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

## Pathways indicators for registered apprentices in Canada, 2008 to 2018

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# Pathways indicators for registered apprentices 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 at Statistics Canada website <https://www.statcan.gc.ca/eng/rdc/data> (type "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, the RAIS produces cross-sectional statistics on registrations in apprenticeship programs and certifications in trades.

The annual RAIS files from 2008 to 2018 were linked longitudinally to themselves to produce longitudinal indicators on apprenticeship training.

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](#). For more information on tax data, visit the [T1 Family File](#).

### 3.2 Concepts used by the Registered Apprenticeship Information System

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

**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.

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

**New registrations** occur when individuals register in a new apprenticeship training program during the reference period.

**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 the Red Seal standards receive a Red Seal endorsement on their provincial or territorial trade certificates.

The Canadian Council of Directors of Apprenticeship (CCDA) have identified 56 Red seal trades at the national level. Provinces and territories are responsible for the administration of these trades, and as such the availability of training and exams can vary across jurisdictions.

**Certification**- In order to work unsupervised in a number of trades in Canada, it is necessary to be a certified journeyman. Requirements for obtaining such a designation vary widely across jurisdictions as well as across the trades themselves. In most instances, apprentices become certified journeymen after completing such requirements as supervised on-the-job training, technical training as well as passing one or more examinations.

### 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 Pathway indicators, which do not contain confidential information. To this effect, all indicators with rounded cohort sizes less than 20 were suppressed<sup>1</sup>.

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.

Margins of error caused by rounding and suppression because of small cohort sizes are well documented in the RAIS statistical table (37-10-0193-01).

## 4. Methodology of the apprenticeship pathway indicators

The primary purpose of the apprenticeship pathways component is to produce a set of indicators on how well apprentices are faring during their apprenticeship training. The purpose of this section is to define these indicators and to inform data users of their limitations.

### 4.1 Indicator definitions

**Pathways cohort:** a group of apprentices that are newly registered for an apprenticeship program during the given calendar year.

The following indicators are all measured at the program duration, one and a half times program duration<sup>2</sup>, and twice the program duration. For example, an apprentice registered in a four year program will have each indicator measured at four, six, and eight years.

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1. Suppressions were implemented after aggregating datasets. This broadly maintains the correspondence between the reported and unrounded estimates, yet in conjunction with rounding procedures may yield discrepancies between reported and summed values.

2. When one and a half times program duration is not an integer, they are rounded up. For example, the program outcome is measured at five years after registration as one and a half times program duration for apprentices registered in a three-year program. For this reason, indicators for apprentices in one-year programs have the same values for one and a half times program duration and for twice the program duration, as both indicators measure outcomes two years after registration.

As apprenticeship programs are administered by provinces and territories, program durations can vary across jurisdictions. When this occurs, the reported duration is used to create the indicators and the most commonly reported program duration is displayed in the statistical table (37-10-0193-01).<sup>3</sup>

**Certification rate:** the percentage of newly registered apprentices (pathways cohort) that received a certificate.

**Continuation rate:** the percentage of newly registered apprentices (pathways cohort) that are still registered.

**Discontinuation rate:** the percentage of newly registered apprentices (pathways cohort) that discontinued a given apprenticeship program.

**Median time to certification:** the median time it takes from registration to receive certification within a program.

**Median time to discontinuation:** the median time it takes since registration to discontinue a program.

**Median age at registration:** the median age of pathways cohorts at registration.

**Median age at certification:** the median age at certification for those who certify within a program.

## 4.2 Limitations of the apprenticeship pathway indicators

### 4.2.1 Provincial and territorial variations

Apprenticeship programs are administered by provinces and territories. Each province and territory works with its respective industries to customize its programs to address the specific labour market demands and the training needs of its workers.

Furthermore, apprenticeships are primarily work-based training, and different employers offer different work experiences and contexts for learning. As a result, apprenticeship programs for the same trade may differ across jurisdictions. For instance, to receive a certificate in the same trade, one jurisdiction may offer a four-year program while another offers a three-year program. One jurisdiction may classify a trade as compulsory while another classifies it as voluntary. One jurisdiction may offer the interprovincial Red Seal endorsement for the trade while another may only offer provincial certification. Some jurisdictions may provide apprentices with a certificate as they reach each level of a program, while others may provide just one certificate when apprentices have successfully completed all levels and the certification exam. Jurisdictions may have different apprentice-to-journeyman ratios. These differing administrative practices can make it more difficult to compare certification rates between jurisdictions and across the trades themselves.

### 4.2.2 Certification versus employment

Workers are not required to undertake or complete apprenticeship programs to practise voluntary trades. It is common for workers to practise certain voluntary trades after receiving some apprenticeship training, without obtaining a certificate. Results from the 2015 National Apprenticeship Survey (NAS) suggest that many apprentices who discontinued voluntary programs (e.g., Cook, Carpenter and Heavy-duty equipment technician programs) were still employed in a job related to their trade after leaving their programs.

### 4.2.3 Varying economic realities

Employers play an important role in supporting apprentices throughout their programs. For instance, apprentices may require regular leave from work to attend technical in-class training. Employers also have to sign off on the fulfillment of all requirements (hours and/or skills) before apprentices can seek certification. Finding and maintaining employment that provides the required hours and scope of practice affect apprentices' ability to obtain a certificate. Any interprovincial or trade-level comparison should take into account the varying economic realities that exist across jurisdictions and across the trades themselves.

3. Although it contains the same set of indicators, due to revisions in methodologies, indicators in Table 37-10-0001-01, which is archived on December 9<sup>th</sup>, 2020, are not directly comparable to indicators in Table 37-10-0193-01. To produce Canada-level indicators, program durations were standardized at the trade and jurisdiction level in 37-10-0001-01, while updated methodology now allows program duration to vary by individual apprentices within the same jurisdiction and trade.

## 5. Geography and trades

Apprenticeship indicators are available for all Red seal and non-Red seal trades at the aggregated level. Detailed trade level data is available for selected trades, including 25 Red Seal<sup>4</sup> trades and 5 non-Red seal trades, which account for the majority of apprentices in Canada. Estimates are available for Canada and all provinces, including the Atlantic Region, and the territories grouped together to obtain sufficient cohort sizes.

Appendix A of this document contains a complete list of the trades for which detailed indicators are available in the RAIS statistical table (37-10-0193-01).

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 the trades themselves. The certification of a trade as Red seal or non-Red seal may also vary by jurisdiction. Focusing on the most common Red Seal trades in Canada helps to reduce some of these jurisdictional differences.

Estimates at the Canada and jurisdictional levels are available for selected 25 Red Seal trades and 5 non-Red Seal trades as well as aggregated trade groups. All jurisdictions where these are designated trades contribute to the Canada-level estimates. Some jurisdictional estimates may not be available because of small cohort sizes that fall below predetermined thresholds. Predetermined thresholds were specified to ensure estimates of acceptable quality and to ensure data confidentiality. For more information see Appendix A of this document.

Five non-Red Seal trades, which were provided in some jurisdictions, are included to better account for women in apprenticeship program. Child and youth worker, developmental service worker, early childhood educator and educational assistant are available only in Ontario, and esthetician is available in Quebec, Saskatchewan and Manitoba.

Few estimates are available in the territories because of small cohort sizes. Quebec and British Columbia were excluded from the Canada and provincial-level estimates for certain trades because of different administrative practices. For more information, see Appendix A of this document.

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4. The 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 the Red Seal standards receive a Red Seal endorsement on their provincial or territorial trade certificates.



## Appendix A

### Trades and jurisdictions included in the RAIS statistical table (37-10-0193-01)

Selected 25 Red Seal trades <sup>1</sup>	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.	Territories
Automotive service technician <sup>2,3</sup>	9	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Agricultural equipment technician <sup>2</sup>	8	.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	.
Bricklayer	10	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	.
Carpenter	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Construction electrician	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Cook <sup>2,3</sup>	10	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	.	Territories
Crane operator <sup>2,6</sup>	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Hairstylists and barbers <sup>3,4</sup>	9	N.L.	P.E.I.	N.S.	.	Que.	Ont.	Man.	Sask.	Alta.	.	Territories
Heavy-duty equipment technician <sup>2</sup>	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Landscape horticulturist <sup>2</sup>	10	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	.
Industrial electrician <sup>2,5</sup>	9	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	.	.	B.C.	Territories
Industrial instrumentation and control technician <sup>2</sup>	10	N.L.	P.E.I.	N.S.	N.B.	.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Industrial mechanic (millwright) <sup>2</sup>	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Ironworker	10	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	.
Machinist <sup>2</sup>	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Motor vehicle body repairer <sup>2</sup>	10	N.L.	P.E.I.	N.S.	N.B.	.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Painter and decorator	10	N.L.	P.E.I.	.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Powerline technician <sup>2</sup>	9	N.L.	P.E.I.	N.S.	N.B.	.	Ont.	.	Sask.	Alta.	B.C.	Territories
Plumber <sup>2</sup>	10	N.L.	P.E.I.	N.S.	N.B.	.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Refrigeration and air conditioning mechanic	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Roofer	9	.	.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Sheet metal worker	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Steamfitter/pipefitter <sup>2</sup>	11	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Truck and transport mechanic <sup>2</sup>	10	N.L.	P.E.I.	N.S.	N.B.	.	Ont.	Man.	Sask.	Alta.	B.C.	Territories
Welder <sup>2,3</sup>	10	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	.	Territories
Additional trades to better account for women following apprenticeship programs	Number of jurisdictions	Estimates made available only in the following jurisdictions										
Child and youth worker <sup>6,7</sup>	1	.	.	.	.	.	Ont.	.	.	.	.	.
Developmental service worker <sup>6,7</sup>	1	.	.	.	.	.	Ont.	.	.	.	.	.
Early childhood educator <sup>6,7</sup>	1	.	.	.	.	.	Ont.	.	.	.	.	.
Educational assistant <sup>6,7</sup>	1	.	.	.	.	.	Ont.	.	.	.	.	.
Esthetician <sup>6,7</sup>	3	.	.	.	.	Que.	.	Man.	Sask.	.	.	.

. 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 table (37-10-0193-01):

**Agricultural equipment technician** — Apprenticeship training is not available in Quebec.

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

**Industrial instrumentation and control technician** — Apprenticeship training is not available in Quebec.

**Motor vehicle body repairer** — the Red Seal program for auto body and collision technician is not available in Quebec.

**Powerline technician** — Apprenticeship training is not available in Quebec.

**Truck and transport mechanic** — Apprenticeship training is not available in Quebec.

**Plumber** — Few new registrations and certifications were recorded in the RAIS during the reference period.

Quebec data is included, but does not record discontinuations for cooks, crane operators, hairstylists and barbers, industrial electricians, landscape horticulturists, welders, and machinists. This results in low discontinuation rates and high continuation rates. The aggregated discontinuation and continuation levels are affected by these administrative practices

3. In British Columbia, different administrative practices led to the following trades being excluded from the RAIS statistical table (37-10-0193-01):

**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); this has an impact on comparisons over time and with other jurisdictions.

**Cook** — In 2009, this three-year program was divided into three one-year programs (with certificates granted at the end of each year completed); this has an impact on comparisons over time and with other jurisdictions.

**Hairstylist** — The Red Seal exam was not offered prior to 2014, which resulted in virtually no certifications being granted in this province during the reference period.

**Welder** — Apprentices who newly register in this trade in British Columbia have already completed the required training; certificates are therefore granted almost immediately upon newly registering.

4. Hairstylist is not a designated trade in New Brunswick. See Section 3 for the definition of a designated trade.

5. Industrial electrician is not a designated trade in Saskatchewan or Alberta. See Section 3 for the definition of a designated trade.

6. Not all trades included in the RAIS statistical table (37-10-0193-01) are Red Seal. Non-Red Seal trades include:

Ontario: child and youth worker, developmental service worker, early childhood educator and educational assistant.

Quebec, Manitoba, and Saskatchewan: Esthetician.

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

7. Child and youth worker, developmental service worker, early childhood educator and educational assistant are designated trades only in Ontario, while esthetician is only a designated trade in Quebec, Manitoba and Saskatchewan. See Section 3 for the definition of a designated trade.

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