Canada’s Health Care Providers, 1997 to 2011—
A Reference Guide

Overview and Methodological Notes
Our Vision
Better data. Better decisions.
Healthier Canadians.

Our Mandate
To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

Our Values
Respect, Integrity, Collaboration, Excellence, Innovation
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About the Canadian Institute for Health Information

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada and makes it publicly available. Canada’s federal, provincial and territorial governments created CIHI as a not-for-profit, independent organization dedicated to forging a common approach to Canadian health information. CIHI’s goal is to provide timely, accurate and comparable information. CIHI’s data and reports inform health policies, support the effective delivery of health services and raise awareness among Canadians of the factors that contribute to good health.

For more information, visit our website at www.cihi.ca.

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Acknowledgements

The Canadian Institute for Health Information (CIHI) would like to acknowledge and thank the many individuals and organizations that contributed to the development of this report. The Health Human Resources department at CIHI appreciates the contributions and support of our data providers and organizations that make this publication possible. Without their efforts and collaboration, a national health personnel database for Canada could not exist. A complete list of the data sources is available in Appendix B.

We would like to sincerely thank the provincial and territorial regulatory bodies, provincial and territorial associations, national professional associations and participating universities and colleges.

We also wish to extend our thanks and gratitude to all health care providers who work with Canadians to improve their quality of life.

This report represents the work of CIHI staff within the Health Human Resources department. The Health Personnel Database (HPDB) core project team responsible for the development of this report includes

- Michael Gaucher, Director, Pharmaceuticals and Health Workforce Information Services
- Paul Sajan, Manager, Health Human Resources
- Julie Goulet, Program Lead
- Lan Wang, Senior Analyst
- Yasmine Léger, Analyst
- Raina Helen Armstrong, Co-Op Student
- Qiaoyi (Oscar) Sun, Co-Op Student

This report could not have been completed without the ongoing and generous support of many other CIHI program areas and staff members.
About CIHI’s Health Personnel Database

The Health Personnel Database (HPDB) at the Canadian Institute for Health Information (CIHI) is a national database that contains supply and graduate information on 27 groups of health professionals. At a minimum, data represents the number of members registered with regulatory authorities and/or voluntary professional associations in each province/territory. Where possible, the HPDB also includes more specific information on the number of professionals who are actively employed. Additional information includes gender, age group and education data, where available.

The HPDB contains information on the following 27 groups of health professionals in Canada:

- Audiologists
- Chiropractors
- Dental Assistants—New
- Dental Hygienists
- Dentists
- Dietitians
- Environmental Public Health Professionals
- Health Information Management Professionals
- Licensed Practical Nurses
- Medical Laboratory Technologists
- Medical Physicists
- Medical Radiation Technologists
- Midwives
- Nurse Practitioners
- Occupational Therapists
- Opticians—New
- Optometrists
- Paramedics—New
- Pharmacists
- Physicians
- Physiotherapists
- Psychologists
- Registered Nurses
- Registered Psychiatric Nurses
- Respiratory Therapists
- Social Workers
- Speech–Language Pathologists

The HPDB publishes information in two reports:

- *Canada’s Health Care Providers—A Reference Guide*: reports the most recent 15-year trends by group of health professionals (released every two years); and
- *Canada’s Health Care Providers—Provincial Profiles*: presents profession-specific data grouped by province (released annually).
Summary

Canada’s Health Care Providers, 1997 to 2011—A Reference Guide provides aggregate, supply-based data and graduate information for 27 groups of health professionals by province/territory and by year. This report also includes information on entry-to-practice requirements and, for the first time, presents information on training capacity.

Three new groups of professionals have been added to this edition: dental assistants, opticians and paramedics.

This publication consists of two parts: an overview and methodological notes (this document) and professional-specific Excel workbooks.

To facilitate provincial and national comparative analysis of HPDB data, CIHI also produced Canada’s Health Care Providers—2011 Provincial Profiles as a companion product to the reference guide, presenting health personnel data grouped by province.

Health Care Workforce Continues to Grow

- From 1997 to 2011, the number of providers increased for most health professions in Canada. The increase ranged from 15% for medical laboratory technologists to 163% for social workers.
- Together, nursing professionals and physicians represented more than half of the health workforce. However, most groups of health professionals grew at a faster rate than nurses and physicians over this period.

Number of Health Care Graduates Continues to Increase

- Overall, the number of graduates of health care programs increased over the past 15 years, particularly in the midwifery (300% increase) and psychiatric nursing (208% increase) programs.

Demographics of Health Professions Are Changing

- An increasing number of women are working in health professions typically dominated by men. Between 1997 and 2011, the number of female dentists increased by 157%, the number of female general practitioners increased by 64% and the number of female ambulance attendants increased by 44%.
- In general, more females graduated in 2011 than 15 years ago. In 1997, for example, 42% of the 152 chiropractor graduates were female; in 2011, the figure was 56%.
Overview

Becoming a Health Care Provider in Canada

How do people become health care providers in Canada? For many health professions, formal education is often the entry point into practice. The entry-to-practice requirements for different health professions vary from a diploma to a doctorate depending on the profession. The length and requirements of the education programs may also vary. Program requirements may differ among provinces and territories and/or regulatory bodies within a health profession. When a profession is regulated in a province/territory, it is mandatory to register with a provincial/territorial licensing body as a condition of practice. Table 1 summarizes licensure/certification requirements for selected health professionals.

<table>
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<th>Professionals</th>
<th>Minimum Education Required</th>
<th>Internship/ Clinical Practicum</th>
<th>National Exam†</th>
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<td>Master’s</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Chiropractors</td>
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<td>✓</td>
</tr>
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<td>Certificate</td>
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<tr>
<td>Dental Hygienists</td>
<td>Diploma</td>
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<td>✓</td>
</tr>
<tr>
<td>Dentists</td>
<td>Professional Doctorate</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dietitians</td>
<td>Bachelor’s</td>
<td>✓</td>
<td>✓</td>
</tr>
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<td>Environmental Public Health Professionals</td>
<td>Bachelor’s</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Health Information Management Professionals</td>
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<td>✓</td>
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<td>Diploma</td>
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<td>Medical Laboratory Technologists</td>
<td>Diploma</td>
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<td>✓</td>
</tr>
<tr>
<td>Medical Physicists</td>
<td>Master’s or Doctorate</td>
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<td>✓</td>
</tr>
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<td>✓</td>
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<td>Bachelor’s</td>
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<td>Optometrists</td>
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Table 1: Licensure/Certification Requirements, by Selected Groups of Health Professionals,* Canada, 2012 (cont’d)

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<th>Internship/ Clinical Practicum</th>
<th>National Exam‡</th>
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<td>Registered Psychiatric Nurses</td>
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<td>Speech–Language Pathologists</td>
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</table>

Notes
* This list includes only the groups of health professionals presented in this report.
† Further details on the list of education programs are provided in the respective Excel workbooks.
‡ For non-regulated professions, the national exam is not necessarily a requirement to work/practise in Canada; however, it could be an employer requirement. For regulated professions, each licensing body has its own requirements such as passing national exams.
✓ Indicates that an internship/clinical practicum and a national exam exist and are required in most provinces/territories.

Source
Health Personnel Database, Canadian Institute for Health Information.

Education in Canada

In Canada, every province and territory offers health education programs. Most programs are accredited; the accreditation ensures that an education program meets certain standards and that it is effective in preparing students for entry into the profession. Some health education programs are available in every province, including those for registered nurses and medical radiation technologists. Conversely, for other health professions, education programs are offered only in a few locations. For example, up to now, chiropractic education programs have been offered only in Quebec and Ontario. The number and location of training programs are important to understand because they provide information on the potential supply and mobility patterns of new graduates into various health professions within the country. The following table summarizes the number of graduates in 1997 and 2011 and the availability of training programs for selected health professionals by province/territory in 2012.
### Table 2: Number of Graduates, 1997 and 2011, and Availability of Training Programs,* by Selected Groups of Health Professionals, Province/Territory, Canada, 2012

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**Notes**

* This list pertains to only the groups of health professionals presented in this report and to new programs where, in some cases, accreditation is pending.
† Registered psychiatric nurses are educated and regulated separately from other regulated nursing professionals in four western provinces and one territory (Manitoba, Saskatchewan, Alberta, British Columbia and Yukon).
✓ Indicates the availability of training programs in the province/territory.
† Indicates an increase from 1997 to 2011.
n/a Not applicable.
.. Information was not available.
To maintain comparability across time, the following data sources were used in this table: MLT graduates indicate candidates who obtained CSMLS general certification for the first time; MRT graduates indicate candidates who passed the CAMRT national certification exam.

**Source**

Health Personnel Database, Canadian Institute for Health Information.
Did You Know?

To practise as a family physician or medical/surgical specialist in Canada, one must hold a doctor of medicine (MD) degree from 1 of the 17 accredited programs (see the Excel workbook on physicians for more details) and complete an accredited residency program in family medicine or the related medical/surgical specialty. Between 1997 and 2011, the number of MD graduates and residents increased substantially (61% and 74%, respectively). In addition, females experienced greater growth than males in the number of both MD graduates and residents (Figure 1).

Figure 1: 15-Year Percentage Growth of MD Graduates and Residents, 1997 to 2011

Supply and Regulatory Environment for Health Care Providers in Canada

According to the website Immigrant Toolbox, “Regulatory authorities are granted authority by provincial and territorial governments to protect the rights of the public and are self-governing. These bodies are established through provincial and territorial legislation and have the authority to determine the process of licensing members. Members of a regulatory body are licensed to work within a regulatory framework. Professional associations primarily represent the health professions and work to establish and protect the rights of the health care providers.”

Sources
Association of Faculties of Medicine of Canada and Canadian Post-MD Education Registry.
Professions such as dentistry, pharmacy, medicine, optometry and registered nursing are regulated in each province and territory in Canada. This means that it is mandatory to register with a provincial or territorial regulatory body to become licensed to practise within their respective jurisdictions. Other professions, such as medical laboratory technology and medical radiation technology, are regulated in some provinces but not in others. As regulation differs by jurisdiction, the mobility for interjurisdictional practice may be affected. The following table provides the overall supply picture for selected health professionals in Canada in 1997 and 2011, and summarizes the regulatory environment for health professions in 2012, by province and territory.

Table 3: Number of Health Personnel, 1997 and 2011, and Regulatory Environment for Selected Groups of Health Professionals, * Canada, 2012

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### Table 3: Number of Health Personnel, 1997 and 2011, and Regulatory Environment for Selected Groups of Health Professionals, Canada, 2012 (cont’d)

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**Notes**

* This list pertains to only the groups of health professionals presented in this report.
† Newfoundland and Labrador, Prince Edward Island and Manitoba were not regulated; nevertheless, mandatory registration with both the provincial association and the Canadian Association of Medical Radiation Technologists was a condition of practice.
‡ Canada totals may not be representative, as data was unavailable from one or more provinces; Canada totals should be interpreted with caution.
§ Legislation was enacted on December 6, 2012.
✓ Indicates that the profession was regulated as of 2012.
✫ Indicates an increase from 1997 to 2011.
n/a Indicates that the category is not applicable; that is, registered psychiatric nurses are educated and regulated separately in four western provinces and one territory (Alberta, British Columbia, Manitoba, Saskatchewan and Yukon).
NC Data was not comparable due to a change in data source from 1997 to 2011.
.. Information was not available.
A blank cell indicates that the profession was not regulated as of 2012.
To maintain comparability across time, the following data sources were used in this table: 2011 medical laboratory technologist, medical radiation technologist, occupational therapist, pharmacist and physiotherapist supply data represents active registered members; pharmacist data comes from the National Association of Pharmacy Regulatory Authorities.

**Source**
Health Personnel Database, Canadian Institute for Health Information.
Did You Know?

The distribution of health care providers in major categories of health care employment has stayed relatively stable over the past 15 years. In general, nurses and physicians together represented more than half of the health workforce (Figure 2).

Figure 2: Distribution of Health Personnel in Canada, 1997 and 2011

Notes
Physicians include general practitioners and specialist physicians.
Nurses include head nurses, registered nurses and licensed practical nurses.
Other includes dentists, optometrists, chiropractors, pharmacists, dietitians/nutritionists, audiologists, physiotherapists, occupational therapists, medical laboratory technologists, medical laboratory technicians, respiratory therapists, medical radiation technologists, cardiology technologists, denturists, dental hygienists, dental technicians, opticians, midwives, ambulance attendants, dental assistants, psychologists and social workers.

Source
Growth of Health Care Providers in Canada

Many factors influence the overall increase or decrease in the number of health professionals, such as the number of seats, the location and availability of schooling, retirement rates and entry-to-practice credentials. Over the period 1997 to 2011, the number of health care providers in Canada increased. However, the growth experienced by the different groups of health professionals varied. For example, the number of medical laboratory technologists grew by 15%, and the number of social workers experienced the highest increase, at 163%.

Figure 3: 15-Year Percentage Growth for Selected Groups of Health Professionals, 1997 to 2011

Notes
This list pertains to only the groups of health professionals presented in this report. Audiologists, dental assistants, environmental public health professionals, midwives, nurse practitioners, opticians, paramedics, psychologists and speech–language pathologists were not included, either because their 1997 data was not available or because their 1997 Canada totals may not have been representative, as data was unavailable from one or more provinces. Licensed practical nurses and registered psychiatric nurses were not included because of data variations.

To maintain comparability across time, the following data sources were used in this figure: 2011 medical laboratory technologist, medical radiation technologist, occupational therapist, pharmacist and physiotherapist supply data represents active registered members; pharmacist data comes from the National Association of Pharmacy Regulatory Authorities.

See the Methodological Notes for comprehensive information regarding collection and comparability of HPDB data.

Source
Health Personnel Database, Canadian Institute for Health Information.
Did You Know?

- When compared with six other G8 countries in 2010, Canada placed third for its supply of nurses and pharmacists, fifth for its supply of dentists and sixth for its supply of physicians (Figure 4).
- Over the past five years, each of these four professional groups grew faster than the Canadian population; this was especially so for physicians and pharmacists, whose numbers increased at almost three times the rate of population growth.

Figure 4: Distribution of Health Care Providers Within G8 Countries (Excluding Russia), per 100,000 Population, 2010

**Notes**

Figures represent professionally active health care providers, with the exception of the United Kingdom’s data and Japan’s pharmacist data, which represents practising health care providers. The United States’ dentist data relates to 2008. Italy’s nurse data represents licensed-to-practice nurses. The United Kingdom’s pharmacist data was an estimate. Russia’s data was not available.

**Source**

Demographics of Health Care Providers

Sex Distribution in Selected Health Professions

According to the 2011 Labour Force Survey (LFS),¹ the groups of health professionals with the highest proportion of females included dental assistants, dental hygienists and dental therapists, nurses, dietitians and nutritionists, and occupational therapists (Table 4), each of which was more than 90% female. The predominately male professionals included chiropractors, specialist physicians, ambulance attendants and dentists.

From 1997 to 2011, audiologists and speech–language pathologists, dietitians and nutritionists, registered nurses and occupational therapists experienced a decrease in the proportion of females (Table 4). During the same period, the highest increase in the proportion of females was observed in dentists (157%), general practitioners (64%) and ambulance attendants (44%).

Average Age of Health Care Providers for Selected Professions

The average age of those working in health professions in Canada was 43 in 2011 (Table 4)—this was two years older than the average age of the general Canadian workforce. According to the 2011 LFS,¹ the “younger age” professionals (younger than 40) included ambulance attendants, dental assistants, respiratory therapists, dental hygienists and dental therapists, and occupational therapists. Some of the “older age” professionals (older than 45) included psychologists, dentists and physicians as a group (both general practitioners and specialists).

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¹ Please refer to the Methodological Notes for information regarding the quality of LFS estimates.
Table 4: Average Age and Percentage of Females in Selected Groups of Health Professionals,*
Canada, 1997 and 2011

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<th>Percentage Female</th>
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<td>1997</td>
<td>2011</td>
</tr>
<tr>
<td>All Professionals</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>All Health Professionals</td>
<td>41</td>
<td>43</td>
</tr>
<tr>
<td>Ambulance Attendants</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Audiology and Speech Language–Pathologists</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Dental Assistants</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>Dental Hygienists and Dental Therapists</td>
<td>34</td>
<td>39</td>
</tr>
<tr>
<td>Dentists</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>Dietitians and Nutritionists</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>General Practitioners</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>Licensed Practical Nurses</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>Medical Laboratory Technologists</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Medical Radiation Technologists</td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>Optometrists</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>Opticians</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Physiotherapists</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>Psychologists</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>Registered Nurses</td>
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<td>45</td>
</tr>
<tr>
<td>Respiratory Therapists</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>Social Workers</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Specialist Physicians</td>
<td>45</td>
<td>47</td>
</tr>
</tbody>
</table>

Notes
* This list pertains to only the groups of health professionals presented in this report. Midwives were excluded because Labour Force Survey data on midwives included a group of different health professionals. Information on environmental public health professionals, health information management professionals and medical physicists was not available.

x Estimate suppressed due to small cell value.
n/a Not applicable.

Source
Did You Know?

• The proportion of health care providers age 55 and older differs among groups of professionals. As depicted in Figure 5, a larger proportion of physicians and a smaller proportion of occupational therapists are approaching retirement age.

**Figure 5: Percentage of Health Personnel Age 55 and Older, by Selected Groups of Health Professionals,* 2011**

![Diagram showing percentage of health personnel age 55 and older by profession.]

**Notes**
* This list pertains to only the groups of health professionals contained within CIHI’s internal databases. Please note that MLT data includes only the regulated provinces (Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan and Alberta) and that pharmacist data does not include Quebec, Yukon or Nunavut, as age information was not available. Please refer to the Methodological Notes of the individual databases for further information.

LPNs: licensed practical nurses.
MLTs: medical laboratory technologists.
MRTs: medical radiation technologists.
NPs: nurse practitioners.
OTs: occupational therapists.
RNs: registered nurses.
RPNs: registered psychiatric nurses.

**Sources**
Nursing Database, Medical Laboratory Technologist Database, Medical Radiation Technologist Database, Occupational Therapist Database, Pharmacist Database, Physiotherapist Database and Scott’s Medical Database, Canadian Institute for Health Information.
Employment Status of Health Care Providers

The proportion of the overall Canadian workforce working part time has remained consistent over the past 15 years. In comparison, 22% of the health care workforce worked part time in 2011, which was lower than the proportion in 1997 (26%; Figure 6). Overall, the following groups of professionals were more likely to work part time in 2011 than 15 years ago: general practitioners, dentists, psychologists and dental hygienists.

Figure 6: Percentage of Professionals Working Part Time, Selected Professions,*
Canada, 1997 and 2011

Notes
* This list pertains to only the groups of health professionals presented in this report. Midwives were excluded because Labour Force Survey data on midwives included a group of different health professionals. Information on ambulance attendants, chiropractors, environmental public health professionals, optometrists and opticians was not available due to small cell suppression. Information on health information management professionals and medical physicists was not available.

Source
Urban–Rural Distribution of Health Care Providers

Health care providers are predominantly located in urban areas in Canada. Over the past five years, the proportion of health care providers working in rural areas remained relatively stable, with the exception of nurse practitioners, which decreased by 7 percentage points (Figure 7).

Figure 7: Percentage Distribution of Selected Groups of Health Professionals* Located in Rural Areas, Canada, 2007 and 2011

Notes
* This list pertains to only the groups of health professionals contained within CIHI’s internal databases, with the exception of medical laboratory technologists and medical radiation technologists, whose data was not available. Please note that pharmacist data relates to 2008 and does not include Quebec, Yukon or Nunavut, as information was not available. Please refer to the Methodological Notes of the individual databases for further information.

LPNs: licensed practical nurses.
RPNs: registered psychiatric nurses.

Sources
Nursing Database, Occupational Therapist Database, Pharmacist Database, Physiotherapist Database and Scott’s Medical Database, Canadian Institute for Health Information.
Health Expenditures on Health Personnel in Canada

Health expenditure in the National Health Expenditure Database (NHEX) is grouped into nine major categories: Hospitals, Other Institutions, Physicians, Other Professionals, Drugs, Capital, Public Health, Administration and Other Health Spending. Total health expenditures in Canada were $193.1 billion in 2010, or $5,659 per person—11.9% of Canada’s gross domestic product.

In 2010, the third- and fourth-largest categories of spending (following Hospitals and Drugs) were Physicians (14.2%) and Other Professionals (10.6%).

In 1997, physicians’ services and other professionals’ services combined accounted for $21.0 billion, or 26.6% of total health care spending. By 2010, expenditure on health professionals had more than doubled to $47.9 billion, which accounted for 24.8% of total health care spending—a slightly smaller proportion.

Expenditure on physicians’ services and other professionals’ services differs considerably in terms of sources of finance. Physicians’ services are primarily financed by the public sector, as determined by the Canada Health Act and provincial insurance plans. Other professionals’ services, such as those of dentists, optometrists, physiotherapists and chiropractors, are primarily financed by the private sector, which includes individual and group health insurance plans, as well as out-of-pocket spending (Figure 8).

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ii. Expenditure data was obtained from CIHI’s report National Health Expenditure Trends, 1975 to 2012. Please visit www.cihi.ca for more information.
Figure 8: Expenditure on Physicians and Other Health Professionals, by Source of Finance and Type, Canada, 2010

Note
Others include chiropractors, massage therapists, osteopaths, physiotherapists, podiatrists, psychologists, private duty nurses and naturopaths.

Source
National Health Expenditure Database, Canadian Institute for Health Information.
Did You Know?

- On average, 68% of hospital expenditure went to compensation for health personnel; this ranged from 63% to 79% across jurisdictions (Figure 9).

Figure 9: Percentage of Provincial/Territorial Hospital Expenses Related to Compensation, Fiscal Year 2010–2011

Note
Quebec and Nunavut were not included, as information was not available.

Source
Canadian MIS Database, Canadian Institute for Health Information.

Conclusion

Health human resources planning and management is important to ensure that health services are available for all Canadians. Health care planners anticipate needs by comparing the existing health workforce supply with expected future health care needs of the population. Monitoring trends provides valuable knowledge to inform effective health human resources planning now and in the future. The profession-specific Excel workbooks provide supply, demographic and graduate trends on 27 groups of health professionals.
Methodological Notes

Background

The Health Personnel Database (HPDB) is a national database that contains supply information on 27 selected groups of health professionals in Canada. The HPDB does not collect, use or disclose personal information. Individual record-level data is not collected or maintained in the HPDB. The data in the HPDB represents aggregate counts by province or territory and by year.

Data Definitions

The definitions given below are used as mechanisms to standardize data collection and reporting for regulated and unregulated health professions within this report.

<table>
<thead>
<tr>
<th>Type of Data Requested From Data Providers</th>
<th>Regulated Health Professions</th>
<th>Unregulated Health Professions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>A regulated health profession is covered by provincial/territorial and/or federal legislation and governed by a professional organization or regulatory authority. The regulatory authority governing the profession has the authority to set entry requirements, license qualified applicants and ensure practice requirements are met and/or maintained. Licensure/registration with the regulatory authority is a condition of practice.</td>
<td>An unregulated health profession is one for which there is no legal requirement or restriction on practice with regard to licensure/registration. Registration with a provincial/territorial or national professional organization is voluntary and not a condition of practice.</td>
</tr>
<tr>
<td>If the health profession is subject to regulation in a specific jurisdiction, the following information is requested from the data provider:</td>
<td>If the health profession is not subject to regulation within a specific jurisdiction, the following information is requested from the data provider:</td>
<td></td>
</tr>
<tr>
<td>Total number of Registered: All individuals who are registered/licensed with the organization. The count may include individuals in all registration categories (active, inactive, honorary, etc.).</td>
<td>Total number of Registered: All individuals who are registered with the organization. The count may include individuals in all registration categories (active, inactive, honorary, etc.).</td>
<td></td>
</tr>
<tr>
<td>Total number of Registered, Active: All registered/licensed individuals who are legally able to work under the title of the specified health profession. Individuals may or may not be currently employed in the profession.</td>
<td>Total number of Registered, Active: All individuals who are registered with the organization. The count may include individuals in all registration categories (active, inactive, honorary, etc.).</td>
<td></td>
</tr>
</tbody>
</table>
| Total number of Registered, Active, Employed: Personnel who are registered/licensed with the organization and currently working in the specified health profession. | }
Data Sources

**Professional Associations and Regulatory Bodies**

The primary data sources for the HPDB are national professional associations, provincial and territorial regulatory bodies, provincial and territorial professional associations, governments and education institutions (see Appendix B for a listing of HPDB data sources). These organizations provide much of the contextual information and data on the number of personnel and number of graduates.

**CIHI Internal Databases**

For the reporting of regulated nurses, medical laboratory technologists (starting 2008), medical radiation technologists (starting 2008), occupational therapists (starting 2006), pharmacists (starting 2006 with the exception of Quebec and Nunavut), physiotherapists (starting 2007) and physicians, the publication utilizes existing data sources at CIHI. This includes the Nursing Database, Medical Laboratory Technologist Database, Medical Radiation Technologist Database, Occupational Therapist Database, Pharmacist Database, Physiotherapist Database and, for physician data, both Scott's Medical Database (formerly known as the Southam Medical Database) and, for resident information, the Canadian Post-MD Education Registry (CAPER). For more information about these databases, please go to [www.cihi.ca](http://www.cihi.ca).

**Education Data**

Counts of graduates of professional health education and training programs and training capacity are provided for health personnel groups. Education data may reflect graduates of Canadian educational institutions, candidates of a specific competency exam and/or candidates who passed specific competency exams. Additional training (for example, post-MD training required to enter medical practice) may be required before entering the workforce.

**Labour Force Survey**

While the Labour Force Survey (LFS) provides detailed and current data on the health personnel labour market across the country, it is based on a sample of the total supply, and the sample is relatively small for many health professions. In particular, LFS data at the four-digit occupation code level should be used with caution.

**Notes to Readers**

Participating national associations or CIHI staff are provided with an opportunity to review the information before publication to ensure accuracy.
Data Year

The HPDB reflects data as of December 31 of the given year, unless otherwise specified in Appendix A. As a result, reference periods are not always uniform, which may influence the comparability of the data.

Northern Territories Data

CIHI attempts to collect data from each province and territory in Canada. On April 1, 1999, the central and eastern portions of the Northwest Territories became the new territory of Nunavut. For some professionals (for example, physicians and dentists), Nunavut-specific data is provided in this publication. In many cases, however, data providers have combined Nunavut and Northwest Territories data or data for all three northern territories, including Yukon.

Descriptions of Health Professionals

National associations provided the majority of the professional descriptions. The descriptions for medical laboratory technologists, medical radiation technologists, each of the nursing groups (RNs/NPs, LPNs and RPNs), occupational therapists, pharmacists and physiotherapists were provided by the Health Human Resources internal databases at CIHI; the descriptions for chiropractors and psychologists were adopted from Human Resources Development Canada’s National Occupational Classification with the permission of the Minister of Public Works and Government Services Canada, 2001.

Entry-to-Practice Requirements

Since accreditation ensures that an education program meets certain standards and is normally the prerequisite for licensure, accredited programs, degree awarded and language of instruction are reported in most cases unless otherwise specified in the Excel workbook. The information on entry-to-practice requirements is applicable at the time of publication of this report. Individual schools should be contacted for any updated information.

Training Capacity

For the first time, the HPDB is exploring information on training capacity (also called quotas) for selected health profession programs in Canada. Many programs limit the number of new admissions due to space, faculty or equipment constraints. For some programs, training capacity is not limited as long as applicants meet admission requirements.

Estimates

In circumstances where the count could not be obtained, where feasible, individual data providers provided us with an estimate. In cases where such estimates were not available, CIHI imputed estimates.
Prior to 2005, CIHI estimates were prepared by applying the average Canadian growth rate over the previous five years. Starting in 2005, CIHI adopted a new imputation method for estimates by applying the Canadian growth rate to a particular jurisdiction's count for the previous year. Thus, the number in a profession in a jurisdiction in year $y$, $X_y$, would be calculated using the following formula:

$$X_y = X_{y-1} \frac{C_y}{C_{y-1}}$$

Where

- $X_{y-1}$ is the number in a profession in a jurisdiction during the previous year. This value can either be reported or imputed.

- $C_y$ is the number in a profession in Canada for year $y$. Only reported values make up this total.

- $C_{y-1}$ is the number in a profession in Canada for year $y - 1$. Only reported values make up this total and the jurisdictions that contribute to the numerator and denominator of this national trend must be exactly the same.

In the tables, all estimates are noted. Summarized data (for example, column totals) that contains estimates (or voluntary membership data) is also noted.

**Notes Under Tables**

When a symbol is beside the province or territory or institutional name, the information in the note applies to all years in that row. Similarly, when a symbol is beside the specific year, the information in the note applies to all the provinces/territories or schools in that column.

**Privacy and Confidentiality**

CIHI is committed to protecting the privacy of individuals. Its comprehensive privacy program ensures the confidentiality and security of personal health information entrusted to CIHI by data providers.

While CIHI’s privacy policy governing the disclosure of published data generally requires the suppression of cells containing fewer than five observations, the publication series *Canada’s Health Care Providers, 1997 to 2011—A Reference Guide* does contain some tables with small cell sizes. These tables were reviewed and assessed by the Health Human Resources department, in conjunction with CIHI’s Privacy and Legal Services Secretariat, and it was determined that their publication would not compromise the confidentiality of the data being reported and would add to the analytical value of the reference guide.
Data Quality

To ensure a high level of accuracy and usefulness in data dissemination, CIHI has developed a framework for assessing and reporting the quality of data contained in its databases and registries. The framework focuses on five dimensions of data quality: timeliness, accuracy, usability, comparability and relevance, which are explained below. *Canada’s Health Care Providers, 1997 to 2011—A Reference Guide* has a variety of data sources with differences in the level of detail available.

Timeliness, Usability and Relevance

Timeliness

Member data is collected annually by CIHI; graduate data is collected every two years.

Usability

The Methodological Notes and the detailed notes accompanying all data tables in this publication contribute to usability; as well, the limitations of data interpretation are clearly outlined.

Relevance

Data in this publication is useful for identifying trends in health personnel in Canada. However, CIHI does not infer from total numbers or population ratios the adequacy of health personnel resources.

Accuracy

Under-Coverage

There are a few potential sources of under-coverage:

- Since the purpose of the HPDB is to collect and maintain data on selected health personnel groups, data for many professionals important to the health system and the health of Canadians are not reflected in the HPDB or this publication.
- CIHI 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 reference period because more registrations may occur after data has already been submitted to CIHI.
- When membership in a professional organization is voluntary, a certain percentage of the health personnel in that profession will not register. Therefore, the number of health professionals may be under-represented. All voluntary membership data, including summarized data (for example, column totals) found in tables, is identified.
• It may not be known whether the provincial/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 (for example, registered social worker), then individuals practising under a slightly different title may not be covered by legislation and, as a result, may not be required to register as a condition of practice. Data collected within this regulatory environment would potentially under-count the number of personnel.

• For some professions, not all post-secondary institutions provided information regarding programs and graduates.

**Over-Coverage**

There are a few potential sources of over-coverage:

• Those professionals temporarily out of the workforce, or out of the province or country, may maintain their registration to maintain continuity. Data collection in these circumstances may over-count the number of health personnel actively engaged in the Canadian workforce.

• 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 personnel 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 personnel from separate professions are added together.

**Collection and Capture**

Since data providers do not submit individual record-level data, rigorous edit checks and advanced verification and validation routines cannot be applied by CIHI. Data entry also affects the accuracy of the data, as information may not be classified or coded properly. Although quality checks are utilized, the manual entry of data can also introduce errors.

**Comparability**

**Data Collection Standards**

CIHI requested that data providers submit data based on standardized definitions (see Data Definitions). While this collection strategy improves comparability, it is important to note that this approach is not equivalent to the submission of data based on standardized minimum data sets.

Before making comparisons between health personnel groups, it is important to review the title of the table or figure and to read the notes carefully, as a table including data for all registered members of a health personnel group (for example, active, inactive, retired and honorary) will not be directly comparable with a table that includes only data on employed active registered members. Caution must be exercised when comparing inter-temporal change at both the provincial/territorial and national levels when tables contain data collected under different regulatory environments or from different data sources.
Data Reference Period

Registration periods vary among various health personnel regulatory authorities, across various jurisdictions and within the same health profession. If the data providers cannot provide data as of December 31 of each year, they are asked to identify the actual point in time reflected by the data. As a result, reference periods of the available data are not always uniform, which may influence the comparability of data (see Appendix A: Notes and Submission Dates for further details).

Comparability With Other Sources

The HPDB data used in CIHI publications, media releases, ad hoc requests and special studies will vary from data released by other provincial and territorial sources of health personnel data, as a result of differences in definitions, the collection period used, and editing and processing activities.

Any questions regarding the methodology may be sent to hpdb@cihi.ca.
Reference

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