

How Much Do They Make?

New Evidence on the Early Career Earnings of Canadian Trade Certificate

Ross Finnie
University of Ottawa

Michael Dubois
University of Ottawa

Masashi Miyairi
University of Ottawa

This paper provides new evidence on the early career earnings of Canadians who obtain a trade certificate. The analysis uses comprehensive national level administrative data on individuals who received a trade certificate between 2008 and 2016 linked to their tax information at Statistics Canada in order to link earnings to their individual characteristics and details related to their certification. In this paper we track their yearly employment earnings from their first full year following certification onward, to a maximum of 9 years. Overall, journeypersons in nationally accredited Red Seal trades earn more than those in non-Red Seal trades, those in Mechanical and Electrical trades earn the most, and journeywomen earn only 47% of what journeymen do overall, largely driven by their being concentrated in a relatively narrow set of low-paying trades.

Keywords: trades, apprenticeship, earnings, labour market, skills

INTRODUCTION

Upon finishing secondary school, Canadians have several choices before them to further their education and training, including attending post-secondary education (PSE), embarking on apprenticeship training and skilled trade certification, or entering the job market. The decision to do so has important individual and societal implications. In making those decisions, one of the most sought-after pieces of labour market information is salary. And while many other factors are considered before Canadians make those choices, the aim of this research is to provide all stakeholders — students, parents, institutions, policy makers, researchers and the broader Canadian public — with earnings information that will help them make the most informed decisions possible. In the context of COVID-19, decisions regarding training and education just became even more challenging.¹

A previous research partnership between the Education Policy Research Initiative (EPRI)² and the Labour Market Information Council (LMIC)³ produced a report on the post-graduation earnings of Canadian PSE students, which can be found on the EPRI/LMIC project page. In recognition of the

important role that skilled trades play – about 20% of Canadians work in the skilled trades – this report provides extensive new evidence on the labour market earnings of journeypersons (trade certificate holders), with particular emphasis on Red Seal trades.^{4,5}

As with our first project on PSE, this report is based on analysis carried out using Statistics Canada's Education and Labour Market Longitudinal Platform (ELMLP), which contains anonymized information on those enrolled in apprenticeship programs. This data is taken from administrative records provided by all provinces and territories in Canada and can be integrated with tax information.⁶ Through the ELMLP, we are able to identify records of individuals within the Registered Apprenticeship Information System (RAIS) who received a trade certification from 2008 to 2016. Then, for each certification cohort, we track their yearly employment earnings from their first full year following certification over the years for which tax data were available (2009–2017). In this report, we focus primarily on the 2009 cohort, which can be followed for eight years following certification.⁷

This research builds upon a literature review of past research on the labour market outcomes of journeypersons presented in Section 2. Section 3 of this report describes the data and methodology used to carry out the analysis. Section 4 presents the earnings patterns of journeypersons from a range of perspectives, including comparisons of those in the Red Seal trades with those in all trades. Breakdowns by gender, by stream (completers versus qualifiers),⁸ by trade category and by specific trades for the most common certificates in each trade category are included. Section 5 compares the earnings of journeypersons to select post-secondary graduates from our previous report. Section 6 concludes the report with a brief summary and a look toward future research.

SECTION 2: LITERATURE REVIEW

The National Apprenticeship Survey

Statistics Canada's introduction of the National Apprenticeship Survey (NAS) in 1993 and provincial apprenticeship surveys in British Columbia, Alberta, Saskatchewan and Newfoundland and Labrador were among the first steps to address the lack of information on apprenticeships (Canadian Apprenticeship Forum, 2008). The NAS targets all individuals who completed or discontinued their apprenticeship training during a certain reference period (approximately 30,000 people in the last two iterations of the survey). The survey asks respondents for their before-tax hourly rate of pay after leaving their apprenticeship programs, and report on their age, sex, education level, Indigenous or immigration status, marital status, presence of children and more (Statistics Canada, 2017).

Much of the early work with the NAS focuses on the demographic characteristics of apprentices and on comparisons between those who complete their programs and those who do not. Campbell (2010) and Dostie (2010) use the 2007 NAS to examine two outcomes of Canadian apprenticeship programs—successful completion and time to completion—and find that older, disabled and minority or Indigenous apprentices are less likely to complete their programs on time.

Using the same iteration of the NAS, Ménard, Menezes, Chan, & Walker (2008) find that the median hourly wage of those who complete apprenticeship programs are \$27, while the median hourly wage of those who leave their programs before completion are \$20 per hour.

Laryea & Medu (2010) and Ahmed (2010) also produced reports as part of a series for the Canadian Council of Directors of Apprenticeship using the 2007 NAS. The former focus on apprenticeship participation, while the latter focus on labour market outcomes. According to Laryea & Medu (2010), women tend to be drawn to a small number of trade groups (e.g. hairstyling/esthetics and food services) that include the lowest-paying trades.

Ahmed (2010) quantifies the gender gap among certified tradespeople, determining that overall (i.e. across all trades), women earn an average of \$29,000 less than men, of which \$15,000 could be attributed to gender after controlling for other factors in the NAS. The report also finds welders have the highest earnings, followed by heavy equipment operators, and that the earnings of hairstylist/esthetician and food services worker trade groups are lower than those of all others.

Laporte & Mueller (2012) also make use of the 2007 NAS to examine the hourly wages of those who complete versus discontinue (those who left) apprenticeship programs, as well as those who do and do not obtain actual trade certification within each group. They find that certified completers have the highest average hourly wages, at \$28.07, followed by certified discontinuers at \$27.25, non-certified completers at \$23.92 and finally non-certified discontinuers at \$23.30 (see glossary). These patterns also hold after controlling for other factors using a multivariate regression modelling framework.

Examining tradespeople's earnings using the 2006 Census and 2007 NAS, Boothby & Drewes (2010) find that the weekly earnings premiums of male apprenticeship completers over those who completed only high school range from 9% to 14%. The premiums over high school graduates are lower for women who complete apprenticeships, but still positive.

In 2015, an updated NAS cycle was launched with a focus on completers and discontinuers, excluding long-term continuers—those who take more than one and a half times the expected duration of their program—from the sample. As a result of that restriction, the populations of the 2007 and 2015 NAS are not comparable (Frank & Jovic, 2017). Examining the 2015 cycle, Frank & Jovic (2017) also find that completing apprenticeship programs have higher earnings than those who leave their programs. Completers have average hourly wages of \$33.30 (\$69,512 annually), while discontinuers earn \$27.88 hourly (\$59,782 annually).

Provincial Surveys

The 2016 British Columbia Apprenticeship Survey is a telephone and online survey conducted from January to May 2016. All individuals who completed their apprenticeship training at a BC post-secondary institution between July 1, 2014 and June 30, 2015 were invited to participate. The survey had a 54% response rate. A report based on the survey finds that, for example, journeypersons in the Machinery & Transportation Equipment Mechanics (except motor vehicle) group have the highest median hourly wage, at \$38, followed by those in the Electrical Trades & Electrical Power Line & Telecommunications Workers group, at \$36, followed in turn by those in the Contractors & Supervisors, Industrial, Electrical & Construction Trades & Related Workers group and the Machining, Metal Forming, Shaping & Erecting Trades group, who earn \$32 per hour. Chefs and Cooks reported the lowest median hourly wage, at \$18 (BC Stats, 2017).

Similar apprenticeship surveys were carried out in Saskatchewan (Insightrix Research Inc., 2017) and Alberta (Advanis Inc., 2018). Research in both provinces address outcomes such as satisfaction, specific fields of employment and how they vary across demographic and program characteristics of apprenticeship completers (e.g. gender, age, program and teaching method).⁹ However, Advanis Inc. (2018) also includes some information on the earnings of certified journeypersons, finding that 20% report monthly earnings of \$5,000, 26% report earnings of \$5,000 to \$6,999, 14% report earnings of \$7,000 to \$8,999 and 15% report earnings higher than \$9,000 (the remaining 26% of responders did not know or refused to answer). A comparison with four previous cycles of the biennial survey indicates that mean monthly income varies from a low of \$6,360 in 2007–08 to a peak of \$7,749 in 2014–15 before dropping to \$6,844 in 2016–17.

Studies Using Apprenticeship Administrative Data Linked to Tax Data

A common limitation of all studies discussed so far is their reliance on self-reported data, which can be inaccurate. Discussing the NAS, Boothby & Drewes (2010) state that “information on schooling and training credentials [is] self-reported and it would appear... that a significant number of individuals report themselves as having undertaken apprenticeable training in occupations which, in fact, are not apprenticeable” (p. 5). An alternative approach draws on administrative data collected by program providers and government agencies to circumvent this issue.

To examine the characteristics and labour market outcomes of women who enter male-dominated apprenticeships and vice-versa, Frank & Frenette (2019) used the 2015 NAS—containing information on apprentices who completed or left their programs from 2011 to 2013—linked to tax data (T1FF) from 2011 to 2014. A comparison of median hourly wages reported in the NAS finds women in male-

dominated trades tend to have lower earnings than their male counterparts, a result that continues to hold even after controlling for age, completion status and level of education, although the differences become smaller. For those in female-dominated or evenly mixed trades, they find no significant difference in wages at the 25th and 50th percentiles. However, they find that women have lower wages than men at the 75th percentile of their respective distributions.

Using a combination of survey, administrative and tax data from the Labour Force Survey, the Census, RAIS and T1FF, Crocker, Pepin, Hurrell, Wald, Wiebe, Wong, & Ahmed (2014) examine a variety of labour market outcomes of tradespeople. Using the 2006 Census, they compare the earnings of individuals in the top 10 largest trades by the highest level of education completed: high school diploma or less, a registered apprenticeship certificate or diploma, other trade certificates or diplomas, and college or university credentials. In all cases, those who completed apprenticeships had the highest median annual earnings, the highest being millwrights at over \$65,000 and the lowest being hairstylists and barbers at over \$15,000.

Crocker et al. (2014) also use linked RAIS-T1FF data to track earnings patterns over time. At the time of their report, the data in RAIS only contained an apprentice's status as a completer, continuer (still enrolled), long-term continuer, discontinuer (no longer enrolled) or trade qualifier in 2004 and 2008. Earnings are tracked before, during and after training, and show that qualifiers—those who could demonstrate that they met the standard for certification in a trade based on prior experience and skills—tend to earn more than completers before their certification, but that after certification, completers earn more than qualifiers. Ultimately, both groups' earnings are similar four and five years into the labour market.

A 2018 report used administrative data from Alberta's Apprenticeship, Trade and Occupation Management System (ATOMS) database linked to tax data from T1FF to track journeypersons in Alberta from 2005 to 2013 and report their earnings from 2006 to 2014 (Alberta Advanced Education, 2018). Journeypersons were divided into completers and qualifiers. The report finds that qualifiers have higher median earnings than completers and that they tended to vary more widely from year to year.

Completers are further divided into six major trade categories: Architectural/Construction, Electrical, Mechanical, Metal, Vehicle and Related, and Other. Apprentices in the Mechanical category have the highest earnings one year after graduation, while those in Electrical have the highest median earnings after five years. A further breakdown by specific trades find that the trade with the highest median earnings can vary from year to year, with all trades experiencing increases and decreases in earnings over time. Nonetheless, the earnings of some trades are more volatile than those of others (Alberta Advanced Education, 2018).

In December 2018, Statistics Canada released national findings on the labour market outcomes of tradespeople using RAIS-T1FF data in the ELMLP. Across 18 selected apprenticeship programs, the median earnings of apprentices who received certificates in 2010 is \$52,030 at the time of certification. The highest median earnings are in the male-dominated, heavy duty trades of equipment technician (\$79,920), steamfitter/pipefitter (\$78,030) and industrial electrician (\$74,350), while the lowest median earnings are in the female-dominated trades of hairstylist (\$21,130) and educational assistant (\$21,950), followed by the more gender-balanced trade of cook (\$30,090). Automotive service technicians have the lowest median income of the male-dominated trades, at \$40,860. However, this was still greater than the highest median income female-dominated trade: child and youth worker, at \$37,070 (a certified trade only in Ontario). Four years after program completion, the three highest-earning trades are heavy duty equipment technician (\$107,220), steamfitter/pipefitter (\$105,620) and industrial mechanic (millwright) (\$99,320)—all predominantly male—while the highest-earning female-dominated trade is child and youth worker (\$41,490) (Statistics Canada, 2018).

Statistics Canada (2020) compares the earnings of journeypersons from the top 10 most common Red Seal trades with those of bachelor's degree graduates in various fields of study. Five years after receiving their certifications or graduating, journeypersons in most trades earn more than the average bachelor's degree graduates. The exceptions were cooks and hairstylists, who earn less than bachelor's degree holders in all fields of study.

Also using Statistics Canada’s RAIS-T1FF data, Prism Economics and Analysis produced a report for the Canadian Apprenticeship Forum presenting aggregate earnings for the top 10 Red Seal trades at year of completion and two years later. Earnings vary across cohorts (2008 to 2014): first-year median earnings vary from \$57,200 (2010 cohort) to \$61,100 (2014 cohort), and second-year earnings vary from \$63,590 (2014 cohort) to \$76,205 (2012 cohort) (Prism Economics and Analysis, 2019).

SECTION 3: DATA AND ANALYTICAL APPROACH

The Education and Labour Market Longitudinal Platform (ELMLP)

This project leverages Statistics Canada’s ELMLP, a data platform that includes anonymized administrative data on PSE students and those in apprenticeship programs, along with personal income tax information for these individuals. The ELMLP allows researchers to address a wide range of policy-related questions pertaining to PSE, trades training, school-to-work transitions, labour market outcomes and other related topics.

The core components of the ELMLP are three longitudinal databases: the Postsecondary Student Information System (PSIS), the Registered Apprenticeship Information System (RAIS) and the T1 Family File (T1FF). The ELMLP is not a dataset per se, but rather a relational data environment that allows users to combine the research potential of PSIS, RAIS and T1FF by integrating across these files using a key, anonymous person-level identifier.¹⁰

PSIS contains enrollment data from 2009 onwards for all public Canadian colleges and universities along with student and program characteristics. RAIS is the equivalent of PSIS but dedicated to registered apprenticeship programs (2008 onwards). The T1FF data on the ELMLP are taken from personal income tax returns transferred to Statistics Canada by the Canada Revenue Agency (CRA) from 2004 onwards. This report focuses on journeypersons (or trade certificate holders) from RAIS (see Finnie, Miyairi, Dubois, Bonen, & Amery, 2020, for the comparable PSE graduate report).

Strengths and Limitations of the ELMLP

The ELMLP has remarkable strengths. It contains near complete representation and detailed information on trade certification (and education-related administrative data) in Canada that is integrated with other datasets, including accurate income information, such as earnings on a year-by-year basis.

However, as with any single data source, the ELMLP also has limitations in terms of providing a complete picture of the outcomes for tradespeople. For instance, it does not contain information on occupation or specific job characteristics, hours and weeks worked in a year, comparison groups of individuals who have not undertaken PSE or training, or enough information to calculate the monetary rate of return to training.¹¹ Some of these limitations may be resolved over time as Statistics Canada adds other datasets to the platform.

The Earnings Measure

This project focuses on total before-tax employment earnings. These are calculated by combining all paid employment income (wages, salaries and commissions) reported on T4 slips, positive net income earned from self-employment (business, professional, commissions, farming and fishing),¹² “Indian exempt” employment income,¹³ and other taxable employment income not reported on a T4 slip, such as tips, gratuities and net research grants (Statistics Canada, 2018b).

This measure of earnings can thus be summarized as follows:

$$\text{Earnings} = \text{employment income} + \text{positive net self-employment income} + \text{“Indian exempt” employment income} + \text{other employment income} \quad (1)$$

Earnings are adjusted to constant 2016 dollars using the Canada-wide Consumer Price Index (CPI).

One important caveat of the self-employment income category is that it includes only unincorporated earnings. In some cases, however, journeypersons may form corporations, and their earnings may be

transmitted through dividends, allocated to family members or retained within the corporation. Earnings paid out in salary from the corporation to individuals themselves would, though, be included in the earnings measure as employment income.

As mentioned in the introduction, the ELMLP does not have information on individuals' occupations. Therefore, the earnings reported capture all journeypersons regardless of where they are employed.

Stream and Trade Categories

Stream: Apprenticeship Completers and Trade Qualifiers

In RAIS, each observation is associated with one of two streams: Apprenticeship or Trade Qualifier. The stream indicates how the journeyperson receives their certification (Statistics Canada, 2016).

In these data, apprenticeship completers are journeypersons who registered in and completed a formal apprenticeship program, comprised of structured on-the-job training and usually some in-class training to acquire their certification. Trade qualifiers (or challengers) are journeypersons who did not complete a formal apprenticeship program but demonstrate job experience across the scope of the trade and pass the final certification exam. Provincial/territorial certification authorities define the eligibility requirements (i.e., experience, scope) for trade qualifiers to challenge the certification exam.

RAIS also contains additional career pathways in trades-related occupations (e.g., continuers and discontinuers), but this study focuses on certified tradespeople/journeypersons (i.e., apprenticeship completers and trade qualifiers).

Trades and Trade Categories

Trade certifications are awarded by provincial/territorial authorities, who work closely with industry partners to devise training requirements, regulations and processes. Because of this, it is not uncommon for trades to have different approaches for registering apprentices, accreditation and certification, and to have different program curriculum and requirements, depending on the jurisdiction.

RAIS compiles information on apprenticeship completers and trade qualifiers from approximately 385 trades across 13 Canadian jurisdictions. Given this large number, this project focuses on a subset of trades that have common occupational standards across Canada through the Red Seal Program (referred to as Red Seal trades).

Journeypersons who pass the Red Seal exam (based on the interprovincial standard), receive a Red Seal endorsement on their provincial/territorial trade certificates (Statistics Canada, 2018b). At the time of this analysis, there were 56 designated Red Seal trades. The report classifies individual trades into six main categories (Table 1). While there is no standard categorization of trades in Canada, the classification employed is informed by previous studies, namely Alberta Advanced Education (2018) and Sharpe & Gibson (2005). However, we recognize that any such classification is, to some degree, arbitrary.

**TABLE 1
TRADES WITH RED SEAL STANDARDS BY TRADE CATEGORY**

Architectural & Construction Trades (12 trades)		
Bricklayer	Construction Craft Worker	Lather (Interior Systems Mechanic)
Cabinetmaker	Drywall Finisher and Plasterer	Painter and Decorator
Carpenter	Floorcovering Installer	Roofer
Concrete Finisher	Glazier	Tilesetter
Electrical Trades (4 trades)		
Construction Electrician	Industrial Electrician	
Electric Motor System Technician	Powerline Technician	

Mechanical Trades (10 trades)		
Gasfitter — Class A	Oil Heat System Technician	Sprinkler Fitter
Gasfitter — Class B	Plumber	Steamfitter/Pipefitter
Instrumentation and Control Technician	Refrigeration and Air Conditioning Mechanic	Tool and Die Maker
Insulator (Heat and Frost)		
Metal Trades (9 trades)		
Boilermaker	Ironworker (Reinforcing)	Metal Fabricator (Fitter)
Industrial Mechanic (Millwright)	Ironworker (Structural/Ornamental)	Sheet Metal Worker
Ironworker (Generalist)	Machinist	Welder
Vehicle & Related Trades (15 trades)		
Agricultural Equipment Technician	Heavy Equipment Operator (Dozer)	Parts Technician
Auto Body and Collision Technician	Heavy Equipment Operator (Excavator)	Recreation Vehicle Service Technician
Automotive Refinishing Technician	Heavy Equipment Operator (Tractor-Loader-Backhoe)	Tower Crane Operator
Automotive Service Technician	Mobile Crane Operator	Transport Trailer Technician
Heavy Duty Equipment Technician	Motorcycle Mechanic	Truck and Transport Mechanic
Other (6 trades)		
Appliance Service Technician	Cook	Landscape Horticulturist
Baker	Hairstylist	Rig Technician

This report will, at different points, examine all journeypersons available in RAIS (i.e., 385 trades), all those within the 56 Red Seal trades, and a subset of specific Red Seal trades with sufficient observations. It is important to note, however, that when the analysis focuses on Red Seal trades, the individual journeypersons included may or may not have the Red Seal endorsement on their provincial or territorial certification. The Red Seal trades are merely used as a subset of trades to provide a clear and consistent sample. Those with a Red Seal certificate represent approximately three-quarters of all journeypersons in RAIS (see Section 3).

Analytical Approach

This report aims to provide strategically important labour market information to a wide range of stakeholders, including those making their training decisions, institutions offering technical training for apprenticeship programs, policy makers, industry, researchers and the Canadian public.

The objective is to provide a new and detailed picture of Canadian journeypersons' earnings following each cohort after certification by using annual tax data. To this end, we track journeypersons' annual employment earnings on a year-by-year basis starting with the first full year following certification. For the 2009 cohort, the focus of this report, their annual earnings are reported from 2010 forward. For this cohort, information is available for eight years, from 2010 through 2017. These same calculations are done separately for each cohort, with later cohorts having fewer years of post-certification earnings information available.

We focus on journeypersons' mean earnings. While some studies of journeypersons' labour market outcomes focus on median earnings (e.g., Statistics Canada, 2018b), a comparison of the trajectories of mean and median earnings presented in Section 4 shows that they are generally similar.

This analysis is intended simply to track the earnings of journeypersons and present them descriptively as opposed to investigating the relationship between earnings and any particular set of demographics or program characteristics.¹⁴ In addition, results cannot be interpreted as the causal effects of trades on earnings since individuals self-select their training pathways, trades and other aspects of their training. Physically demanding trades or ones requiring workers to be in remote locations for months at a time, can by themselves result in higher earnings, regardless of the trade. Employers and sponsors also play a role in who becomes an apprentice since they fund training and exam costs for selected individuals depending on their needs and resources. These selection processes generally correlate with individual ability and other factors that have their own effects on earnings outcomes, which cannot be controlled for here using the analytical approach employed and data available. Since T1FF does not include information on hours or weeks worked, the analysis cannot adjust journeypersons' earnings for labour supply decisions and related factors. All results follow Statistics Canada's disclosure rules.

Of course, earnings are not the only factor determining individuals' training decisions. The earnings reported below should be seen in this context.

Sample Selection

To construct the sample of journeypersons used in this analysis, we first searched across all RAIS records from 2008 to 2016 and selected records to which certification was granted in a particular reference year, using a certification indicator.¹⁵ This study includes apprentices who successfully completed their apprenticeship and received certification, and trade qualifiers who passed the exam and received certification. The report deals with two groups of journeypersons:

All Trades Group

Includes all individuals who received provincial/territorial certification in any trade. Over 385 trades are accounted for in RAIS, with some trades recognized only in certain jurisdictions.

Red Seal Trades Group

Received their certification in one of the 56 recognized Red Seal trades, representing a subset of journeypersons in the All Trades group.

This study does not differentiate between journeypersons with or without a Red Seal endorsement. In other words, those with a provincial trade certification in a Red Seal trade may not always have a Red Seal endorsement.

We constructed nine cohorts of journeypersons according to the calendar year of certification, from 2008 to 2016. Due to the comprehensive coverage of RAIS, in principle this should represent the entire population of journeypersons in Canadian provinces and territories.¹⁶

When a journeyperson receives a certification in multiple trades in a given year, only the trade acquired last is kept. If more than one certification was acquired at the same time, one was chosen at random (approximately 1.5% of the sample). We also restricted the sample to journeypersons aged 15 to 64 at certification (removing 0.1% of the sample).

Once records are selected from RAIS, they are merged with the T1FF data to track journeypersons' earnings through 2017, the latest year available at the time of this study. Overall, 97.8% were matched to at least one year of post-certification tax data.¹⁷

Three additional sample restrictions are imposed. First, individuals who do not file taxes in a given year are excluded for that year but are included for all other years (both before and after) for which their tax information is available to keep the samples as inclusive and representative as possible.

Second, individuals are also excluded if they are identified as pursuing further full-time training or education in any given year¹⁸ and for all subsequent years thereafter. This restriction is imposed because further training or schooling typically leads to less active engagement in the labour market, and new skills

or credentials acquired following new training or returning to school could lead to new earnings patterns upon labour market re-entry.¹⁹ If an individual is observed to have earned another trade certification, they can be reintroduced into the sample as a new trade certificate holder and followed from that point forward.²⁰

Third, in order to focus on journeypersons who are meaningfully engaged in the labour market, those whose total before-tax earnings are lower than \$1,000 are excluded from the sample for that year. When individuals with earnings under \$1,000 are included, average earnings generally shift slightly downward, while the earnings trajectories and the relative patterns across the different sets of trades certificate holders remain essentially unchanged.

The proportion of non-filers ranges between 5% and 7% every year following certification with an additional 2% to 6% of journeypersons removed because they earn less than \$1,000. Due to its cumulative nature, the further education or training restriction increases over time: 3% of the All Trades group is excluded one year following certification, which climbs to 16% eight years out, while the numbers for the Red Seal Trades group are 2% and 13%.

Some studies (e.g., Statistics Canada, 2018a) opt for a balanced panel approach, where individuals excluded based on any of the three restrictions in any year are removed from the entire analysis in all years. We have conducted tests comparing our approach with a balanced panel approach. The earnings trajectories with the balanced approach shift up (i.e., earnings are higher) but remain approximately parallel, indicating similar patterns of earnings growth over time.²¹

Sample Characteristics

For both the whole sample (all 385 trades) and for Red Seal trades (56 trades), the number of certifications granted increased until 2013 and dropped slightly from 2014 onwards.

Across all cohorts, the number of certificates granted ranges from 44,900 in 2008 to 52,300 in 2016 for All Trades and from 34,200 to 37,700 for Red Seal Trade groups. Certificates granted in Red Seal trades represent approximately three-quarters across all cohorts. This report will largely focus on these Red Seal trades as a well-defined group of journeypersons. Section 4 will show that the earnings trajectories of Red Seal trades are similar, albeit marginally higher, than other trade certificate holders.

The distribution by gender, stream and age is very similar across the All Trades and Red Seal Trades groups, though the latter has a slightly higher proportion of apprenticeship completers and a somewhat younger demographic.

The sample restrictions discussed in Section 3 affect the different trade categories in very similar ways, except for Other, which has a greater proportion of individuals acquiring more training/schooling and earning under \$1,000. The sample patterns are also very similar across gender, stream, age, region and trade category when comparing the sample before and after restrictions.

Table 2 shows that female journeypersons represent 8.8% of trade certificates granted in 2009 in Red Seal trades. Women account for between 1.3% and 2.3% of journeypersons in each category, except for Other where they hold 67.4% of all certificates, largely driven by the numbers of Hairstylists, Cooks, and Bakers.

TABLE 2
DISTRIBUTION OF JOURNEYPersonS BY GENDER, 2009 COHORT
(AFTER SAMPLE RESTRICTIONS)

	All		Female		Male	
	#	Distribution	Share	Distribution	Share	Distribution
ALL TRADES (385)	40,900	100.0%	8.8%	100.0%	91.1%	100.0%
RED SEAL TRADES (56)	32,200	78.7%	8.8%	78.6%	91.3%	78.9%
Trade Category						
Architectural & Construction	6,200	19.3%	1.8%	3.9%	98.2%	20.7%
Electrical	6,430	20.0%	1.4%	3.2%	98.6%	21.6%
Mechanical	5,440	16.9%	1.3%	2.5%	98.7%	18.3%
Metal	5,280	16.4%	2.3%	4.2%	97.7%	17.6%
Vehicle & Related	5,450	16.9%	2.2%	4.2%	97.8%	18.1%
Other	3,440	10.7%	67.4%	82.0%	32.6%	3.8%

Overall, journeypersons are divided fairly equally across the six trade categories. Electrical trades account for 20%, followed by Architectural & Construction with 19%, Mechanical and Vehicle & Related both with 17%, and Metal and Other round up the count with 16% and 11% respectively. The distribution of women across trade categories, however, shows that 82% of them are in the Other category, while men are evenly distributed across all categories (roughly 20% each).

Some regional differences are worth pointing out, namely that 46% of all Quebec certificates granted in Red Seal trades are in Architectural & Construction, a category that only accounts for 7% in Alberta. At the same time, the Atlantic provinces and Quebec have a very small proportion of their journeypersons in the Other category. These differences are due to several factors, including differences in industrial structure and in the Red Seal trades in each jurisdiction (e.g., 14 of the 56 Red Seal trades are not recognized in Quebec. While none of these are in the Architectural & Construction trade category, seven are in the Vehicle & Related sector).

SECTION 4: EARNINGS OF A JOURNEYPerson

This section presents the earnings of journeypersons who received their trade certificates, with a particular focus on Red Seal trades and those who received their certification in 2009. The 2009 cohort of journeypersons is followed on a year-by-year basis for eight years following certification (up to 2017).

We focus our analysis on the 56 Red Seal trades and the 2009 cohort for five reasons: i) the number of certificates granted in Red Seal trades represents three-quarters of all certificates every year (see Section 3); ii) each Red Seal trade has a clear, jurisdiction-specific definition; iii) the earnings of all journeypersons in Red Seal Trades are very similar to those in other trades (see Figure 1); iv) the 2009 cohort is used in this report because we identified irregularities in the 2008 cohort once the earnings results were analyzed by gender and trade category;²² and v) the earnings patterns of the other cohorts (i.e., 2010–2016) have similar trajectories. It is important to note, however, that we do not distinguish between journeypersons with and without actual Red Seal endorsement within these 56 specific trades; we simply track the earnings of all journeypersons with provincial certifications in these trades.

We first present the earnings of all journeypersons taken together and then break them down by gender and stream. This is followed by an analysis of earnings by trade category, first for all journeypersons together, and then broken down by gender once more. Finally, we present the earnings of journeypersons for the five trades with the largest number of certificates granted within each trade category.

In examining these earnings patterns following certification, it is important to bear in mind that we do not have information on individuals' occupations. Therefore, the earnings presented here are of journeypersons regardless of where they may be employed. In other words, while someone may hold a particular trade certification, we cannot determine whether that individual is working in that trade.

All Journeypersons in Red Seal Trades

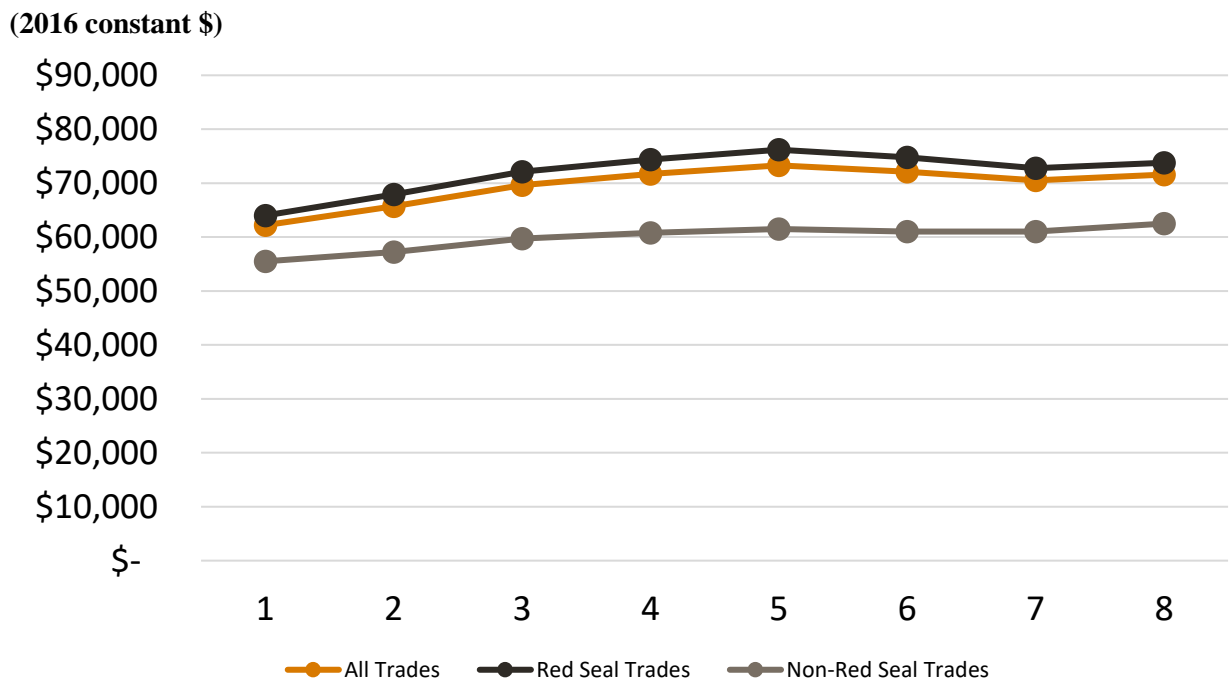
Earnings by Red Seal Versus All Other Trades

Figure 1 compares the average earnings of journeypersons across All Trades (representing the 385 trades available in RAIS), as well as those in Red Seal (56 trades) and non-Red Seal Trades (the remaining 329 trades).²³ Since journeypersons in Red Seal trades represent over three-quarters of the All Trades group, the former pulls the earnings of the latter upwards, which explains why they have very similar earnings levels and trajectories. Earnings in the non-Red Seal trades are quite a bit lower, but their earnings trajectory seems to mirror that of the Red Seal trades.

On average, the first-year earnings of the All Trades and Red Seal Trades groups are \$62,200 and \$64,000 and increase to \$71,600 and \$73,800, respectively, eight years following certification. The average difference in any given year is approximately \$2,400 (or 3%). Earnings grew steadily following certification — 3.4% per year in the first five years — and fell in the two subsequent years, driven by slowdowns in the Metal and Electrical trades. Average earnings then picked again eight years following certification.

The downturn observed after year five (representing 2014) is also recorded by other cohorts. Upon further investigation, it seems to be most pronounced in Alberta and the Atlantic Provinces, as well as in trade groups largely associated with the energy sector. This decline is also reflected in the number of certificates granted.

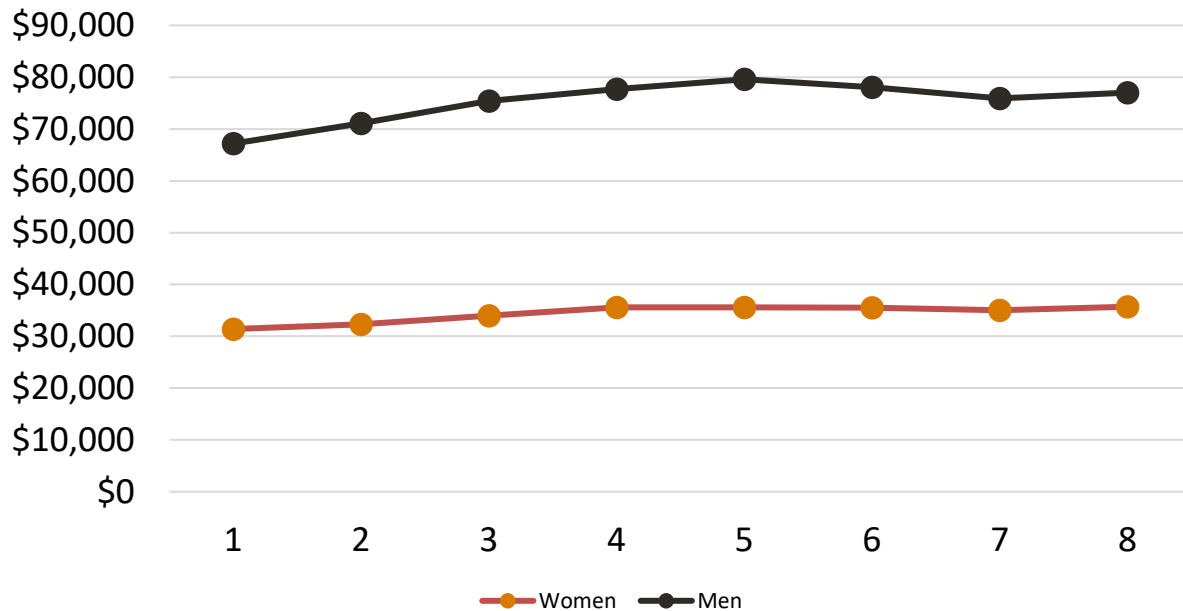
FIGURE 1
AVERAGE EARNINGS OF JOURNEYPEOPLE IN ALL TRADES, RED SEAL TRADES, AND NON-RED SEAL TRADES, 2009 COHORT



Earnings by Gender

Figure 2 presents the earnings of the 2009 cohort of journeypersons by gender. On average, women earn \$31,400 in the first year following certification, which is 47% of what men earn at the same point in their career (\$67,200 or \$35,800 more than women). Eight years out, this differential is essentially unchanged: women earn \$35,700, which is 46% of what men earn (\$77,000).

FIGURE 2
AVERAGE EARNINGS OF JOURNEYPERSONS IN RED SEAL TRADES BY GENDER, 2009
COHORT (2016 CONSTANT \$)

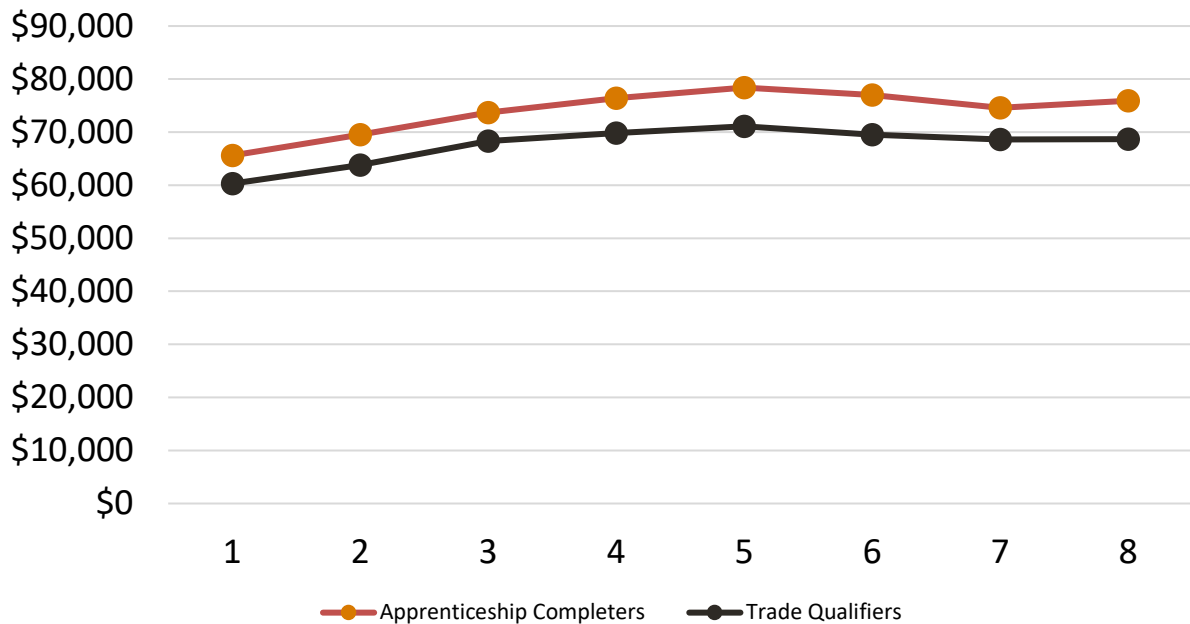


These differences are due in part to the different distributions of men and women across trade categories (Section 3). Analyzing earnings by gender in specific trades is not possible due to limited sample sizes, but we do breakdown the earnings by gender and trade categories in Section 4.²⁴ Labour supply decisions leading to differences in hours and weeks worked (including differences due to childrearing and other family responsibilities), as well as pure labour market discrimination, are also important factors said to contribute to these gendered differences in earnings.²⁵

Earnings by Completers and Qualifiers

Figure 3 compares the earnings of apprenticeship completers (those who complete a program and obtain certification) to trade qualifiers (those who train on the job and obtain certification). Their earnings are similar, but completers consistently earn more. One year following certification, apprenticeship completers earn \$65,600 and trade qualifiers \$60,300. Eight years out, their earnings increase to \$75,900 and \$68,700 respectively. Over the years, the gap between the two groups fluctuates between \$5,300 and \$7,500, representing a 7–10% difference. Exploring these patterns in detail would make for an interesting extension of this project.

FIGURE 3
AVERAGE EARNINGS OF JOURNEYPERSONS IN RED SEAL TRADES BY STREAM, 2009
COHORT (2016 CONSTANT \$)



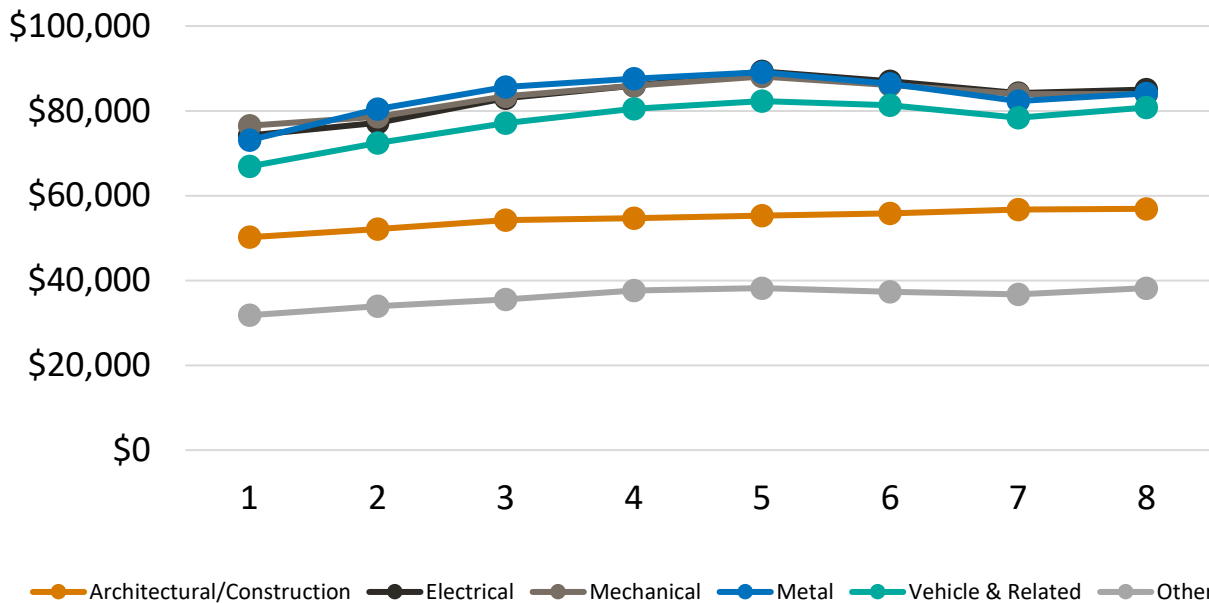
Trade Categories

Looking at earnings trajectories by trade category in the first year following graduation (Figure 4), those in Mechanical and Electrical trades earn the most, with \$76,100 and \$74,200, followed by Metal and Vehicle & Related trades, with \$73,100 and \$66,900. Those with certifications in Architectural & Construction trades and Other trades have the lowest earnings, with \$50,200 and \$31,800, in their first year following certification. Of course, the trades under each category can have an important role to play in the overall patterns for the group.

Eight years following certification, the ranking of the trade categories from highest to lowest earners remains the same, except that Electrical trades now represent the highest earners, with \$85,000. Metal, Mechanical and Vehicle & Related trades are next with \$84,100, \$84,000 and \$80,800. Finally, Architectural & Construction and Other trade categories follow with \$56,900 and \$38,200.

All trade categories recorded their highest earnings in the fifth year after certification (2014) and experienced a decrease in the two years thereafter, except the Architectural & Construction and Other trade categories, which remained stable over time.

FIGURE 4
AVERAGE EARNINGS OF JOURNEYPersons IN RED SEAL TRADES BY TRADE
CATEGORY, 2009 COHORT (2016 CONSTANT \$)



Once again, it is important to recognize that earnings differences across trade categories do not necessarily reflect the causal effects of gaining a credential in one trade or another. Multiple factors contribute to the observed differences, including the underlying abilities of those who enter different trades, the hours and weeks worked, the occupation, the gender composition of each trade category and more.

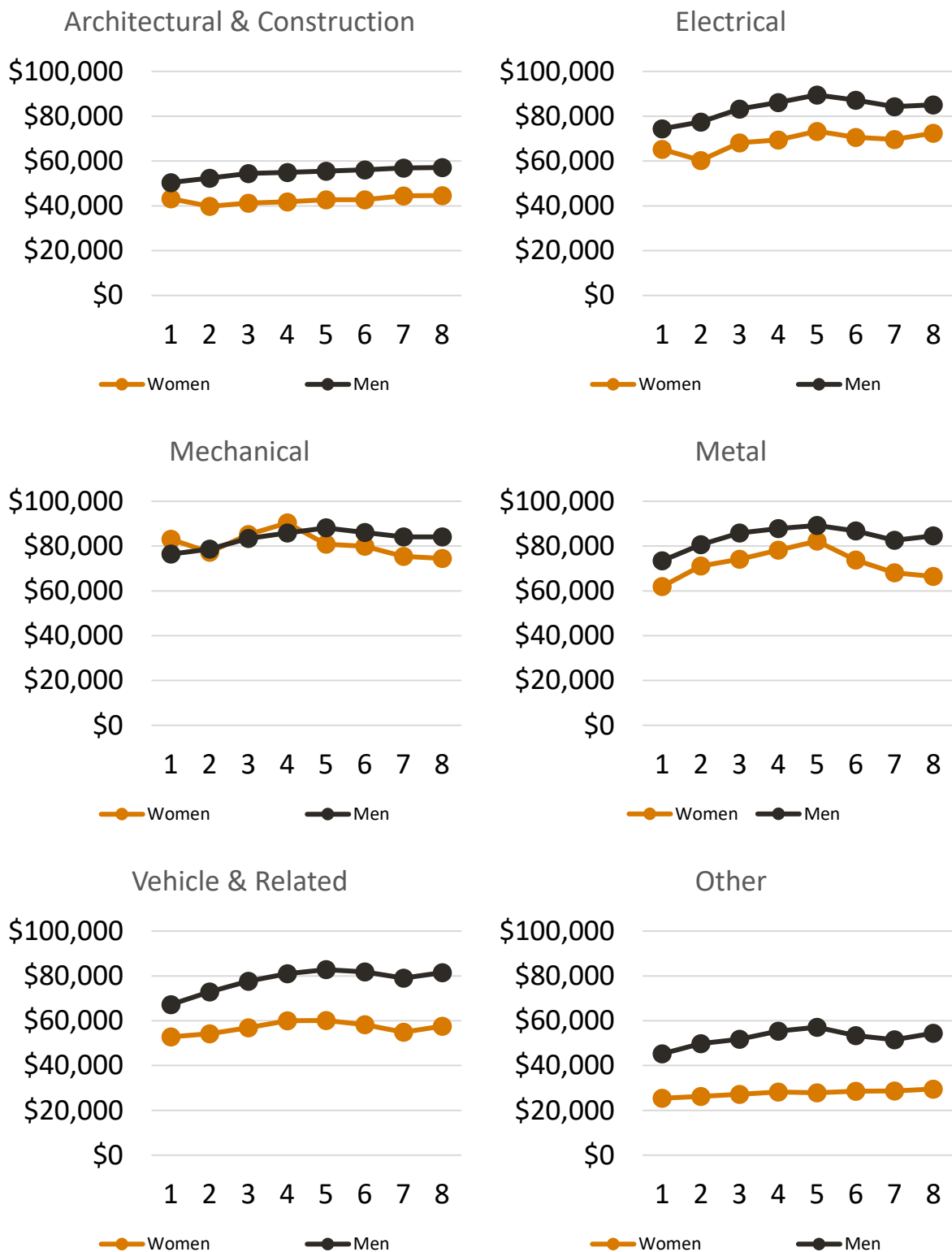
Earnings by Trade Category and Gender

As mentioned above, presenting earnings by specific trade and gender is not possible since so few women receive trade certifications. As shown in Table 2, women represent less than 2.5% of journeypersons in each category, except for Other where they represent 67%.

However, in looking at the broad trade categories, Figure 5 highlights that women earn less than men in every trade category except Mechanical where the pattern is inconsistent over time. On average, women in Metal trades earn 84% of what men earn in the first year following certification, compared to 79% eight years later. For Electrical trades, the figures are 88% of what men earn in the first year and 85% in year eight. Architectural & Construction and Vehicle & Related trades women earn 86% and 79% of what men do in the first year, compared to 78% and 71% in year eight, respectively. The largest gender earnings gap is observed in the Other trade category, where women are overrepresented. Women in Other trades earn 56% of what men do in the first year, driven in part by men’s overrepresentation as Rig Technicians, one of the highest-earning trades among journeypersons. Eight years after certification, women still earn 54% of what men do in Other trades. Even excluding Rig Technicians, women still earn between 60–67% of what men do.

These earnings differentials, as discussed previously, can be a result of factors that we cannot control for with existing data, such as differences in hours and weeks worked, including differences due to childrearing and other family responsibilities. Other studies on earnings differences in the trades that control for some of these factors still found a difference (albeit smaller), suggesting that discrimination may still be a contributing factor.

FIGURE 5
AVERAGE EARNINGS OF JOURNEYPERSONS IN RED SEAL TRADES BY TRADE
CATEGORY AND GENDER, 2009 COHORT (2016 CONSTANT \$)



Specific Trades

In this section we present the earnings of the five largest individual trades for each category, with size defined by the number of certificates granted (see Table 3). As previously mentioned, occupation is not available in the data and earnings are presented by trade certification regardless of occupation.

TABLE 3
LARGEST TRADES IN EACH TRADE CATEGORY, 2009 COHORT

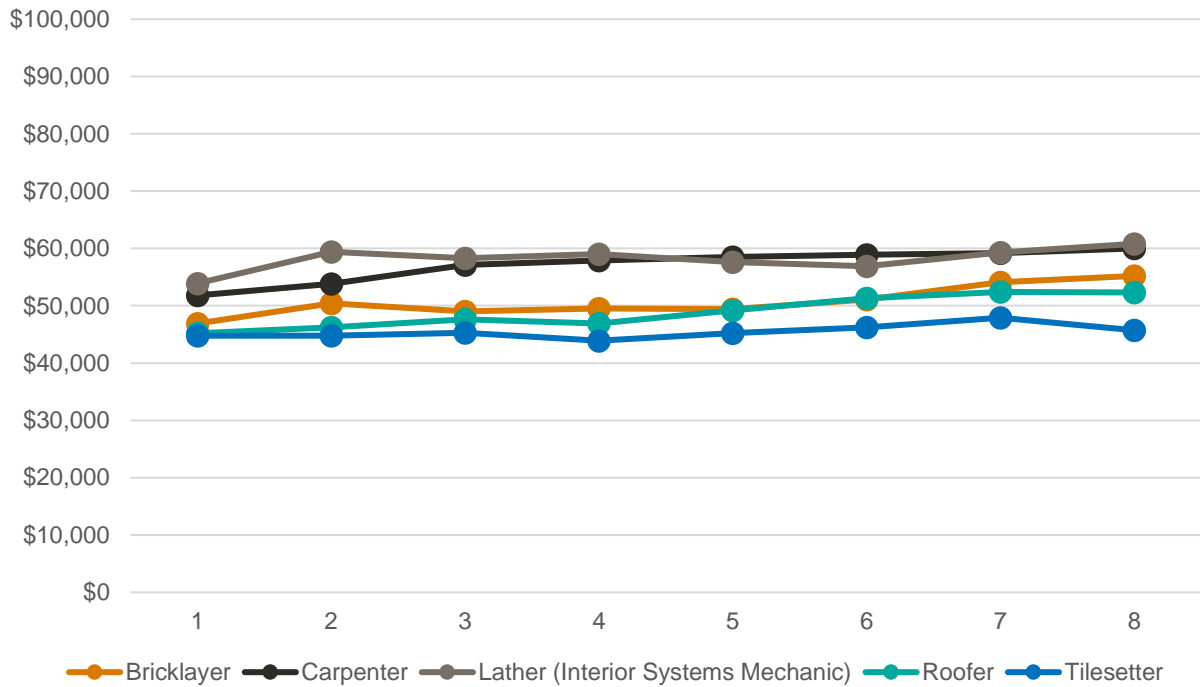
Trade Category	% Accounted for by 5 Largest Trades	5 Largest Trades	%
Architecture & Construction	86%	Carpenter	57%
		Tilesetter	12%
		Roofer	7%
		Bricklayer	5%
		Lather (Interior Systems Mechanic)	4%
Electrical	94%	Construction Electricians	80%
		Industrial Electricians	14%
Mechanical	90%	Plumber	28%
		Gasfitter - Class A	21%
		Steamfitter/Pipefitter	21%
		Refrigeration and Air Conditioning Mechanic	11%
		Instrumentation and Control Technician	8%
Metal	90%	Welder	36%
		Industrial Mechanic (Millwright)	30%
		Sheet Metal Worker	10%
		Machinist	9%
		Ironworker (Reinforcing)	4%
Vehicle & Related	87%	Automotive Service Technician	40%
		Heavy Duty Equipment Technician	21%
		Truck and Transport Mechanic	16%
		Motor Vehicle Body Repairer (Metal and Paint)	5%
		Mobile Crane Operator	5%
Other	99%	Hairstylist	63%
		Cook	25%
		Baker	4%
		Landscape Horticulturist	4%
		Rig Technician	3%

In Architectural & Construction, the five largest trades account for 86% of all certificates granted (Carpenters, 57%; Tilesetters, 12%; Roofers, 7%; Bricklayers, 5%; and Lather (Interior Systems Mechanic), 4%).

As shown in Figure 6, Lather (Interior Systems Mechanics) are the highest earners (starting at \$53,900 and reaching \$60,800 eight years following certification), followed by Carpenters (\$51,800 and

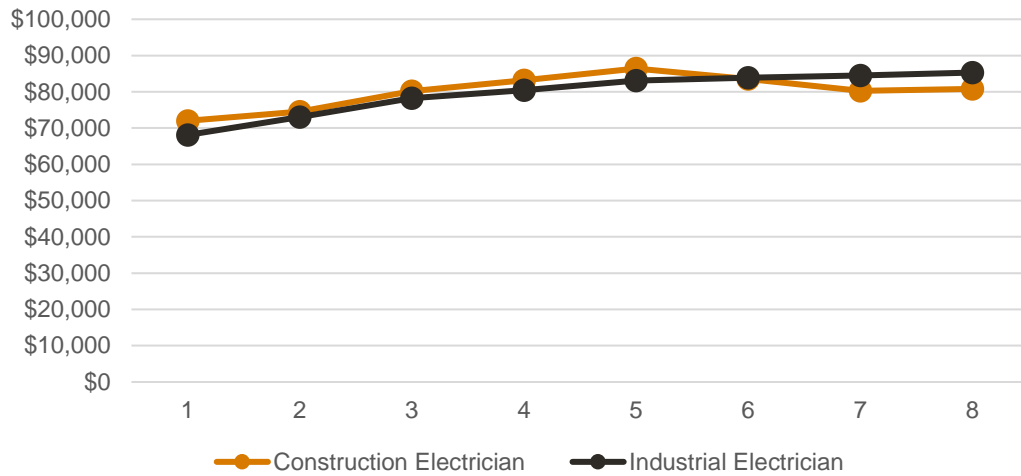
\$60,000), Bricklayers (\$46,900 and \$55,200), and Roofers (\$45,200 and \$52,300). Tilesetters (\$44,800 and \$45,700) record the lowest earnings out of the top five most common trades in Architectural & Construction, but not by a large margin.

FIGURE 6
AVERAGE EARNINGS OF JOURNEYPERSONS IN THE FIVE LARGEST ARCHITECTURE & CONSTRUCTION TRADES, 2009 COHORT (2016 CONSTANT \$)



Due to sample size issues, only two out of four Electrical trades are presented in Figure 7; however, together they comprise 94% of all certifications granted in this trade category (Construction Electricians, 80%; Industrial Electricians, 14%). While Construction Electricians earn more (\$72,000) than Industrial Electricians (\$68,100) by close to \$4,000, eight years later the opposite is true as Industrial Electricians (\$85,300) now earn more than Construction Electricians (\$80,800) by close to \$5,000.

FIGURE 7
AVERAGE EARNINGS OF JOURNEYPERSONS IN THE TWO LARGEST ELECTRICAL TRADES, 2009 COHORT (2016 CONSTANT \$)

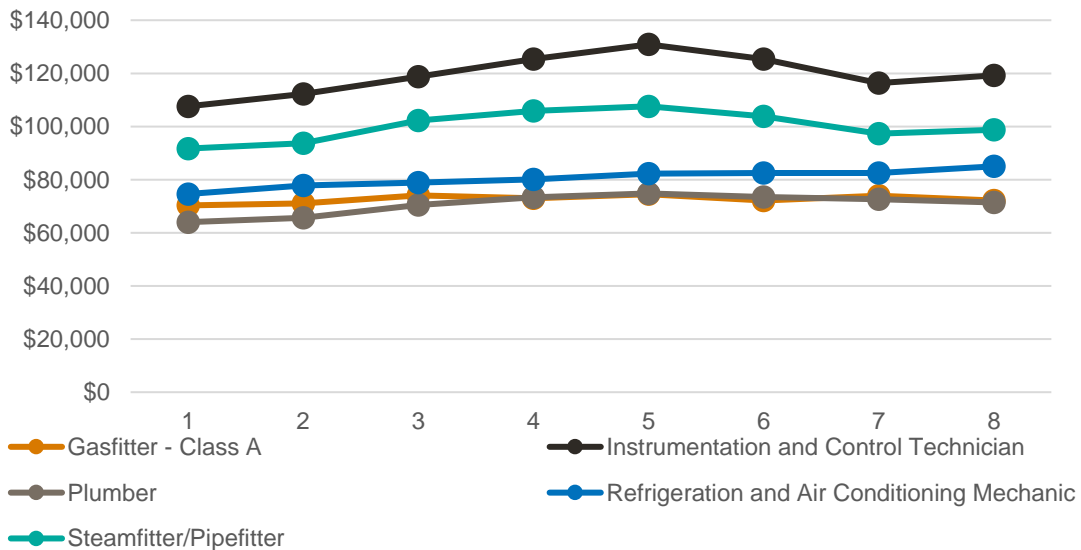


Out of 10 Mechanical trades (Figure 8), the top five account for 90% of certificates granted (Plumbers, 28%; Gasfitters – Class A, 21%; Steamfitters/Pipefitters, 21%; Refrigeration and Air Conditioning Mechanics, 11%; Instrumentation and Control Technicians, 8%).

Instrumentation and Control Technicians have the highest earnings levels by a substantial margin (\$107,600 and \$119,200). Along with Steamfitters/Pipefitters (\$91,700 and \$98,700), they experienced a slight decrease in their earnings in the sixth and seventh years after certification.

Refrigeration and Air Conditioning Mechanics (\$74,600 and \$85,000), Gasfitters – Class A (\$70,300 and \$72,100) and Plumbers (\$64,000 and \$71,400) had somewhat more stable earnings trajectories over the years following certification.

FIGURE 8
AVERAGE EARNINGS OF JOURNEYPERSONS IN THE FIVE LARGEST MECHANICAL TRADES, 2009 COHORT (2016 CONSTANT \$)

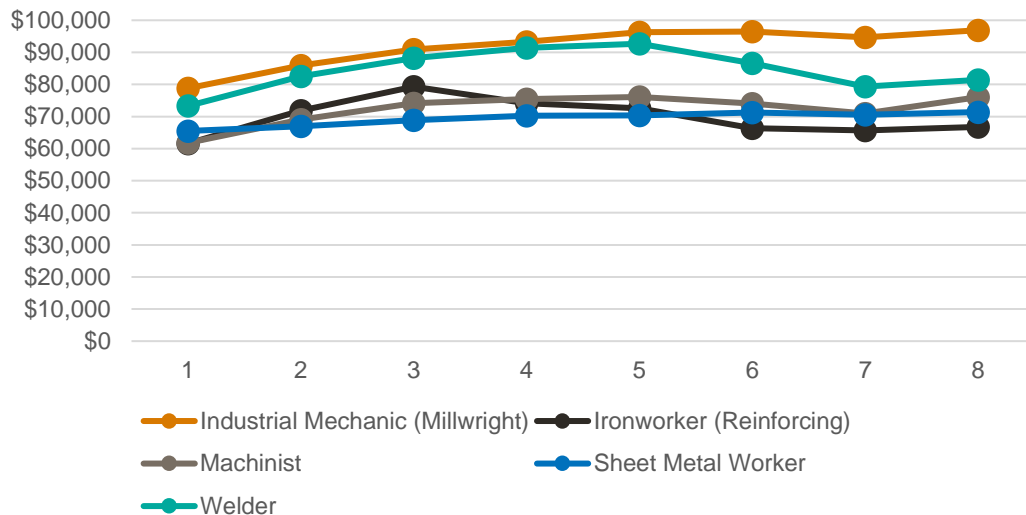


Welders (36%), Industrial Mechanics (Millwrights; 30%), Sheet Metal Workers (10%), Machinists (9%) and Ironworkers (Reinforcing; 4%) collectively represent 90% of the Metal trades, as shown in Figure 9.

Industrial Mechanics (Millwrights) earn the most, starting at \$78,800 and reaching \$96,900 eight years out. Welders follow with \$73,300 in their first year but experienced a decrease six years following certification, reaching \$81,400 by year eight. Ironworkers (Reinforcing) experienced something similar with a decrease in year three (\$61,600 and \$66,800).

Sheet Metal Workers (\$65,500) have higher earnings than Machinists (\$61,800) in the first year following certification. Eight years out, the opposite is true as Machinists (\$76,000) earn more than Sheet Metal Workers (\$71,400).

FIGURE 9
AVERAGE EARNINGS OF JOURNEYPERSONS IN THE FIVE LARGEST METAL TRADES, 2009 COHORT (2016 CONSTANT \$)

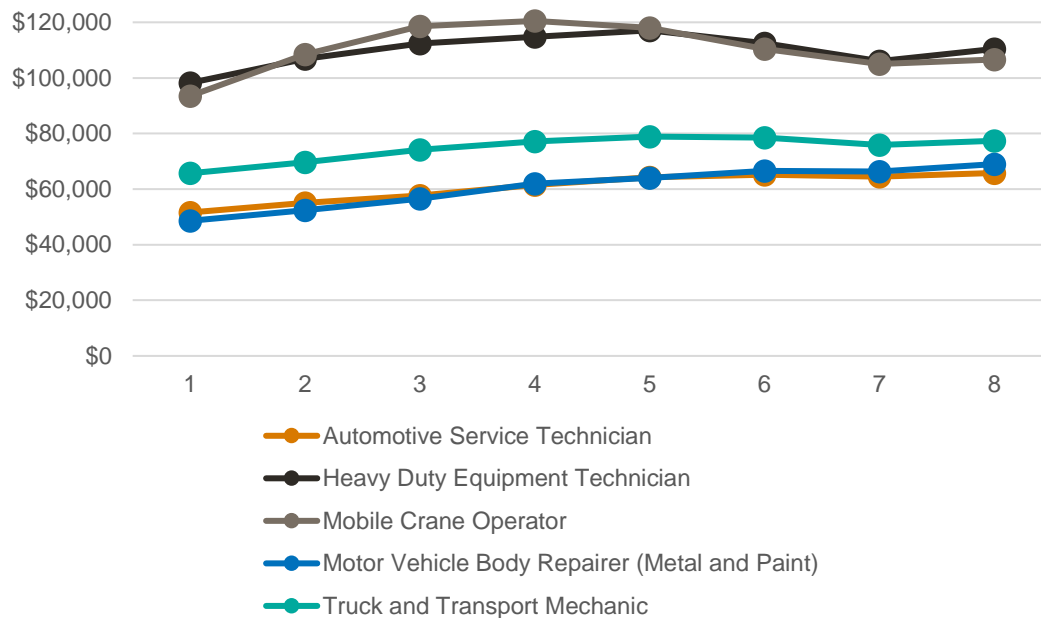


The five largest Vehicle & Related trades represent 87% of all certificates granted in that category (Automotive Service Technicians, 40%; Heavy Duty Equipment Technicians, 21%; Truck and Transport Mechanics, 16%; Motor Vehicle Body Repairers (Metal and Paint) and Mobile Crane Operators, 5% each).

Figure 10 shows that Heavy Duty Equipment Technicians and Mobile Crane Operators are the two highest earning trades in the category with \$98,200 and \$93,500 upon labour market entry and \$110,400 and \$106,600 eight years out, respectively.

Truck and Transport Mechanics (\$65,700 and \$77,400), Automotive Service Technicians (\$51,600 and \$65,800) and Motor Vehicle Body Repairers (Metal and Paint; \$48,600 and \$69,000) follow.

FIGURE 10
AVERAGE EARNINGS OF JOURNEYPERSONS IN THE FIVE LARGEST VEHICLE & RELATED TRADES, 2009 COHORT (2016 CONSTANT \$)

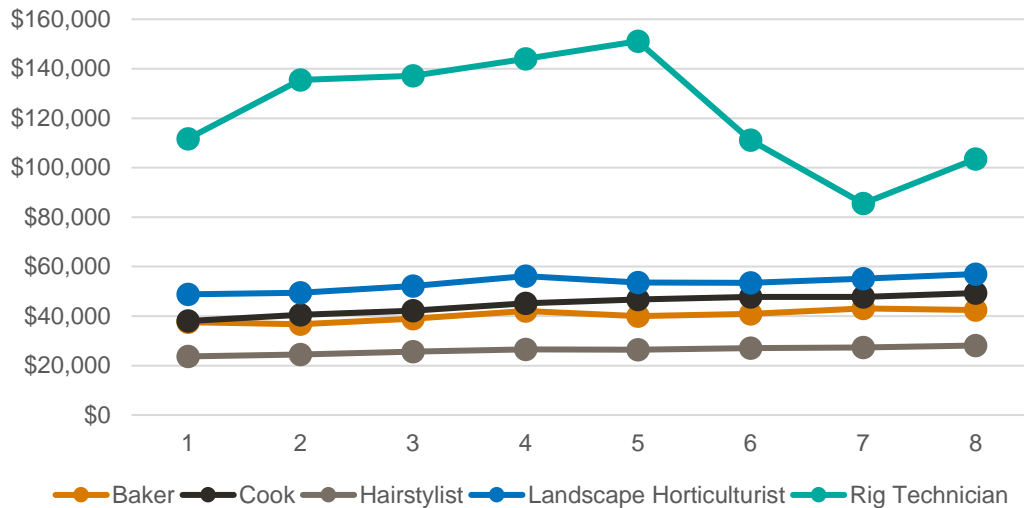


In 2009, 99% of all certificates in the Other category were granted in five of the six trades represented (Hairstylists, 63%; Cooks, 25%; Bakers, 4%; Landscape Horticulturists, 4%; and Rig Technicians, 3%). Figure 11 presents their earnings.

The first-year earnings of Rig Technicians were \$111,600, which increased to \$151,100 five years later. The drop to \$85,500 two years later, no doubt due to instability in the industry, recovered to \$103,500 in the last year. Rig Technicians significantly raise the average earnings of men in the Other trade category since they represent a large segment of men (see Figure 5) but do not significantly drive the overall Other trade category (see Figure 4) since there are so few of them.

Landscape Horticulturists are the (distant) second highest earners in this category earning \$48,800 in their first year following certification and \$57,000 eight years out, followed by Cooks (\$38,000 and \$49,300) and Bakers (\$37,500 and \$42,400). Hairstylists have the lowest earnings levels at \$23,700 and \$28,100.

FIGURE 11
AVERAGE EARNINGS OF JOURNEYPEOPLE IN THE FIVE LARGEST OTHER TRADES,
2009 COHORT (2016 CONSTANT \$)



SECTION 5: THE EARNINGS OF JOURNEYPEOPLE AND (SELECTED) PSE GRADUATES

Upon finishing secondary school, Canadians have before them a set of choices to make regarding their education and training. While many decide to enter the job market directly, others chose to pursue post-secondary education (PSE) or a skilled trade certificate that combines work and study-based training. When considering these options, our public opinion research reveals that individuals consider a wide range of factors, including but not limited to personal interests and preferences; the time, costs and effort associated with the education or training; and potential earnings. Indeed, salary is one of the most sought-after pieces of labour market information.

To help Canadians navigate these decisions and to put the findings presented in this report in a broader education and training context, we align the earnings of journeypeople presented here with the early career earnings of Canadian PSE graduates by credential and field of study presented in our recently published companion report. Placing the earnings of journeypeople alongside PSE graduates is not meant to place greater or lesser value on any one path or in any way to suggest that earnings alone should determine career choices, but rather to provide important insights that will help Canadians make more informed decisions.

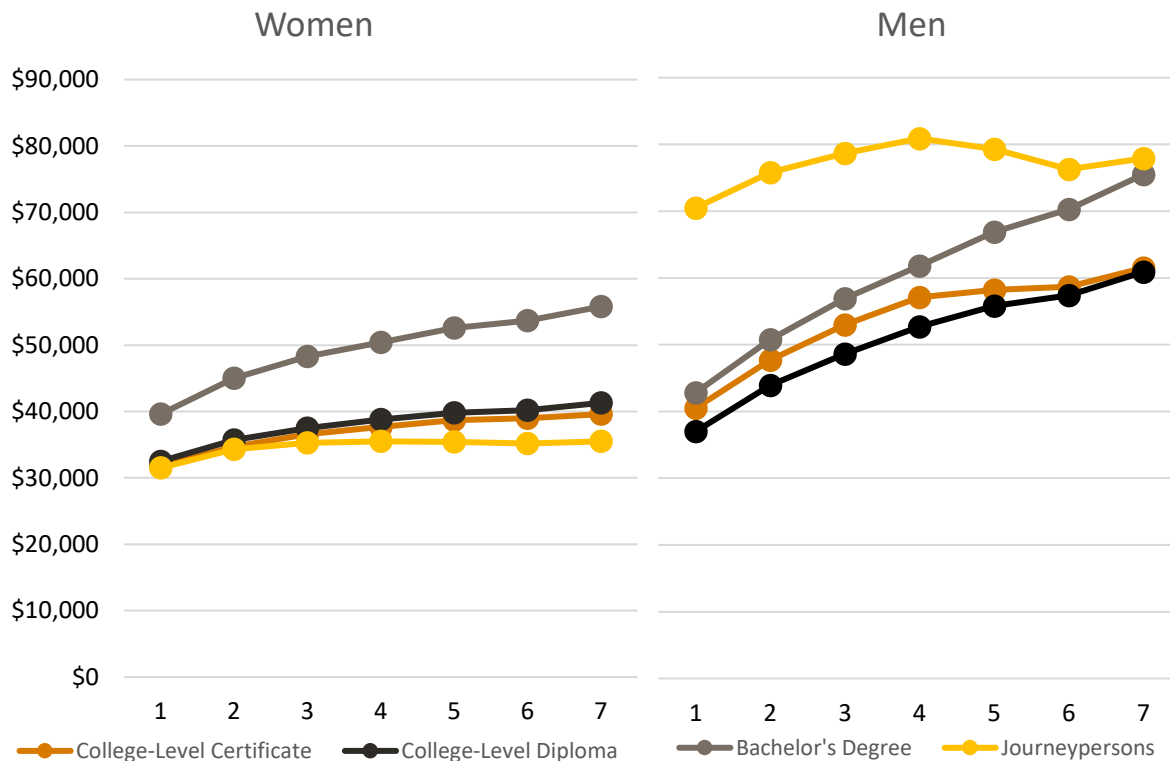
Taken together, these reports provide detailed information on the earnings of Canadians who undertake post-secondary education and training. In this section, we present the earnings of individuals who received college-level certificates (typically one-year programs) and diplomas (typically two-year programs), bachelor’s degrees (typically three- to four-year programs) and journeypeople certificates for Red Seal trades (ranging between two and five years and combining work and study-based training).^{26, 27}

In looking at these together (Figure 12), it is important to remember that for both those with trades and those with PSE credentials there is great variation across trade category and field of study, as can be seen in both reports and compared on the two respective interactive dashboards. There is also great variation within each field and category across individuals. Here we provide only overall average earnings across all journeypeople with a Red Seal trade certificate and PSE graduates at the different levels considered. This is an important caveat, especially when considering the information through a gender lens. Further caveats and cautions regarding the interpretation of these earnings patterns are provided below.

Figure 12 illustrates that female journeypersons in their first year following certification in a Red Seal trade earn, on average, \$31,500, which is very similar to the earnings levels of women with college-level certificates (\$31,800) and college-level diplomas (\$32,500). Seven years later, women with trade certificates earn \$4,100 less than their counterparts with college-level certificates (\$35,500 versus \$39,600) and \$5,800 less than those with college-level diplomas (\$35,500 versus \$41,300). However, as discussed above, many women hold certificates in a very narrow set of Red Seal trades (i.e., predominantly Hairstylists, Cooks and Bakers), which are among the lowest paying. This drives the overall average earnings of journeypersons down to the levels observed here. Should the comparison be made to women in specific trade categories — such as electrical, mechanical or metal trades (see Figure 5) — journeypersons clearly record higher average earnings than women with any of the PSE credentials reported here. This makes for potentially great opportunities — not currently being realized — to encourage, guide and support women who may wish to consider pursuing skilled trades.

Men with a Red Seal certificate, on the other hand, have first-year earnings levels of \$70,500 compared to men with bachelor's degrees (\$42,800), college-level certificates (\$40,500) and diplomas (\$37,000). Seven years following certification, men with journeyperson certificates earn \$77,900 compared to bachelor's degree graduates who earn \$75,500, followed by college-level certificates (\$61,500) and diplomas (\$60,900).

FIGURE 12
AVERAGE EARNINGS OF PSE GRADUATES AND JOURNEYPersonS IN RED SEAL TRADES, 2010 COHORT (2016 CONSTANT \$)



These comparisons should be viewed in the context of several important caveats. First, as mentioned above, these are only broad averages represented by mean earnings. There is substantial variation in earnings across fields of study and trade categories as well as within groups at the individual level. These distributions generally overlap, meaning that individuals' earnings will depart from these overall patterns, and in many cases substantially so.

Second, as emphasized in both reports, these earnings patterns do not reflect the causal effects of the training or education on earnings. In particular, earnings would generally differ even in the absence of this training and education due to differences in individual characteristics along a range of dimensions. When correlated with the education and training choices, these individual characteristics alone would affect earnings. These differences are especially relevant in a context where individuals self-select their programs, including both type of credential and specific field/category. These decisions are likely to be based at least in part on where individuals feel they would do best — in terms of earnings as well as other career and life considerations.

Third, these earnings do not represent any kind of rate of return to the education and training gained. Such calculations must take costs into account, which will differ substantially across programs and individuals, reflecting direct monetary costs, the opportunity cost of the time required, along with other factors. Further, different programs — including almost all trades — involve on-the-job training, which can provide earnings that offset the costs of the training and provide labour market experience, which will generally lead to higher earnings after program completion.

Finally, our figures represent earnings only in the early years following the completion of education and training programs. It will be interesting and important to follow these earnings trajectories further over time with the annual updates of the ELMLP as they become available.

In sum, these comparisons are meant to provide context only. Their purpose is to further inform individual Canadians making education and training choices along with other stakeholders regarding the early career earnings associated with some of the education and training pathways available.

SECTION 6: CONCLUSION AND FUTURE WORK

This report and related materials, including the interactive dashboard, presents the results of an analysis of the early career earnings of journeypersons in Canada using the Education and Labour Market Longitudinal Platform (ELMLP). The goal is to inform a wide range of stakeholders, including those making training decisions, institutions offering technical training for apprenticeship programs, policy makers, industry, researchers and the Canadian public.

Overall, we find that for individuals who obtained their certification in 2009 in a Red Seal trade, their first-year earnings averaged \$64,000. Earnings grew steadily following certification (4.2% per year), peaked at \$76,200 after five years (in 2014), and fell in the subsequent two, rising again to \$73,800 eight years following certification.

Earnings vary considerably by type of trade and gender. Women with trade certificates earn only 47% of what men earn in the first year and 46% eight years out, reflecting both earnings differences within each trade category and women being overrepresented in the lower-earning trades.

In addition, in looking at the broad categories of Red Seal journeypersons, those in Mechanical and Electrical trades earn the most, followed very closely by Metal trades, and then by Vehicle & Related trades. There is a substantial gap between the top four earning trade categories and Architecture & Construction and Other.

Finally, to put the findings presented in this report in a broader education and training context, we line up the earnings of journeypersons presented here with those of selected PSE graduates. Placing the earnings of journeypersons alongside PSE graduates is not to place greater or lesser value on any one path or in any way suggest that earnings alone should necessarily determine career choices, but rather to provide important insights that will help Canadians make more informed decisions. We find that compared to PSE graduates, journeywomen tend to earn less overall, driven primarily by the fact that women hold trade certificates in a very narrow set of Red Seal trades (i.e., predominantly Hairstylists, Cooks, and Bakers) which are among the lowest paying. In contrast, journeymen earn more than PSE graduates over the same period, although the gap narrows over time.

Our results are generally in line with what has been found in the skilled trades literature (see EPRI & LMIC, 2021) but go further than other studies in the level of detail of the analysis. Other studies have, of course, adopted different approaches and emphasis.

While this research is intended simply to present the earnings of journeypersons in a descriptive manner, an important next step would be to use regression analysis and other more sophisticated analytical approaches to identify the contributions of various factors to the observed earnings patterns, and to identify earnings patterns by trades after controlling for these influences.

Future work could also investigate in further detail the specific dimensions of the patterns presented here, including stream, gender, general trade category, specific trade and more. Additional elements could include those with actual Red Seal endorsements, completers and non-completers, combinations of trade certifications, mobility and other specific topics.

ACKNOWLEDGEMENTS

EPRI would like to thank LMIC for their drafting contributions and they would both also like to express their gratitude to Statistics Canada for their support with the Education and Labour Market Longitudinal Platform (ELMLP). EPRI would like to thank Employment and Social Development Canada (ESDC) for providing resources to support the initial phase of the analysis.

ENDNOTES

1. In March and April 2020, the Canadian economy shed more than 3 million jobs. Employment among Red Seal trades fared comparatively well during the crisis. Although it fell sharply at the outset — close to 30% in March and April — as of December 2020, it had rebounded to 2% above its February 2020 level.
2. EPRI is an academic research group based at the University of Ottawa that engages in research aimed at informing policy discussions on education, skills and the labour market.
3. LMIC is an independent not-for-profit organization whose mission is to provide Canadians with timely and reliable labour market information and insights in an engaging way to support their decision-making process.
4. The Red Seal Program (2018) sets common standards to assess the skills of tradespeople across Canada. Tradespersons who have successfully passed the examination receive a Red Seal endorsement on their provincial or territorial trade certificate. When affixed to the certificate, the Red Seal indicates that a tradesperson has demonstrated the knowledge required for the national standard in that trade. This study focuses on individuals with certificates in one of the 56 Red Seal trades, whether they have the Red Seal endorsement or not. For more information on the Red Seal program see Red Seal Canada.
5. The ELMLP does not have information on individuals' occupations. Therefore, the earnings reported capture all journeypersons regardless of where they are employed.
6. In Canada, skilled trades training is the responsibility of provincial and territorial authorities. Entry requirements vary depending on the trade, but individuals are typically required to have a high school diploma (or equivalent) or a combination of grade 11 and 12 courses. Training is offered by a variety of institutions including colleges, polytechnics and technical institutes, as well as private organizations.
7. After investigating all cohorts, we identified irregularities in the 2008 cohort once the results were analyzed by gender and trade categories. The 2009 cohort is more representative of the patterns observed in the subsequent cohorts and can be followed for the second longest period (eight years).
8. Trade completers have registered and completed a formal apprenticeship program (class and on-the-job training) while trade qualifiers have demonstrated job experience and have passed the final qualification exam.
9. Both surveys indicate that the level of satisfaction with the on-the-job training component of apprenticeships is very high (around 90%), but satisfaction in the technical training component, albeit still high, varies between 80% and 90% (Insightrix Research Inc., 2017; Advanis Inc., 2018).
10. LMI Insight Report no. 4 (LMIC, 2018) provides a broad overview of the ELMLP; LMI Insight Report no. 18 (LMIC, 2019b) discusses new datasets being processed and added to this data environment.
11. For more information on the limitations of the ELMLP, see Finnie et al. (2020) and LMIC (2018).
12. Statistics Canada (2018b) includes negative net self-employment income values. In this analysis, we convert these to zero on the grounds that labour market earnings cannot, by definition, be negative. Self-employment income mixes business activities and labour market earnings, further complicating its tax treatment.

13. For employment income to be considered “Indian exempt,” the location of the employment duties is a major factor since most on-reserve work is classified as tax exempt. However, the CRA also recognizes that employees of bands, tribal councils or organizations that operate on their behalf may perform most of their activities off reserve. If the employer is resident on a reserve and the “Indian” is employed in a non-commercial activity for the social, cultural, educational or economic development of “Indians” who mostly live on reserves, the income of their employees is also tax exempt. For more information on the guidelines covering “Indian exempt” employment income under Section 87 of the Indian Act, visit <https://www.canada.ca/en/revenue-agency/services/aboriginal-peoples/indian-act-exemption-employment-income-guidelines.html>.
14. An important next step for this line of research would be to use regression analysis and other more sophisticated analytical frameworks to identify the contribution of these types of factors to the observed earnings patterns, and to identify earnings patterns by trades after controlling for such influences. The initial descriptive analysis presented here, however, provides a natural starting point for this type of research.
15. To build the sample, we used a combination of STATEND (i.e., 00 and 02) and CERT (i.e., 02–05) variables (Statistics Canada, 2016).
16. A small number of records were dropped because of missing key information (0.8%).
17. The number is similar to the integration rate of Statistics Canada’s (2018b) sample of 99%.
18. This data is recorded in the T1FF through the full-time education tax credit for the 2009–2016 tax years and the months of full-time PSE study for the 2017 tax year.
19. The further training or education restriction could also have been based on the RAIS/PSIS files, but we decided to use the full-time education tax credit to be consistent with our previous PSE study (Finnie et al., 2020).
20. Individuals pursuing training or education part-time remain in the sample until they are observed to earn a new certification or graduate with a credential since part-time training/education allows them to remain in the labour market. Similarly, journeypersons learning another trade on the job and not through formal apprenticeship training would also remain in the sample during their training until they qualify for new certification.
21. Statistics Canada (2018a) also differs in other ways, including the specific sample restrictions, the precise earnings measure, their presentation of median rather than mean earnings, and what is covered in the analysis. The two projects therefore represent two independent but related treatments of the early career earnings of journeypersons.
22. The 2008 cohort irregularities are mostly driven by an unusually large number of Rig Technicians compared to later cohorts, which did not influence the overall earnings patterns considerably, but did influence them significantly when broken down by stream and trade category.
23. The average or mean earnings reflect the arithmetic average earnings across all earners, whereas median earnings represent the level of the person exactly in the middle of the distribution. In other words, 50% of all individuals in the sample have higher earnings, while the other 50% have lower earnings. The mean is slightly higher than the median, indicating that higher earners bring the mean up more than lower earners bring it down, reflecting an underlying unequal distribution. See Section 4 for additional information and comparison of mean and median earnings.
24. An interesting extension could be to use the largest trades and break down earnings by gender when possible. Alternatively, using a regression framework could help deal with the small sample sizes.
25. Other studies have determined that women in male-dominated trades tend to have lower earnings than their male counterparts even after controlling for age, completion status and level of education, although the differences become smaller (EPRI & LMIC, 2021).
26. The PSE report also includes the earnings of graduates with advanced degrees, but here we focus on bachelor’s degrees and college-level certificates and diplomas since these are, like trade programs, typically entered directly from high school with no additional prerequisites.
27. While RAIS data covering journeypersons start in 2008, its post-secondary equivalent — the Postsecondary Information System (PSIS) — only starts in 2010. For a full description of PSIS and the credentials used in the previous study, please see the full report on LMIC’s website.

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