



Canada's Health Care Providers, 2014 to 2018

Methodology Notes



Canadian Institute
for Health Information

Institut canadien
d'information sur la santé

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Health workforce information at CIHI

The Canadian Institute for Health Information (CIHI) collects and reports health workforce data to support federal, provincial and territorial workforce planning and policy development and to assist decision-makers in the planning and distribution of the health workforce. CIHI collects and reports data on 30 groups of health care providers in Canada.

For 8 of these provider groups, data is available at the record level; for the other 22, data is available at the aggregate level. Record-level data collection offers information on the supply, distribution, demographic, education, employment and practice characteristics of health care providers; aggregate-level collection offers information on their supply, distribution and demographics.

The following health workforce products are available on [CIHI's website](#):

- [Canada's Health Care Providers, 2014 to 2018 — Data Tables](#)
- [Nursing in Canada, 2018](#) (report, data tables, infographic, methodology notes)
- [Physicians in Canada, 2018](#) (report, data visualization, data tables, historical data, methodological notes, Quick Stats)
- [Health Workforce, 2018](#) (data tables on occupational therapists, physiotherapists and pharmacists in Canada, methodology guide, indicators)

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About this document

This document summarizes the basic concepts, data sources, data definitions, strengths and limitations of the data available in *Canada's Health Care Providers, 2014 to 2018 — Data Tables*. It helps readers better understand the health workforce data presented in the data tables, compare with other data sources and look at trends over time.

Data availability

Health care provider groups

CIHI's Health Workforce Database (HWDB) collects data for 30 health care provider groups in Canada. Longitudinal trends for some health care provider groups are available since 1988, although data availability may vary by province and territory and by year.

Table 1 Health care provider group and first year of data collection at CIHI

Health care provider group	First year of data collection at CIHI
Audiologists	2001
Chiropractors	1988
Dental assistants	2011
Dental hygienists	1988
Dentists	1988
Dietitians	1988
Environmental public health professionals	1999
Genetic counsellors	2011
Health information management professionals	1988
Licensed practical nurses	2002
Medical laboratory technologists	2008
Medical physicists	1992
Medical radiation technologists	2008
Midwives	1996
Nurse practitioners	2003
Occupational therapists	2006
Opticians	2011

Health care provider group	First year of data collection at CIHI
Optometrists	1988
Paramedics	2011
Pharmacists	2006
Pharmacy technicians	2012
Physician assistants	2013
Physicians	1978
Physiotherapists	2007
Psychologists	1988
Registered nurses	1980
Registered psychiatric nurses	2002
Respiratory therapists	1988
Social workers	1988
Speech–language pathologists	2001

Canada's Health Care Providers, 2014 to 2018 — Data Tables provides 5-year trends for most of the above health care providers, where data is available. Additional years of data can be requested by emailing hhr@cihi.ca.

Due to unregulated status across all provinces and territories, data on environmental public health professionals, genetic counsellors, health information management professionals and medical physicists is not available in *Canada's Health Care Providers, 2014 to 2018 — Data Tables*. Data on opticians is also not available in this publication due to limited data availability. CIHI will continue to evaluate data quality for these groups of providers as annual data collection continues. If you are interested in data on these groups of providers, please email the Health Workforce Information team at hhr@cihi.ca.

Nurse practitioners and registered nurses have distinct scopes of practice. For the first time, *Canada's Health Care Providers, 2014 to 2018 — Data Tables* presents data on nurse practitioners separate from that for registered nurses. The data presented in the data tables for these health care providers may not match data in other CIHI publications.

Variables collected

CIHI endeavours to collect annual data for the variables listed below for all 30 of the health care provider groups previously listed. The accompanying descriptions are used as tools to standardize data collection and reporting.

Table 2 Variables collected for health care provider groups

Name of variable	Description
Supply	<p>Number of all active members registered with a regulatory body who were eligible to practise in the given year. This includes those employed and those not employed at the time of registration.</p> <p>In some cases, supply may reflect only those active members who were employed in the specific health profession; in others, it may reflect those with various registration statuses, such as inactive, on leave or retired.</p> <p>For the health care provider groups that are not regulated in a province or territory, the supply refers to the number of health care providers who had a membership with a professional association. Most often the membership with a professional association is voluntary; therefore, the number of health care providers may be under-represented and should be interpreted with caution.</p>
Sex	Number of health care providers in the supply count that indicated their sex as male, female or undifferentiated.
5-year age groups	Number of health care providers in each 5-year age group for the supply count. Note that this data is available for some providers only and can be obtained by contacting the Health Workforce Information team at hhr@cihi.ca .
Average age	Calculated by adding age for all registrants in the supply, divided by the total number of registrants in the supply.
Health care provider group-to-population ratio	<p>Calculated using the following formula:</p> <ul style="list-style-type: none"> • Numerator: Number of health care providers in a province/territory • Denominator: Number of people (total population) in the province/territory for which the supply was available <p>Population data is obtained from Statistics Canada. As historical population estimates are revised by Statistics Canada annually, historical health care provider group-to-population ratios are revised as well. Therefore, the ratios presented in the most recent publication may differ from ratios presented in previous publications.</p>

Data collection period

CIHI endeavours to collect data on the number of registrations or memberships received from January 1 until December 31 of the given year. Note that registration periods may vary among health care provider groups and across jurisdictions. Not all data providers are able to submit data on all registrations/memberships for the respective year to CIHI, as their registration periods may vary from the CIHI data collection period.

Data sources

The following types of data sources are used for aggregate data in the HWDB:

- For most health care provider groups, the primary data sources are provincial and territorial regulatory bodies; national, provincial and territorial professional associations; and governments.
- Aggregate data on regulated nurses, occupational therapists, pharmacists (with the exception of Quebec and Nunavut), physiotherapists and physicians is sourced from CIHI's record-level databases.
- For more information on data sources, please email us at hhr@cihi.ca.

Data quality

CIHI is founded on the principles of data quality, privacy and confidentiality. Data collection, processing, analysis and dissemination are guided by CIHI's commitment to publish high-quality data in a privacy-sensitive manner. Data quality methodologies are used to maximize the accuracy, comparability, timeliness, usability and relevance of the health workforce data. Below are key factors that influence data quality in the HWDB.

Regulation status

Whether a health care profession is regulated in a province or territory has a significant impact on data collection and the completeness of the data. Regulated health care professions are governed by a legislative framework, which establishes health regulatory organizations that regulate the professions in the public's interest.

All regulated health care providers are required to register with their respective regulatory body to obtain an annual licence to practise in their province or territory. For the regulated health care provider groups, where possible, CIHI endeavours to collect data on the number of health care providers from their respective provincial or territorial regulatory bodies.

Non-regulated health care providers typically acquire a voluntary annual membership with their professional association. For the non-regulated health care provider groups, CIHI endeavours to collect data on the number of health care providers who had a membership with such professional associations. Most often the membership with a professional association is voluntary; therefore, the number of non-regulated health care providers in CIHI's HWDB may be under-represented.

[The appendix](#) lists the first year of regulation and identifies the non-regulated professions by jurisdiction, for the 30 groups of health care providers that CIHI collects data on.

Under-coverage and over-coverage

There are a few potential sources of under-coverage:

- CIHI's collection timelines do not necessarily align with data providers' year-end data processing. As a result, the data reported may not reflect the total number of registrations for that year, because more registrations may occur after data has already been submitted to CIHI.
- When membership in a professional association is voluntary, a certain percentage of the health care providers in that profession may not register. Therefore, the number of health care providers may be under-represented.
- It may not be known whether the provincial or territorial legislation provides for the exclusive provision of services falling within a particular scope of practice or simply reserves the use of certain titles. If legislation protects only specific titles (e.g., registered social worker), then individuals practising under a slightly different title may not be covered by legislation. As a result, health care providers may not be required to register as a condition of practice. Data collected within this regulatory environment would potentially under-count the number of providers.

There are a few potential sources of over-coverage:

- Possible over-counting may occur for the supply of various health care provider groups in the territories, as these may include temporary or relief workers who may not permanently reside or provide services in the territories.
- CIHI aims to collect data on all active health care providers who are registered with a regulatory body and who are eligible to practise in a given year. For the health care provider groups that are not regulated in a province or territory, CIHI collects similar data on individuals who had a membership with a professional association. In some cases, the regulatory bodies or professional associations submit data on various registration/membership types (including inactive, on leave and retired), leading to potential over-counting of health care providers.

- The inability to identify providers consistently and uniquely at a national level is a barrier to integrating information across jurisdictions. National yearly totals for the same health care provider group may double-count individuals registered in more than one province or territory or in more than one profession. This effect is compounded when health care providers from separate professions are added together.

Comparability over time

Historical changes or variations in data submitted across jurisdictions, professions or years have an impact on the comparability of data. CIHI, in collaboration with data providers, is continually striving to improve comparability and hence data quality.

The table below provides information on health care provider groups that had data quality improvements or changes in data years 2014 to 2018 that may affect comparability. Any time series changes must be interpreted carefully, as they may reflect changes in the data collection and submission process.

Table 3 Data quality considerations, 2014 to 2018

Health care provider group	Province/territory	Data quality considerations
Licensed practical nurses (LPNs)	Quebec	In 2015, a new entry-to-practice exam was implemented for LPNs in Quebec. According to the Ordre des infirmières et infirmiers auxiliaires du Québec (OIIAQ), this may have contributed to a decline in new registrants since 2015.
	Alberta	The LPN supply in Alberta increased between 2017 and 2018. According to the College of Licensed Practical Nurses of Alberta (CLPNA), the fluctuation is due to the implementation of a new database and an increase in membership. The CLPNA is working to rectify these issues for 2019.
Medical radiation technologists (MRTs)	Ontario	As of January 1, 2018, the College of Medical Radiation Technologists of Ontario (CMRTO) was given the authority to regulate diagnostic medical sonography as a fifth specialty in addition to the previous 4 specialties of magnetic resonance imaging, nuclear medicine, radiation therapy and radiological technology. The increased number of MRTs in Ontario in 2018 is a result of adding diagnostic medical sonographers.

Health care provider group	Province/territory	Data quality considerations
Midwives	Manitoba	The change in the number of midwives in Manitoba may be partially attributed to changes in registration type for the supply data. Data from 2014 to 2016 represents the number of registered practising midwives, data for 2017 represents the number of all registered midwives (includes active, inactive, on-leave and retired registration status) and 2018 data represents active registered midwives (includes those who were eligible to practise in the given year, including those employed and those not employed at the time of registration).
	Nunavut	The 2018 data for midwives in Nunavut may include midwives working in casual and/or contract positions.
Nurse practitioners (NPs)	Quebec	The number of NPs in Quebec increased over the past 5 years. According to the Ordre des infirmières et infirmiers du Québec (OIIQ), the growth among NPs in Quebec is primarily a result of the implementation of NP legislation in 2006. Since that time, the ministère de la Santé et des Services sociaux du Québec (MSSS) has introduced a workforce strategy with a goal of 2,000 NPs in Quebec by the year 2025. As a result, universities in Quebec, in collaboration with other partners, are increasing enrolment in NP programs.
	Northwest Territories	The number of NPs in the Northwest Territories decreased between 2017 and 2018. The decline in the number of NPs is attributed to the nature of the work in the Northwest Territories.
Paramedics	Saskatchewan	A change in qualifying criteria for maintaining regulatory status for emergency medical technicians and primary care paramedics may have contributed to the decline in the number of paramedics in Saskatchewan in 2018.
	New Brunswick	Possible over-counting may occur for the number of paramedics in New Brunswick, as it may include military paramedics in training from across the country in Moncton who may not permanently reside or provide services in New Brunswick.
Pharmacy technicians	Multiple provinces	Growth in the number of pharmacy technicians in various provinces may be attributed to recent regulatory changes for the profession.
Physiotherapists (PTs)	Quebec	The increase in the number of PTs in Quebec between 2017 and 2018 may be partially attributed to the implementation of a new database.
Psychologists	Prince Edward Island	New data on psychologists in P.E.I. from 2014 to 2018 was submitted by the PEI Psychologists Registration Board. Thus data for psychologists in P.E.I. reported in this publication may not match data in other CIHI publications.

Health care provider group	Province/territory	Data quality considerations
Registered nurses (RNs)	New Brunswick	The number of RNs in New Brunswick decreased between 2015 and 2016. According to the Nurses Association of New Brunswick (NANB), the fluctuation is due to an increase in outflow and a decrease in initial registrations.
	Northwest Territories and Nunavut	The number of RNs in the Northwest Territories and Nunavut decreased between 2017 and 2018. The decline in the number of RNs is attributed to the nature of the work in the Northwest Territories and Nunavut.
Respiratory therapists	Quebec	The decrease in the number of respiratory therapists in Quebec from 2017 to 2018 may be partially attributed to the change in registration type for the Quebec supply data. Data until 2017 represents the number of all registered respiratory therapists, both active and non-active. The 2018 data represents the number of active registered respiratory therapists only.
Social workers	Manitoba	Growth in the number of social workers in Manitoba between 2015 and 2016 corresponds with the start of mandatory registration for the profession with the Manitoba College of Social Workers.

Caution must be exercised when comparing change over time at both the provincial/territorial and national levels, as some data may have been submitted by data providers using varying supply definitions or collected under different regulatory environments from different data sources or at different time points during a given year.

Statistics reported in this publication may differ from those reported in other CIHI publications or by other organizations, even though the source of the data may be the same. Differences may be attributed to variations in the population of reference or the data collection period.

Privacy and confidentiality

The protection of individual privacy, the confidentiality of records and the security of information are essential to CIHI's operations. In support of this position, CIHI established a comprehensive privacy, confidentiality and security program. A key element of the program is the statement of principles and policies set out in the document *Privacy Policy on the Collection, Use, Disclosure and Retention of Health Workforce Personal Information and De-Identified Data, 2011*. A copy of this document is available free for download from CIHI's website at cihi.ca.

The HWDB does not collect, use or disclose personal information. The aggregate data collected may contain small cell sizes. However, in keeping with Section 32 of the Health Workforce Privacy Policy, 2011, CIHI makes statistical information publicly available only in a manner designed to minimize any risk of identifiability and residual disclosure of personal information about individuals.

Appendix: Health care providers, first year of regulation, by province and territory, 2018

Health care provider group	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.
Audiologists	2013	n/r	2015	1987	1964	1994	1961	1992	2002	2010	n/r	n/r	n/r
Chiropractors	1992	1962	1972	1958	1974	1925	1945	1943	1923	1934	1986	n/r	n/r
Dental assistants	1995	1998	1976	1987	n/r	n/r	2007	1971	1990	1968	n/r	n/r	n/r
Dental hygienists	1969	1974	1973	2009	1975	1993	2005	1951	1990	1952	1958	1990	1999
Dentists	1893	1891	1891	1890	1869	1867	1883	1906	1906	1886	1958	1988	1999
Dietitians	1965	1994	1998	1988	1956	1994	1982	1958	2000	2004	n/r	n/r	n/r
Environmental public health professionals	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Genetic counsellors	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Health information management professionals	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Licensed practical nurses	1983	1959	1957	1960	1974	1947	1946	1956	1986	1988	1987	1988	2011
Medical laboratory technologists	2012	n/r	2004	1992	1973	1994	2007	1996	2002	n/r	n/r	n/r	n/r
Medical physicists	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Medical radiation technologists	n/r	n/r	1967	1958	1973	1980	n/r	1978	1986	n/r	n/r	n/r	n/r
Midwives	2016	n/r	2009	2016	1999	1994	2000	2008	1998	1998	n/r	2005	2011
Nurse practitioners	1997	2006	2002	2002	2003	1997	2005	2003	2002	2005	2013	2004	2004
Occupational therapists	1987	1976	1972	1997	1973	1993	1971	1971	1990	2000	n/r	n/r	n/r
Opticians	1982	1974	2005	1976	1973	1991	1953	2011	1965	2010	n/r	n/r	n/r
Optometrists	1928	1922	1921	1921	1909	1919	1909	1911	1920	1921	1959	1988	1999

Health care provider group	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.
Paramedics	2010	2013	2015	2006	2015	1990	2018	2009	2008	1974	n/r	n/r	n/r
Pharmacists	1910	1905	1876	1884	1875	1871	1878	1911	1911	1891	1986	1953	1999
Pharmacy technicians	2012	2014	2011	2015	n/r	2010	2014	2015	2011	2011	n/r	n/r	n/r
Physician assistants	n/r	n/r	n/r	2009	n/r	n/r	1999	n/r	2016	n/r	n/r	n/r	n/r
Physicians	1893	1871	1828	1816	1848	1795	1871	1885	1885	1867	1958	1885	1999
Physiotherapists	1970	1973	1959	1960	1973	1953	1956	1945	1985	1946	2007	n/r	n/r
Psychologists	1988	1991	1981	1967	1962	1960	1966	1997	1960	1977	n/r	1988	1999
Registered nurses	1954	1949	1910	1916	1946	1922	1913	1967	1916	1918	1994	1973	1999
Registered psychiatric nurses	n/a	n/a	n/a	n/a	n/a	n/a	1960	1948	1955	1951	2009	n/a	n/a
Respiratory therapists	2012	n/r	2007	2009	1985	1991	1981	2008	1988	n/r	n/r	n/r	n/r
Social workers	1994	1988	1994	1989	1960	2000	2009	1995	2003	2008	n/r	2012	n/r
Speech–language pathologists	2013	n/r	2015	1987	1964	1994	1961	1992	2002	2010	n/r	n/r	n/r

Notes

n/r: Not regulated as of 2018.

n/a: Not applicable.

Source

Health Workforce Database, Canadian Institute for Health Information.

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