has a seating capacity of more than 15, while that vehicle is transporting any person in addition to the operator To transport passengers for hire	
4	5	Permits an operator to drive: A taxi or ambulance A bus (including school or kindergarten buses) that has a seating capacity of not more than 24, excluding the operator All motor vehicles included under Class 5 All motor vehicles included under Class 1, 2, 3 and 6, for learning only		
3		Permits an operator to drive: Any motor vehicle, or combination of vehicles that the holder of a Class 5 operator's licence may operate A single motor vehicle with three or more axles A motor vehicle with three or more axles towing a trailer with one or more axles, if the trailer is not equipped with airbrakes Class 2 and 4 type vehicles without passengers All motor vehicles included under Class 1, 2 and 6, for learning only	No holder of a Class 3 operator's licence shall operate a motor vehicle: That has a seating capacity of more than 15, while that vehicle is transporting any person in addition to the operator To transport passengers for hire	Air brake

table continues ▶

2		Permits an operator to drive: Any motor vehicle, or combination of vehicles, that the holder of a Class 3, 4 and 5 operator's licence may operate Any bus Class 1 and 6 type vehicles, for learner only The minimum learning or licensing age is 18.		Air brake
1		Permits an operator to drive: Any motor vehicle, or combination of vehicles, other than a motorcycle Class 6 type vehicles, for learning only		Air brake

Source: Alberta Transportation

Pilots

The staged pilot certification process recognizes that not everyone who flies for a living needs an ATP. If we applied the same paradigm to flying as we do to the trades, any pilot who does not continue to the ATP would be considered a failure.

TRANSPORT CANADA PILOTS LICENSING

Class	Prerequisite	Ratings (equip)	Ratings (Conditions)	Ratings (Crew)
Private	None	Land, sea, multi-engine, multi-engine centre line thrust	VFR, Night, VFR OTT, IFR;	N/A
Commercial Pilot	Private	Land, sea, multi-engine, multi-engine centre line thrust	IFR	Second officer, Flight instructor
Airline Transport Pilot	Commercial, multi, IFR			Second officer, flight instructor

Source: Transport Canada

APPENDIX 3

Some reasons apprentices choose to discontinue

Pressures, from financial to social, and many of them work-related, contribute to the low completion rate for apprenticeships. There is rich literature documenting the reasons, some of which is highlighted below. Many of the numbers used in this section come from two seminal works by Christine Laporte and Richard Mueller of Statistics Canada, who studied apprentice completers and discontinuers in 2011, and a study released in 2014 by the CCDA. Both studies used data from the National Apprenticeship Survey done in 2007 and Census 2006 data. The newest Apprenticeship Survey is being undertaken as we go to print, but the new numbers are not expected soon. The CCDA also used data from the voluntary, 2008 Registered Apprenticeship Information Survey.

Work-related issues

About half of the people who discontinue apprenticeship leave within the first two years of registering.[42] Obviously, not everyone who starts out in an apprenticeship will want to continue, many will realize in their first year that they just do not wish to work under the working conditions of that trade – such as outside, in winter. Or, like many people who discontinue other post-secondary education, they just do not find the subject matter interesting or to their liking. They are more likely to leave if they find the working conditions are not a good fit.[43]

Unfortunately, there are no regulatory requirements for employers to provide the appropriate learning experience. Of course, many employers do provide excellent working conditions and great learning experiences and some low-level work is to be expected in virtually all jobs. A poor experience in first year, however, can put apprentices off the career permanently. Some technical training now includes a module on mentoring in the final year, which gives future journeypersons some training in how to train their own apprentices. However, like any field, some journeypersons do not have the talent, aptitude or desire to teach others.

Apprentices are often the first employees to be laid off when there are work slowdowns or recessions.[44] Because of the ratio requirements, an employer is not allowed to hire an apprentice without first employing a journeyperson to supervise them. Apprentices can then also be last to be hired when work picks up.

On the other side of the economic cycle, during peak times, there is often so much work to be done that there is not enough time for an apprentice to take the time off to go to school. An employer may need their apprentices to be on the job full-time. In the expansionary period between 1991 and 2002, apprenticeship registrations grew but completions went down by 5.3 per cent.[45]

While about half of apprentices in the 2007 survey were working for a firm of fewer than 20 employees, apprentices who are working for employers with between 20 and 500 employees have a greater likelihood of completing their training.[46] Larger employers may be able to manage the work flow of an apprentice, and technical training breaks, more easily.

Financial burden

There is a cost involved in attending the college-based portion of the training. Tuition fees and sometimes living costs (when the college is located away from home) are usually paid by the apprentice. As well, there is a lack of income for the period. Some employers cover these expenses, but many lay off their apprentices while they go to school. While Employment Insurance is payable to apprentices who are at school, those payments are often delayed, interrupting cash flow. If an apprentice supports a family, this cash flow problem can cause them to discontinue their studies. While married apprentices are more likely to complete than those who are single or divorced, those with children are less likely to continue to completion.[47]

The federal government has recognized the financial burden that apprentices experience and has recently made apprenticeship loans, much like the traditional student loans for other post-secondary students, and completion grants available.

Social Influences

For years, the provincial K-12 systems encouraged students to consider university or college-based post-secondary learning. The wage premium earned by degree-holders provided an incentive. Trades careers were thought to be best for the least academically accomplished students and entering the trades was put forward as just a third choice. In the last 20 years, there has been a concerted push towards changing the perception of the trades as a career option and many more young people are attracted to the trades by the time they are in their mid-20s. (The average age of apprentices in Canada is mid-20s.)[48] Registrations in apprenticeship have grown faster than enrolments in post-secondary programs over the last two decades.[49]

Lack of prerequisite skills

The essential skills necessary to earn the journeyperson credential can actually be quite high for some trades programs. Apprentices in many trades need literacy and especially numeracy levels as high as those needed for many university programs. Not having the required skills is a cause of many apprentices dropping out. They may stay in the trades, but not complete the technical portion of the training or write the required exams. Recognizing this cause, many colleges are offering upgrading courses for apprentices who fall short on these skills.

Some pre-apprenticeship programs are allowing candidates to get a good taste of the trade prior to becoming indentured to an employer as an apprentice. More pre-apprenticeship programming would help to reduce the number of people who enter a trade without the aptitude for the work.

Other factors

There are some interesting geographic trends. Most areas in the country have higher completion rates than Ontario. Newfoundland and Labrador has the most long-term continuers, and the territories have the highest rate of discontinuers.[50] Manitoba has the highest pass rate for the Red Seal exams in the country and the gap is growing. The province puts this down to the longer technical training times in many trades for their apprentices, and the added provincial support for essential skills training for apprentices and trade qualifiers alike.[51]

Some individuals complete apprenticeship training and do not become certified as journeypersons. Likely reasons for this are the difficulties in taking or passing the exams, and a lack of interest in becoming responsible for the training and mentoring of others.

The literature is rich in discussions of the factors that improve or lower completion rates and this paper does not cover them all. For further information, the authors recommend both the CCDA and Laporte and Mueller papers listed in the endnotes.

APPENDIX 4

SOME PROVINCIAL APPRENTICESHIP AUTHORITIES HAVE ATTEMPTED TO IMPROVE THEIR TRADES SYSTEMS

Trades can be designated as either compulsory or voluntary

Compulsory trades are so designated for a number of reasons: increasing the prestige of the trade; improving completion rates, increasing public and worker safety, improving quality; and sometimes, restricting the number of people entering the trades, thereby increasing wages. Table 3 shows the compulsory trades in the West, and shows a clear indication of the similarities and differences that is present in systems across the country. Compulsory trades primarily exist within the construction industry. Compulsory designations were introduced in these trades in the late 1960's in most jurisdictions in Canada. The reasons for compulsory designations are sometimes based on faulty assumptions. For instance, Hurrell, in her work for the CCDA in 2010, studied the effects of a trade being compulsory or voluntary on completion rates and found no difference.[52]

British Columbia eliminated compulsory trades as part of the reform of its apprenticeship system. Instead, B.C. established, through legislation and the B.C. Safety Authority, compulsory skills or competencies necessary to perform certain kinds of work. (See text box for some of the new regulations for electricians.) In many cases, these skills could be demonstrated through completion of a specific training or apprenticeship program but this was not the only way to prove competency. Despite fears that this change to the electrician trade would lead to a greater number of electrical accidents, statistics from WorkSafe BC don't support that conclusion.[53] For 2011 to 2013, in the category of "Electrical Work," WorkSafe BC reports that the majority of workplace accidents and incidents are from "struck by," "falls" and "overexertion" – not from electrical accidents.

EXAMPLE: BC ELECTRICAL SAFETY REGULATION

While B.C. has eliminated the notion of compulsory trades, it has captured the need for competent workers in other legislation. The excerpt below from the BC Electrical Safety Regulation (under the BC Safety Standards Act), shows how the province has moved away from compulsory journeyperson certification.

DIVISION 1

Individuals Who May Perform Regulated Electrical Work

4

(1) Subject to subsection (2), an individual must not perform regulated work in respect of electrical equipment unless the individual

(a) holds an appropriate industry training credential in respect of electrical work,

(b) has successfully completed training recognized by a provincial safety manager,

(c) is employed by an organization that utilizes training programs that are approved by a provincial safety manager and the individual

(i) has successfully completed the relevant training, and

(ii) does not perform regulated work for any person other than the individual's employer who provided the training,

(d) is a homeowner acting in accordance with section 17,

(e) is a manufacturer's technical representative,

(f) holds another certificate of qualification under the Gas Safety Regulation or the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation, or

(g) is permitted to do so under section 5 of the Safety Standards General Regulation.

(2) Any right referred to in subsection (1) to perform electrical work is limited by

(a) any exception under this regulation,

(b) any terms and conditions imposed under a permission issued under the Act, or

(c) by the scope of the individual's certificate of qualification or industry training credential.

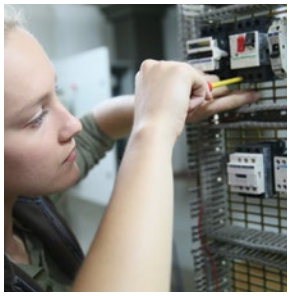
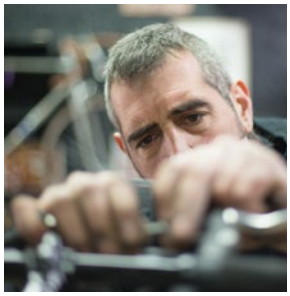
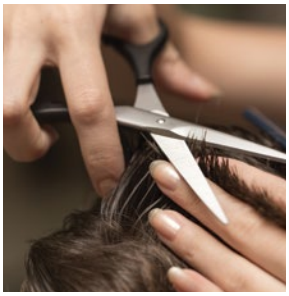
(3) For the purposes of section 5 of the Safety Standards General Regulation or section 12 of this regulation, only an individual referred to in subsection (1) (a), (b), (c) or (f) of this section is authorized to supervise a person to do electrical work.

Source: B.C. Safety Authority

TABLE 3: TRADES THAT ARE DESIGNATED COMPULSORY IN THE WEST

BC (0)	Alberta (19)	Saskatchewan (4)	Manitoba (9)
	Appliance Service Technician	Electrician	Crane and Hoisting Equipment Operator (including Mobile, Tower Crane and Boom)
	Auto Body Technician	Plumber	Electrician (Construction)
	Automotive Service Technician	Refrigeration and Air Conditioning Mechanic	Electrician (Industrial)
	Motorcycle Mechanic	Sheet Metal Worker	Refrigeration and Air Conditioning Mechanic
	Crane and Hoisting Equipment Operator (including Mobile and Tower Crane Operator)		Sprinkler System Installer and Steam Fitter-Pipe Fitter
	Electrician		Electrologist
	Elevator Constructor		Esthetician
	Gas Fitter		
	Heavy Equipment Technician		
	Ironworker		
	Boilermaker		
	Plumber		
	Refrigeration and Air-Conditioning Mechanic		
	Rig Technician		
	Sheet Metal Worker		
	Steam Fitter-Pipe Fitter		
	Welder		
	Recreational Vehicle Service Technician		
	Hairstylist		

Source: Data from each provincial authority

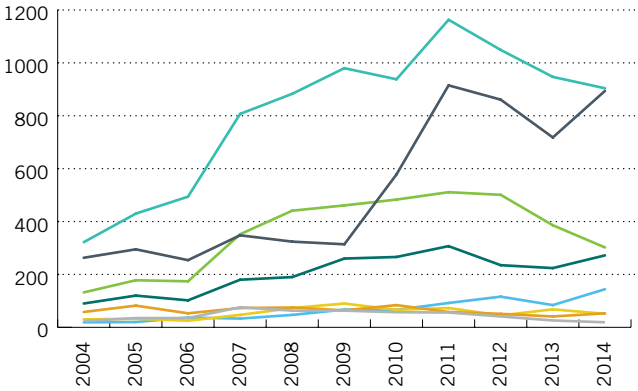





In addition, data from the B.C. Industry Training Authority (Figure 1) show that the removal of compulsory certification has not resulted in the feared decreases in the number of completions for formerly compulsory trades. In virtually all examples, there has been a steady increase in total completions since 2004 (when the 2003 changes to the apprenticeship system were implemented).

The authors note that the recent review of the Industry Training Authority recommended reversing some of the changes made in 2003 – notably, the re-classification of organized labour as an integral part of "industry" (the 2003 reforms virtually excluded labour organizations from the decision-making process), and opening the door to the possibility of re-designating specific compulsory trades.[54]

Before reverting to compulsory occupations versus compulsory competence, it would be important for B.C. to examine the evidence as to how public safety, quality, workmanship, etc. has been impacted by the 2003 changes. For example, have workplace accidents/incidents increased? Are there more warranty claims on finished products? Are there more consumer complaints regarding faulty products that can be traced to the changes? Have there been productivity/competitive changes as a result? Without this analysis, it is difficult to see how changing the current approach would be justified.

FIGURE 3: COMPLETIONS IN PREVIOUSLY COMPULSORY TRADES



- Construction Electrician (Electrician)
- Automotive Service Technician
- Plumber
- Heavy Duty Equipment Technician (Heavy Duty Equipment Mechanic)
- Steamfitter/pipefitter
- Power Line Technician
- Motor Vehicle Body Repairer (Metal & Paint) – Automotive Collision Repair Technician
- Automotive Painter (Automotive Refinishing Technician)

Source: BC Industry Training Authority, October 2015

Other Reforms

BC: Modular Apprenticeship Certifications

British Columbia, since the early 2000s, has been the jurisdiction where the most experimentation on different approaches and methods for apprenticeship have been tried.

Ontario

In Ontario, the most significant changes to the traditional apprenticeship system were brought about by the establishment of the Ontario College of Trades (OCOT), an independent agency with a mandate to issue certificates of qualification and statements of membership, establish apprenticeship and other training programs, maintain a public registry of its members, determine appropriate apprentice to journeyperson ratios, conduct trade classification (i.e. compulsory trade) reviews, and establish the scope of practice for trades.[55]

OCOT has conducted reviews of the 33 trades where journeyperson to apprentice ratios are in effect. These reviews were competed in 2014, resulting in changes – (generally reduced) ratios for 15 and no changes for 18 trades.[56] The review process is to be repeated every five years, with written submissions from all industry stakeholders being presented to the independent review panels to determine a correct ratio. The process hasn't been without its detractors, but it does at least represent a more open and engaging process than has existed in the past.

Prior to the establishment of OCOT, there were two legislative Acts governing the trades in Ontario.[57] One of the primary differences between these Acts was in relation to mandatory duration of the on-job experience required to complete an apprenticeship; construction trades specified durations, while all other trades did not. Under the OCOT, this distinction between the sectors has continued – there appears to be a reluctance among Ontario construction industry stakeholders to move towards a fully competency-based credentialing process.[58]

The OCOT experiment is still ongoing, and it is difficult at this point to draw many conclusions as to the advantages/disadvantages of this "professional self-regulation" model for trades and apprenticeship.

Manitoba

In May 2015, Manitoba introduced its Certified Occupations Act, through which the province will provide training for workers in a few non-apprenticed, and vital to the economy, occupations. The first occupation to benefit from this new approach is commercial truck driving. Training will be put in place to ensure that new truck drivers have the on-road skills, such as backing up and hooking up, an understanding of the rules and regulations that govern the occupation, as well as more transferable skills such as the required language and customer service skills. The interesting point about this new approach for the purposes of this paper is that the training will be competency-based. Standards for competencies will be set in conjunction with industry.

ENDNOTES

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[59] **Note 1: Reliability:** Test reliability refers to the degree to which a test is consistent and stable in measuring what it is intended to measure. Most simply put, a test is reliable if it is consistent within itself and across time. To understand the basics of test reliability, think of a bathroom scale that gave you drastically different readings every time you stepped on it regardless of whether you had gained or lost weight. If such a scale existed, it would be considered not reliable.

Validity: Test validity refers to the degree to which the test actually measures what it claims to measure. Test validity is also the extent to which inferences, conclusions, and decisions made on the basis of test scores are appropriate and meaningful.

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