Technical Reference Guides for the Education and Labour Market Longitudinal Platform (ELMLP)

Earnings indicators for certified journeypersons in Canada, 2008 to 2018

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Earnings indicators for certified journeypersons in Canada, 2008 to 2018

1. Introduction

Statistics Canada, in collaboration with the provinces and territories, Employment and Social Development Canada (ESDC), and other stakeholders, has developed the Education and Labour Market Longitudinal Platform (ELMLP).

The ELMLP allows longitudinal integration of administrative data related to education with other data sources to provide customized datasets for analytical purposes.

The ELMLP Program fills data gaps and enables a greater understanding of student and apprenticeship pathways, transitions to the labour market and outcomes over time.

Data from the ELMLP can help address a wide range of policy questions pertaining to student and apprenticeship persistence, completion, mobility and pathways as well as their labour market outcomes.

These data allow policy makers to understand the different types of trajectories that students can take through their postsecondary education or apprenticeship training as well as student characteristics that may be related to these trajectories.

The target audience for the ELMLP includes provincial ministries of education, apprenticeship authorities, postsecondary institutions, federal government departments, members of the academic community, researchers, students and parents interested in graduate outcomes and other stakeholder groups involved in education and the labour market.

2. The Education and Labour Market Longitudinal Platform (ELMLP)

2.1 The key features of the ELMLP

1. **Platform** – The Platform allows researchers to unlock information about past cohorts of college/university students and registered apprentices, to better understand their pathways and the ways in which education and training affected their career prospects.

2. **Securely integrated datasets** - These integrated datasets allow us to know more than what a single dataset or survey can provide. Integrated datasets means that all of the datasets in the ELMLP may be linked with each other using an anonymous linkage identifier located on each file. After identifying which ELMLP datasets are needed to answer a specific research or policy question, researchers can use the anonymous linkage identifier located on each file to bring these datasets together. The integration of datasets is carried out within the Statistics Canada Social Data Linkage Environment (SDLE), which maintains the highest privacy and data security standards.

3. **Longitudinal data** – The data available within the Platform are linked longitudinally, allowing researchers to better understand the behaviours and outcomes of students and apprentices over time.

4. **Accessible data** – All datasets prepared for the Platform are made available to researchers through the Research Data Centre network across Canada.

2.2 Accessibility, confidentiality and privacy

The integrated datasets in the ELMLP are deemed sensitive statistical information and subject to the confidentiality requirements of the *Statistics Act*. Statistics Canada employees who build the integrated datasets for research purposes have access to the data only after it has been stripped of personal identifiers. Furthermore, only Statistics Canada employees and deemed employees who have an approved need to access the data for their analytical work are allowed access to the linked analytical files.

These data are treated with the same level of confidentiality as surveys administered by Statistics Canada.

Findings from the ELMLP are released through Statistics Canada's website.

The ELMLP data are also available in Statistics Canada's Research Data Centres (RDC) to researchers with approved projects only. These researchers will be provided with access in a secure setting at the RDCs, which are staffed by Statistics Canada employees. The RDCs are operated under the provisions of the *Statistics Act* in accordance with all confidentiality rules, and are accessible to researchers once they have been sworn in under the *Statistics Act* as "deemed employees."

2.3 Core and supplementary datasets

The ELMLP consists of two types of datasets: **core** and **supplementary**.

Core datasets are updated in the ELMLP on an annual basis and include:

1. **The Postsecondary Student Information System (PSIS)** - an administrative dataset of all Canadian public college and university enrolments and graduates by type of program and credential, and field of study for each reporting year. The ELMLP includes PSIS data from 2009 onwards for all provinces and territories, as well as from 2005 onwards for the four Atlantic Provinces and from 2004 onwards for Alberta.
2. **The Registered Apprenticeship Information System (RAIS)** - an administrative dataset of all Canadian (provincial and territorial) annual data on registered apprentices and trade qualifiers. The ELMLP consists of RAIS data from 2008 onward.
3. **Income tax from the T1 Family File (T1FF) -** select information from income tax data from 1992 onwards is available for all PSIS and RAIS records that were linked to the T1 Family File.

Supplementary datasets are additional datasets that are being integrated into the platform in order to add new indicators for research purposes. Over time, the number of supplementary datasets that are brought into the ELMLP will grow and could include survey data already collected by Statistics Canada, administrative data already obtained by Statistics Canada, and administrative data not yet available at Statistics Canada. The list of ELMLP files currently in the RDCs can be found by typing "ELMLP" in the *Filter Items* window.

3. Data sources

3.1 Data sources and record linkages

The Registered Apprenticeship Information System (RAIS) is the foremost source of information on apprentices in Canada. On an annual basis, RAIS produces cross-sectional statistics on registrations in apprenticeship programs and certifications in trades. The cross-sectional annual RAIS files are not structured to support longitudinal studies, and they do not contain information on apprentices and trade qualifiers employment incomes.

The annual RAIS files from 2008 to 2018 were linked longitudinally to themselves to produce longitudinal indicators on apprenticeship training. Those files were then linked to the T1 Family File for the 2004 to 2018 tax years to produce indicators on apprentices and trade qualifiers employment incomes.

Probabilistic record linkages were conducted in the Social Data Linkage Environment. Successful linkages were dependent on the completeness of personal identifiers available in the RAIS files. Nearly 99% of the records in each of the RAIS files from 2008 to 2018 were successfully linked to Statistics Canada's Derived Record Depository.

For more information on record linkage, visit the Social Data Linkage Environment (SDLE). For more information on tax data, visit the T1 Family File.

The Registered Apprenticeship Information System (RAIS), Apprenticeship Grants, Canadian Apprenticeship Loans, Ellis Chart, jurisdictional websites, and other data sources are linked to determine the classification of each trade as Red Seal or non-Red Seal by jurisdiction. As such, trades in certain jurisdictions may not contribute to national Red Seal or non-Red Seal totals. Additionally, not all Red Seal trades receive Red Seal endorsement in all jurisdictions, however data for these trades are still processed as Red Seal for comparison purposes.

3.2 Concepts derived from the Registered Apprenticeship Information System

The **reference period** for the annual RAIS file is the calendar year.

Designated trades are trades for which apprenticeship training and trade qualifications are available in Canada. These trades are governed by provincial and territorial jurisdictions, who determine the trades for which apprenticeship training is made available and certificates are granted. The jurisdictions also determine which designated trades require certification in order to work unsupervised in the trade.

Journeypersons, for the purposes of these indicators, are defined to be individuals who completed an apprenticeship program or trade qualifiers who have received a certificate of qualification.

Individuals who completed an apprenticeship program were registered apprentices who certified through a trade program. Registered apprentices are individuals in a supervised work training program in a designated trade within their provincial or territorial jurisdiction. The apprentice must be registered with the appropriate governing body (usually a ministry of education or labour, or a trade-specific industry governing body) to complete the training.

Trade qualifiers are individuals who meet the on-the-job experience required to qualify for certification within a jurisdiction, without necessarily having completed an apprenticeship program.

Red Seal programs have common standards to assess the skills of tradespersons across Canada in specific trades, referred to as the Red Seal trades. Tradespersons who pass examinations to meet these standards receive a Red Seal endorsement on their provincial or territorial trade certificates. The Red Seal endorsement certifies tradespersons to work in their trade in any province or territory, whereas other forms of certification may only be recognized by certain provinces or territories.

Non-Red Seal trades do not have interprovincial standards. Many of these trades do not have an examination requirement in order to work in the trade. Five non-Red Seal trades are selected to account for female-dominated trades; child and youth worker, developmental service worker, early childhood educator, educational assistant and esthetician.

Certifications are required to work unsupervised in a number of trades in Canada. Requirements for obtaining such a designation vary widely across jurisdictions as well as across the trades themselves. In most instances, apprentices are issued a certificate if they completed requirements such as supervised on-the-job training, technical training, as well as passing one or more examinations. Meanwhile, trade qualifiers become certified once they pass an examination.

Here is the complete list of concepts used by the Registered Apprenticeship Information System (RAIS).

3.3 Confidentiality and rounding

All data are subject to the confidentiality procedures of rounding and suppression. Suppression is primarily a data quality control measure for the earning indicators, which do not contain confidential information. To this effect, all indicators with rounded cohort sizes less than 15 were suppressed.

To protect the confidentiality of the population of interest, counts and amounts are rounded. Rounding may increase, decrease or cause no change to counts and amounts. Rounding can affect the results obtained from calculations. For example, when percentages are calculated from rounded data, results may be distorted as both the numerator and denominator have been rounded. The distortion can be greatest with small numbers.

To produce estimates of apprenticeship income, the disclosure control rules, as outlined on the T1 Family File web page, were used.

4. Methodology of the income indicators

Employment income data for the RAIS statistical tables (37-10-0194-01 and 37-10-0195-01) are obtained from the T1 Family File.

Employment income includes employment earnings (wages and salaries, commissions from employment, training allowances, tips and gratuities, and tax-exempted Indian employment income) and net self-employment income (net income from business, profession, farming, fishing and commissions). Net self-employment income may be positive, negative or zero.

All income data are adjusted for inflation and are reported in 2018 constant Canadian dollars.

4.1 Indicator definitions

Income cohorts are groups of individual who certify during the given calendar year. There are three income cohorts: journeypersons, individuals who completed an apprenticeship program, and trade qualifiers. For more details on the individual income cohorts, refer to section 3.2.

Median age at certification for all those who became certified in the given calendar year is available in both the longitudinal and cross-sectional tables. The median is determined by sorting values and selecting the middle value. When there is an even number of observations, the median is the average of the two middle values.

Median employment incomes (cross-sectional) are calculated at two and five years after certification.

- Individuals who file taxes two or five years after certification contribute to the median employment income of the corresponding year.
- Median employment income is presented as two measures, including and excluding those with self-employment income. Percentages of tax-filers and non-self-employed tax-filers after two and five years are given in this table (37-10-0194-01).
- This table is most appropriate for comparisons with the Postsecondary Student Information System (PSIS).

Median employment incomes (longitudinal) are calculated at four years before certification, two years before certification, the year of certification, two years after certification and four years after certification for individuals who certified in selected trades.

- Individuals who filed taxes in the tax years corresponding to all five points in time contribute to these estimates. If one of the five points is missing, the individual is excluded. In the case where data are not yet available, the cohorts concerned will be included as preliminary data.
- For example, the income cohorts who certified for the last reference year (2018) will not have data for two and four years after certification. The table (37-10-0195-01) includes flags indicating cohorts for the preliminary release, and data for these cohorts will be revised as more data become available in the future.
- Median employment incomes are presented as two measures, including and excluding those with self-employment income. Percentages of tax-filers and non-self-employed tax-filers during this timeframe are given in this statistical table.
- This table is the most appropriate for measuring the progression of incomes over time.

The **progression of median employment income** is the percentage difference between the median employment income at certification and the median employment income at two and four years after certification.

4.2 Limitations of the income indicators

Income data for the RAIS tables (37-10-0194-01 and 37-10-0195-01) are obtained from the T1 Family File. These data may not necessarily reflect full-time or full-year employment, they do not account for the number of hours worked, and they do not necessarily reflect employment in the trades of interest. For more information on tax data, visit the T1 Family File.

Individuals who do not file taxes during the timeframes associated with the estimates are excluded from these income estimates. Percentages of tax-filers are provided in the RAIS tables (37-10-0194-01 and 37-10-0195-01) as important data quality indicators. The cross-sectional income table 37-10-0016-01 and the longitudinal income table 37-10-0017-01 were archived and replaced respectively by the tables 37-10-0194-01 and 37-10-0195-01. Some indicators values between both tables were not comparable, especially for cells where preliminary flags were raised.

Individuals with self-employment income are another consideration in tax data analysis. The 2011 Statistics Canada study "The financial well-being of the self-employed"[1] demonstrated that Canadians with only employment income are quite different from those with incorporated and non-incorporated self-employment income. Only individuals with non-incorporated self-employment income can be identified through current data holdings. Therefore, median employment incomes are presented as two measures, including and excluding those with non-incorporated self-employment incomes.

5. Geography and trades

Earning indicators are produced for all trades at the aggregated level and at the disaggregated level for some selected trades, including 25 Red Seal trades with the largest number of certifications in Canada. Estimates are available for Canada and all provinces, including the Atlantic region, and the Territories grouped together to obtain sufficient cohort sizes.

In Canada, apprenticeship programs and certifications in trades are administered by provincial and territorial jurisdictions. As a result, definitions that govern apprenticeship programs and the way data are reported to Statistics Canada can vary considerably across jurisdictions and across trades themselves. Thus, focusing on the most common Red Seal trades in Canada helps to reduce some of these administrative differences.

While some jurisdictions were able to contribute to the Canada-level results, some jurisdictional-level estimates or estimates for women may not be available because of small cohort sizes that fall below predetermined thresholds. These were specified to ensure estimates of acceptable quality and to ensure the confidentiality of the data.

Few estimates are available in the territories because of small cohort sizes. Quebec was excluded from the Canada- and provincial-level estimates on a number of occasions because of different administrative practices. For more information, see Appendix A and Appendix B of this document.

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1. LaRochelle-Coté, Sébastien and Uppal, Sharanjit. 2011. "The financial well-being of the self-employed." *Perspectives on Labour and Income.* Autumn 2011, vol. 23, no. 4. Statistics Canada Catalogue no. 75-001-XIE.

Appendix A – Individuals who completed an apprenticeship program

Trades and jurisdictions included for individuals who completed an apprenticeship program in the RAIS statistical tables 37-10-0195-01 for longitudinal and 37-10-0194-01 for cross-sectional

Selected 25 Red Seal trades[1]	Number of jurisdictions	Jurisdictions that contribute to the indicators available at the Canada level										
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.[7]	Man.	Sask.	Alta.	B.C.	Terr.
Agricultural equipment technician[2]	7	.	✓	✓	✓	.	✓	✓	✓	✓	.	.
Automotive service technician[2,3]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Bricklayer	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Carpenter	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Construction electrician	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cook[3]	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Crane operator[6]	10	✓	✓	✓	.	✓	✓	✓	✓	✓	✓	✓
Hairstylists and barbers[3,4]	9	✓	✓	.	.	✓	✓	✓	✓	✓	✓	✓
Heavy-duty equipment technician	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Industrial electrician[5]	9	✓	✓	✓	✓	✓	✓	✓	.	.	✓	✓
Industrial instrumentation and control technician[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Industrial mechanic (millwright)	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ironworker	8	✓	.	✓	✓	✓	✓	✓	.	✓	✓	.
Landscape horticulturist	8	.	✓	.	✓	✓	✓	✓	✓	✓	✓	.
Machinist	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Motor vehicle body repairer[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Painter and decorator	10	✓	.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Plumber[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Powerline technician[2]	9	✓	✓	✓	✓	.	✓	.	✓	✓	✓	✓
Refrigeration and air conditioning mechanic	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Roofer	9	.	.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sheet metal worker	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Steamfitter/pipefitter[2]	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Truck and transport mechanic[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Welder[3]	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Additional trades to better account for women following apprenticeship programs	Number of jurisdictions	Estimates made available only in the following jurisdictions										
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Terr.
Child and youth worker[6]	1	.	.	.	.	.	✓	.	.	.	.	.
Developmental service worker[6]	1	.	.	.	.	.	✓	.	.	.	.	.
Early childhood educator[6]	1	.	.	.	.	.	✓	.	.	.	.	.
Educational assistant[6]	1	.	.	.	.	.	✓	.	.	.	.	.
Esthetician[6]	3	.	.	.	.	✓	.	✓	✓	.	.	.

. not available for any reference period

1. While some jurisdictions were able to contribute to the Canada-level results, some jurisdictional-level estimates or estimates for women may not be available because of small cohort sizes that fall below predetermined thresholds. These were specified to ensure estimates of acceptable quality and to ensure the confidentiality of the data.

2. In Quebec, different administrative practices led to the following trades being excluded from the RAIS statistical tables (37-10-0194-01 and 37-10-0195-01):

   • **Agricultural equipment technician** — No certifications were recorded in the RAIS during the reference period.

   • **Automotive service technician** — Quebec does not provide data for this trade as a part of the RAIS.

   • **Industrial instrumentation and control technician** — No certifications were recorded in the RAIS during the reference period.

   • **Motor vehicle body repairer** — No certifications were recorded in the RAIS during the reference period.

   • **Powerline technician** — No certifications were recorded in the RAIS during the reference period.

   • **Truck and transport mechanic** — Apprenticeship training is not offered.

   The following two trades are still available for specific years:

   • **Plumber** — Few new registrations and certifications were recorded in the RAIS for individuals who completed an apprenticeship program. Therefore, they were removed from the data.

   • **Steamfitter/pipefitter** —Certifications for the reference period of 2008 were removed due to data quality issues.

3. In British Columbia, different administrative practices can have an impact on comparisons over time and with other jurisdictions for individuals who completed an apprenticeship program in the following trades:

   • **Automotive service technician —** In 2009, this four-year program was divided into four one-year programs, with certificates granted at the end of each year completed.

   • **Cook —** In 2009, this three-year program was divided into three one-year programs, with certificates granted at the end of each year completed.

   • **Hairstylist —** The Red Seal exam was not offered prior to 2014, which resulted in no certifications being granted for the reference periods of 2008 to 2013.

   • **Welder —** Apprentices who newly register in this trade have already completed the required training; certificates are therefore granted almost immediately upon registration for the reference periods of 2008 to 2010.

4. Hairstylist is not a designated trade in Nova Scotia or New Brunswick for individuals who completed an apprenticeship program. See Section 3.2 for the definition of a designated trade.

5. Industrial electrician is not a designated trade in Saskatchewan or Alberta. See Section 3.2 for the definition of a designated trade.

6. Not all trades included in the RAIS statistical tables (37-10-0194-01 and 37-10-0195-01) are Red Seal. Non–Red Seal trades include:

•Child and youth worker, developmental service worker, early childhood educator and educational assistant for individuals who completed an apprenticeship program in Ontario.

•Esthetician in Quebec, Manitoba and Saskatchewan.

•Crane operator is grouped by four sub-trades. The designation of these sub-trades vary across provinces and territories, with general trends being that mobile crane and tower crane operators are mostly Red Seal trades, while boom truck and wellhead hoist operators are mostly non-Red Seal trades.

7. Due to administrative practices, Ontario occasionally cleaned up some old registration records and issued multiple certifications on the same date, as such, the cohort size, median age at certification, and income indicators for some trades in certain reference periods can be affected.

Source: Statistics Canada, RAIS longitudinal (2008 to 2018).

Appendix B – Trade qualifiers

Trades and jurisdictions included for individuals who completed an apprenticeship program in the RAIS statistical tables 37-10-0195-01 for longitudinal and 37-10-0194-01 for cross-sectional

Selected 25 Red Seal trades[1]	Number of jurisdictions	Jurisdictions that contribute to the indicators available at the Canada level										
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Terr.
Agricultural equipment technician[2]	8	.	✓	✓	✓	.	✓	✓	✓	✓	✓	.
Automotive service technician[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Bricklayer	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Carpenter	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Construction electrician	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cook	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Crane operator[3,5]	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hairstylists and barbers	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heavy-duty equipment technician	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Industrial electrician[4]	9	✓	✓	✓	✓	✓	✓	✓	.	.	✓	✓
Industrial instrumentation and control technician[2]	9	✓	.	✓	✓	.	✓	✓	✓	✓	✓	✓
Industrial mechanic (millwright)	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ironworker[3]	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Landscape horticulturist	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Machinist	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Motor vehicle body repairer[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Painter and decorator	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Plumber	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Powerline technician[2]	9	✓	✓	✓	✓	.	✓	.	✓	✓	✓	✓
Refrigeration and air conditioning mechanic	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Roofer	10	.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sheet metal worker	9	✓	.	✓	✓	✓	✓	.	✓	✓	✓	✓
Steamfitter/pipefitter[2]	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	.
Truck and transport mechanic[2]	10	✓	✓	✓	✓	.	✓	✓	✓	✓	✓	✓
Welder	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Additional trades to better account for women following apprenticeship programs	Number of jurisdictions	Estimates made available only in the following jurisdictions										
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Terr.
Esthetician[5]	3	.	.	.	.	✓	.	✓	✓	.	.	.

. not available for any reference period

1. While some jurisdictions were able to contribute to the Canada-level results, some jurisdictional-level estimates or estimates for women may not be available because of small cohort sizes that fall below predetermined thresholds. These were specified to ensure estimates of acceptable quality and to ensure the confidentiality of the data.

2. In Quebec, different administrative practices led to the following trades being excluded from the RAIS statistical tables (37-10-0194-01 and 37-10-0195-01):

   • **Agricultural equipment technician** — No certifications were recorded in the RAIS during the reference period.

   • **Automotive service technician** — Quebec does not provide data for this trade as a part of the RAIS.

   • **Industrial instrumentation and control technician** — No certifications were recorded in the RAIS during the reference period.

   • **Motor vehicle body repairer** — No certifications were recorded in the RAIS during the reference period.

   • **Powerline technician** — No certifications were recorded in the RAIS during the reference period.

   • **Truck and transport mechanic** — Apprenticeship training is not offered.

   The following trade is still available for specific years:

   • **Steamfitter/pipefitter—** Certifications for the reference period of 2008 were removed due to data quality issues.

3. In Quebec, in 2013, different administrative practices had an impact on the number of certifications granted to trade qualifiers:

   • **Crane operators** — A regulatory change occurred for the construction industry since July 2013. According to the new regulation, a person who held a certificate of competence between May 1, 2007, and July 18, 2013, and met the hour's criteria could receive an exemption to the qualification examination, while extra regulations were required to receive a certificate as a crane operator since July 18 2013. Therefore, there were more certifications granted to trade qualifiers in 2013.

   • **Iron worker** — A regulatory change came into effect in 2013 which affects both Ornamental ironworkers and Structural steel erectors under the jurisdiction of the Commission de la construction du Québec. Workers in these two trades are now considered to be Ironworkers, which increase the number of certification for Other non-Red Seal trades. The impact of these changes is also felt in 2014 and 2015.

   • **Water and waste treatment plant operator** — A new trade under this category was submitted in 2013, which increased the number of certifications for non-Red Seal trades.

4. Industrial electrician is not a designated trade in Saskatchewan or Alberta. See Section 3.2 for the definition of a designated trade.

5. Not all trades included in the RAIS statistical tables (37-10-0194-01 and 37-10-0195-01) are Red Seal. Non–Red Seal trades include:

   • Esthetician in Quebec, Manitoba and Saskatchewan.

   • Crane operator is grouped by four sub-trades. The designation of these sub-trades vary across provinces and territories, with general trends being that mobile crane and tower crane operators are mostly Red Seal trades, while boom truck and wellhead hoist operators are mostly non-Red Seal trades.

Source: Statistics Canada, RAIS longitudinal (2008 to 2018).