



# National Health Expenditure Trends, 1975 to 2017

## Methodology Notes



Canadian Institute  
for Health Information

Institut canadien  
d'information sur la santé

Production of this document is made possible by financial contributions from Health Canada and provincial and territorial governments. The views expressed herein do not necessarily represent the views of Health Canada or any provincial or territorial government.

Unless otherwise indicated, this product uses data provided by Canada's provinces and territories.

All rights reserved.

The contents of this publication may be reproduced unaltered, in whole or in part and by any means, solely for non-commercial purposes, provided that the Canadian Institute for Health Information is properly and fully acknowledged as the copyright owner. Any reproduction or use of this publication or its contents for any commercial purpose requires the prior written authorization of the Canadian Institute for Health Information. Reproduction or use that suggests endorsement by, or affiliation with, the Canadian Institute for Health Information is prohibited.

For permission or information, please contact CIHI:

Canadian Institute for Health Information  
495 Richmond Road, Suite 600  
Ottawa, Ontario K2A 4H6

Phone: 613-241-7860

Fax: 613-241-8120

[www.cihi.ca](http://www.cihi.ca)

[copyright@cihi.ca](mailto:copyright@cihi.ca)

ISBN 978-1-77109-641-6 (PDF)

© 2017 Canadian Institute for Health Information

How to cite this document:

Canadian Institute for Health Information. *National Health Expenditure Trends, 1975 to 2017: Methodology Notes*. Ottawa, ON: CIHI; 2017.

Cette publication est aussi disponible en français sous le titre *Tendances des dépenses nationales de santé, 1975 à 2017 : notes méthodologiques*.

ISBN 978-1-77109-642-3 (PDF)

# Table of contents

Concepts and definitions.....	4
Mandate of the National Health Expenditure Database .....	4
Variables and concepts .....	4
Source of finance (sectors).....	5
Use of funds (categories) .....	7
Other terms .....	9
Major data limitations .....	12
Collection and non-response.....	13
Hierarchy of classification.....	13
General methods.....	14
Calculation methods.....	19
Age and sex distribution methods.....	22
Major changes from previous years .....	29
Revision history.....	29
Age and sex expenditure data.....	31
Economic and demographic data .....	31
Sources of data.....	32
Provincial government sector .....	32
Federal direct sector.....	32
Municipal government sector.....	33
Social security funds sector.....	33
Private sector .....	33
Age and sex data .....	34
Economic and demographic data .....	34
References .....	35

# Concepts and definitions

## Mandate of the National Health Expenditure Database

The mandate of the National Health Expenditure Database (NHEX) at the Canadian Institute for Health Information (CIHI) is twofold:

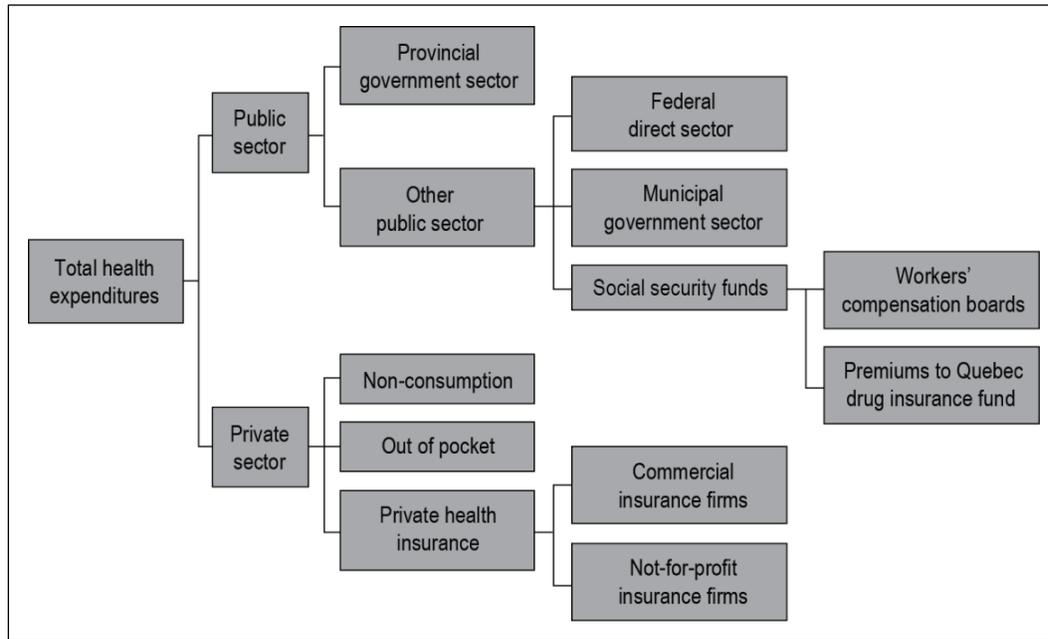
1. To support the development and evaluation of health programs in Canada by all levels of government and within the private sector.
2. To compile information on health expenditures that will accurately portray the importance of health care as a component of national expenditure.

## Variables and concepts

**Health expenditure** — Includes any type of expenditure for which the primary objective is to improve or prevent the deterioration of health status.

This definition allows economic activities to be measured according to primary purpose and secondary effects. Activities that are undertaken with the direct purpose of improving or maintaining health are included. Other activities are not included, even though they may impact health. For example, funds aligning with housing and income support policies that have social welfare goals as their primary purpose are not considered to be health expenditures, yet they are recognized as powerful factors in determining population health.

**Figure** Composition of total health expenditures, by source of finance\*



**Note**

\* The remaining funds in the Quebec Drug Insurance Fund are financed through the Consolidated Revenue Fund (these expenditures are captured under the provincial government sector).

## Source of finance (sectors)

National health expenditures are reported based on the principle of *responsibility for payment* rather than on the original source of the funds. It is for this reason, for example, that federal health transfers to the provinces/territories are included in the provincial government sector, since it is the responsibility of provincial/territorial governments to expend federal transfers on health services. The exception to this principle is that provincial government health transfers to municipal governments are included in the provincial government sector.

**Public sector** — Includes health care spending by governments and government agencies.<sup>i</sup> It is subdivided into 4 levels, as described below:

1. The *provincial government sector* includes health spending from provincial/territorial government funds, federal health transfers to the provinces/territories and provincial government health transfers to municipal governments.
2. The *federal direct sector* refers to direct health care spending by the federal government in relation to health care services for special groups, such as Indigenous peoples, members of the Canadian Armed Forces and veterans, as well as expenditures for health research, health promotion and health protection. Federal direct health expenditure does not include federal health transfers to the provinces.
3. The *municipal government sector* expenditure includes health care spending by municipal governments for institutional services; public health; capital construction and equipment; and dental services provided by municipalities in the provinces of Nova Scotia, Manitoba and British Columbia. Designated funds transferred by provincial governments for health purposes are not included in the municipal sector but are included with provincial government expenditure.
4. *Social security funds* are social insurance programs that are imposed and controlled by a government authority. They generally involve compulsory contributions by employees, employers or both, and the government authority determines the terms on which benefits are paid to recipients. Social security funds are distinguished from other social insurance programs, the terms of which are determined by mutual agreement between individual employers and their employees. In Canada, social security funds include the health care spending by workers' compensation boards, as well as the premiums paid by the subscribers of the Quebec Drug Insurance Fund and by persons age 65 and older insured by this plan.

Health spending by workers' compensation boards includes what the provincial boards commonly refer to as medical aid. Non-health related items often reported by the workers' compensation boards as medical aid expenditure, such as funeral expenses, travel and clothing, are removed. On January 1, 1997, the government of Quebec created a basic drug insurance plan with the objective of ensuring the population of Quebec has access to drugs as required by health status. All residents of Quebec must be covered by drug insurance, whether by private group insurance or by the public plan administered by the Régie de l'assurance maladie du Québec (RAMQ). The Drug Insurance Fund is the chosen mechanism to pay all drug and pharmaceutical service costs provided to subscribers insured by the RAMQ, as well as their children. Since July 1, 2002, the public plan has been financed both by the expenditure allocated to this program by the Quebec government (provincial government sector) and by the amounts collected by the Drug Insurance Fund as premiums and proceeds (social security funds sector).

---

i. Statistics Canada (Public Sector Statistics Division) publishes estimates of government health expenditure as part of its comprehensive reporting system of all government expenditures, the Financial Management System (FMS). The FMS public-sector health spending estimates are lower than those reported by CIHI because different classification methods are applied and a narrower definition of health expenditure is used in the FMS.

**Private sector** — Includes out-of-pocket expenditures made by individuals for health care goods and services; the health insurance claims paid to individuals by commercial and not-for-profit insurance firms, as well as the cost of administering those claims; non-patient revenues received by health care institutions, such as donations and investment income; private spending on health-related capital construction and equipment; and health research funded by private sources.

## Use of funds (categories)

**Hospitals** — Institutions where patients are accommodated on the basis of medical need and are provided with continuing medical care and supporting diagnostic and therapeutic services. Hospitals are licensed or approved as hospitals by a provincial/territorial government, or are operated by the government of Canada, and include those providing acute care, extended and chronic care, rehabilitation and convalescent care, and psychiatric care, as well as nursing stations or outpost hospitals.

**Other Institutions** — Include residential care types of facilities (for the chronically ill or disabled, who reside at the institution more or less permanently) and that are approved, funded or licensed by provincial or territorial departments of health and/or social services. Residential care facilities include homes for the aged (such as nursing homes); facilities for persons with physical disabilities, developmental delays, psychiatric disabilities, and alcohol and drug problems; and facilities for emotionally disturbed children. Facilities solely of a custodial or domiciliary nature and facilities for transients or delinquents are excluded.

**Physicians** — Expenditures include primarily professional fees paid by provincial/territorial medical care insurance plans to physicians in private practice. Fees for services rendered in hospitals are included when paid directly to physicians by the plans. Also included are other forms of professional incomes (salaries, sessional, capitation).

The Physicians expenditure category does not include the remuneration of physicians on the payrolls of hospitals or public-sector health agencies; these are included in the appropriate category, for example, Hospitals or Other Health Spending. Physicians expenditures generally represent amounts that flow through provincial/territorial medical care plans. Provinces/territories differ in terms of what the medical care plans cover. CIHI has not attempted to make adjustments to Physicians expenditures to reflect these differences because only a few provinces, to date, can net out these differences from their data.

**Other Professionals** — Services at the aggregate level represent expenditures for dentists, denturists, chiropractors, optometrists, massage therapists, osteopaths, physiotherapists, podiatrists, psychologists, nurses and naturopaths. Discrete identification of many of the professions included under Other Professionals is often possible only when they are reported by provincial medical care insurance plans.

This category has been disaggregated at the Canada level in NHEX data tables to provide information on the following subcategories:

- *Dental services* — Expenditures for professional fees of dentists (includes dental assistants and hygienists) and denturists, as well as the cost of dental prostheses, including false teeth, and laboratory charges for crowns and other dental appliances.
- *Vision care services* — Expenditures for the professional services of optometrists and dispensing opticians, as well as expenditures for eyeglasses and contact lenses.
- *Other* — Expenditures for chiropractors, massage therapists, osteopaths, physiotherapists, podiatrists, psychologists, nurses and naturopaths.

**Drugs** — At the aggregate level, this category includes expenditures on prescribed drugs and non-prescribed products purchased in retail stores. Estimates represent the final costs to consumers including dispensing fees, markups and appropriate taxes. This category has been disaggregated at the Canada level in NHEX data tables to provide information on the following subcategories:

- *Prescribed drugs* — Substances considered to be drugs under the *Food and Drugs Act* and that are sold for human use as the result of a prescription from a health professional.
- *Non-prescribed drugs* — Include 2 subcomponents: over-the-counter drugs and personal health supplies.
  - Over-the-counter drugs — Therapeutic drug products not requiring a prescription.
  - Personal health supplies — Include items used primarily to promote or maintain health, such as oral hygiene products, diagnostic items such as diabetic test strips, and medical items such as incontinence products.

The Drugs category does not include drugs dispensed in hospitals and, generally, in other institutions. These are included with the category Hospitals or Other Institutions. The classification system is consistent with international standards developed by the Organisation for Economic Co-operation and Development (OECD).

**Capital** — Includes expenditures on construction, machinery, equipment and some software of hospitals, clinics, first-aid stations and residential care facilities. It is based on full-cost or cash-basis accounting principles.

**Public Health** — By governments and government agencies, includes expenditures for items such as food and drug safety, health inspections, health promotion activities, community mental health programs, public health nursing, measures to prevent the spread of communicable disease and occupational health to promote and enhance health and safety at the workplace in public-sector agencies.

**Administration** — Expenditures related to the cost of providing health insurance programs by the government and private health insurance companies and all costs for the infrastructure to operate health departments. The administrative costs of operating hospitals, drug programs, long-term care programs and other non-insured health services are not included under the category Administration, but rather are included under the category of service, for example, Hospitals, Other Institutions and Drugs.

**Other Health Spending** — At the aggregate level, includes expenditures on home care, medical transportation (ambulances), hearing aids, other appliances and prostheses, health research and miscellaneous health care. Some of the subcategories of the aggregate category are defined as follows:

- *Health research* — Expenditures for research activities designed to further knowledge of the determinants of health, health status or methods of providing health care, or evaluation of health care delivery or of public health programs. The category does not include research carried out by hospitals or drug companies in the course of product development. These amounts would be included with either the Hospitals or Drugs category.
- *Other* — Expenditures for items such as home care, medical transportation (ambulances), hearing aids, other appliances, training of health workers and voluntary health associations.

## Other terms

**Federal transfers** — Refer to the total of various federal, provincial and territorial health financing arrangements that may be used to fund the delivery of health and health-related services. They include at various times the Canada Health Transfer, Canada Social Transfer, Health Reform Transfer, Canada Health and Social Transfer, Canada Assistance Plan, Established Programs Financing, Equalization, Territorial Formula Financing and Health Resource Fund, which supported provincial Capital health expenditures from the mid-1970s to the early 1980s, and transfers by the Department of Indian and Northern Affairs to the territorial governments for the medical care and hospital insurance plans on behalf of Indigenous peoples. More recently, several other targeted transfer mechanisms were created, including the Diagnostic/Medical Equipment Fund, the Public Health and Immunization Fund and the Wait Times Reduction Fund.

In April 2004, the federal government restructured its transfers into 5 major programs: the Canada Health Transfer, Canada Social Transfer, Health Reform Transfer, Equalization and Territorial Formula Financing. Effective April 1, 2004, the Canada Health and Social Transfer was restructured to enhance the transparency and accountability of federal support for health.

The Canada Health and Social Transfer was replaced by the Canada Health Transfer and the Canada Social Transfer. In 2005–2006, the Health Reform Transfer was rolled into the Canada Health Transfer program.

- *Canada Health Transfer (CHT)* — Is provided to each province and territory in support of health care. CHT funding is provided through cash payments and tax transfers and supports the government of Canada’s commitment to the 5 principles of the *Canada Health Act*. As announced in December 2011, total CHT cash levels were set in legislation to grow at 6% until 2016–2017. Starting in 2017–2018, total CHT cash growth is in line with a 3-year moving average of nominal gross domestic product, with funding guaranteed to increase by at least 3% per year. Historically, changes in the growth of the CHT have had an impact on the growth of provincial/territorial government health care spending.
- *Canada Social Transfer (CST)* — Provides support to the provinces and territories for post-secondary education, social assistance and social services, including early childhood development and early learning and child care.
- *Health Reform Transfer (HRT)* — Provides provinces and territories support for health care reforms targeted at primary health care, home care and catastrophic drug coverage. The HRT was integrated into the CHT starting in 2005–2006.
- *Equalization* — Ensures that less-prosperous provinces have sufficient revenue to provide reasonably comparable levels of public services at reasonably comparable levels of taxation. Equalization payments are unconditional; provinces can spend them according to their respective priorities. Eligibility to receive equalization funding is determined by a formula measuring each province’s revenue-raising capacity against a 5-province standard. Currently, 6 provinces receive equalization: Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba.
- *Territorial Formula Financing (TFF)* — Ensures that territorial governments can provide reasonably comparable levels of public services at reasonably comparable levels of taxation, taking into account the higher costs in the North. The transfers are based on a formula that fills the gap between the expenditure requirements and revenue-raising capacity of the territories.
- *Diagnostic/Medical Equipment Fund* — To improve access to publicly funded diagnostic services, the government of Canada provides provinces and territories with targeted funding that supports specialized staff training and equipment.
- *Wait Times Reduction Fund* — To improve access to health care services, the government of Canada provides provinces and territories with targeted funding to assist in reducing wait times.
- *Public Health and Immunization Fund* — To improve public health capacities, the government of Canada provides provinces and territories with targeted funding to support immunization programs.

- *Canada Health and Social Transfer (CHST)* — On April 1, 1996, the CHST replaced federal transfers for social assistance under the CAP (see below) and for health and post-secondary education under EPF (see below). The CHST was a block fund provided in the form of both cash transfers and tax point transfers to all provinces/territories in support of health, post-secondary education, social assistance and social service programs. Provinces/territories allocated the CHST to health and other social programs according to their particular priorities while upholding the criteria and conditions of the *Canada Health Act*. In 1996–1997, CHST transfers were allocated among the provinces and territories in the same proportions as provincial/territorial entitlements under the combined EPF and CAP transfers in 1995–1996.<sup>1</sup>
- *Canada Assistance Plan (CAP)* — Introduced in 1966 by the federal government to share in eligible costs incurred by the provinces and territories in providing social assistance and welfare services to persons in need or persons likely to become in need if these services were not provided. The 1994 budget limited 1995–1996 CAP transfers for all provinces/territories to 1994–1995 levels (Human Resources Development Canada, unpublished document, 1996).
- *Established Programs Financing (EPF)* — Prior to the introduction of the CHST, the federal government contributed to the operation of provincial/territorial health insurance plans according to the provisions of the *Federal–Provincial Fiscal Arrangements and Federal Post-Secondary Education and Health Contributions Act, 1977*. Under the act, provinces and territories were entitled to equal per capita federal health contribution increases according to a fixed formula (escalator). Health contributions to the provinces/territories consisted of both cash and an equalized tax transfer. The February 26, 1991, federal budget extended a freeze at 1989–1990 levels to 1994–1995. Legislation later provided for EPF entitlements to grow in 1995–1996 in accordance with the escalator, less 3 percentage points.

**Gross domestic product (GDP)<sup>2</sup>** — Is the sum of gross value-added originating within the boundaries of Canada, regardless of the ownership of the factors of production. GDP can be valued either at factor cost or at market prices. In NHEX publications, GDP is valued at market prices and is expressed in terms of the prices actually paid by the purchaser. It includes all indirect taxes, such as sales and excise taxes, customs duties and property taxes, and also reflects the impact of subsidy payments.

**Implicit price indices** — See Calculation of constant dollars in the section Calculation methods, below.

**Purchasing power parity (PPP)<sup>3</sup>** — Purchasing power parities are the rates of currency conversion that equalize the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. Thus PPPs are the rates of currency conversion that eliminate differences in price levels between countries.

# Major data limitations

Data contained in NHEX is estimated. The data is collected from diverse sources and includes varying classes of financial information. The data is collected and classified according to methods established by a review committee. CIHI analysts and external experts continue to improve the comprehensiveness, accuracy and currency of the data to provide the most complete and objective estimates possible. Notwithstanding, national health expenditure data is estimated and should be used accordingly.

Most private-sector expenditures are estimated from survey data. Prior to 1996, the Family Expenditure Survey by Statistics Canada, an important source of private-sector data, was not carried out annually; therefore, trend data has been imputed for years between surveys. Private-sector data was revised following a methodology review in the early 1990s. The revised private-sector data incorporated information estimated directly from new sources for 1988 and subsequent years. Prior years were estimated using trend data. As a result, readers should use caution when using the private-sector expenditure data for small provinces and for years prior to 1988.

In 2010, the Survey of Household Spending (SHS), formerly the Family Expenditure Survey, underwent a major redesign by Statistics Canada. This impacts out-of-pocket health expenditure in NHEX. For more details, see Private sector, under General methods, in the Collection and non-response section below.

Please note that numbers may not add up to the total due to rounding.

# Collection and non-response

The following notes briefly describe some of the major technical points associated with the compilation of the health expenditure estimates. Additional information can be obtained by contacting the National Health Expenditure team by phone at 613-241-7860, by fax at 613-241-8120 or by email at [nhex@cihi.ca](mailto:nhex@cihi.ca).

## Hierarchy of classification

National health expenditures in Canada are based on a system of classification that is consistent with international standards developed by the OECD for reporting health expenditures.

National health expenditures are grouped within the broad categories of personal health care or other expenditures:

- **Personal health care** consists of expenditure for health goods and services used by individuals.
- **Other expenditures** consist of expenditures on behalf of society, such as public health; expenditures made as investments for purposes of future consumption, such as capital expenditures; the administrative expenses of planning and managing the health care system; and research.

Personal health expenditures are classified within categories that describe the type of health care used. Certain categories overlap. The hierarchy of classification that is used to allocate overlapping categories of expenditure is as follows:

- **Institutional setting** — Health care services consumed in hospitals or other institutions are allocated to the institutional setting category if the institution purchases the services on behalf of its patients. For example, physician services and drugs paid through hospital budgets are classified as hospital expenditures. This allocates expenditure to the supplier actually paid by patients or their agents in the form of government or insurance companies. It also reflects data availability.
- **Self-employed provider of service** — For example, all expenses of physicians' practices are considered to be expenditures for physician services, even though some of these expenses would be for employment of other health professionals, drugs or personal health supplies.
- **Type of good and service** — Drugs, personal health supplies and appliances are examples.

An exception to the hierarchy of classification is eye care, in which optometrist services, eyeglasses and contact lenses sold by optometrists are combined as 1 category: vision care services.

The definitions and methods used in the preparation of NHEX reports are for the most part based on those adopted in 1994 by the National Health Expenditure Methodology Review Committee. This committee included representation from Health Canada, Statistics Canada, the ministère de la Santé et des Services sociaux du Québec (MSSS), the Canadian Medical Association and the Canadian Healthcare Association.

## General methods

The following is intended as a general overview of the methods applied to calculate estimates of health expenditure in Canada. More detailed information can be obtained by contacting the National Health Expenditure team by phone at 613-241-7860, by fax at 613-241-8120 or by email at [nhex@cihi.ca](mailto:nhex@cihi.ca).

### Provincial/territorial government

Data is extracted annually from provincial/territorial government public accounts. Programs and/or program items are classified into health expenditure categories according to accepted and standardized methods and definitions used in estimating national health expenditure. Data from the public accounts is supplemented with information from provincial/territorial government department annual reports and annual statistical reports when available, as well as information provided by provincial/territorial government department officials. Total provincial government health spending figures include spending for health services reported by the provincial/territorial ministry responsible for health as well as by other departments that report spending on health according to national health accounts definitions.

Adjustments for regional health authority and/or hospital deficits or surpluses are not made in NHEX unless the provincial government assumes them. Once assumed by the provincial government, they are allocated to the years when the regional health authority and/or hospital accumulated them.

During the preparation of NHEX reports, CIHI's estimates of provincial/territorial government health expenditure are submitted to provincial/territorial departments of health for review.

Figures identified as forecasts are based on the growth rates of major programs reported in provincial/territorial government main estimates and budgets.

The variations seen in administration, prevention and promotion, and health research in 2006–2007 for Saskatchewan are due to methodological changes in its accounting system. The methodological changes involved reclassifying Saskatchewan's health expenditure data.

On April 1, 1999, Nunavut was formed from the eastern part of the Northwest Territories. The Northwest Territories expenditures for calendar year 1999 include expenditures for Nunavut for one-quarter of the fiscal year ending March 31, 1999, prior to the formation of Nunavut. Consequently, expenditure data for the Northwest Territories is not comparable before and after calendar year 1999.

In 2016, the Northwest Territories' Department of Health and Social Services reviewed the health expenditures methodology based on the NHEX definition. Some reclassifications and refinements were made during this process. These changes have resulted in spending variations for Hospitals, Other Institutions, Physicians, Administration and Public Health in 2012–2013 data.

In 2017, the method of estimating Quebec's provincial government health expenditures was revised in the wake of reform brought about by the adoption of Bill 10<sup>ii</sup> in 2015–2016, which amended the organization and governance of the health and social services network. The main differences between the methods relate to the inclusion of expenditures previously excluded because of their "social" nature, the revision of the categorization of certain costs and the inclusion of special government health funds, whose expenses should have been included before. These significant changes imply a break in the series between 2014–2015 and 2015–2016. In particular, the following are observed:

- A significant increase in total expenditures funded by the provincial government, largely attributable to the inclusion of expenditures of the Health and Social Services Fund (FINESSS); and
- A significant increase in expenditures in 3 categories:
  - Other Professionals — Mainly due to the reclassification of certain expenses that were previously recognized in other categories;
  - Other Health Spending — Mainly due to the inclusion of expenditures that were not included in the previous method (e.g., expenditure on home help); and
  - Other Institutions — Mainly due to the inclusion of expenditures on youth in difficulty and people in rehabilitation centres.

It should be noted that the decline in Public Health expenditures resulted from both the reclassification of certain expenditures and changes in the health and social services network as of April 1, 2015, notably the abolition of the agencies. The decline in Administration expenditures mainly reflects the governmental guidelines adopted as part of this reform (again, tied to the abolition of the agencies).

---

ii. *An Act to modify the organization and governance of the health and social services network, in particular by abolishing the regional agencies.*

## Private sector

Private-sector data was revised in 1995, following a methodology review that began in the early 1990s. Private-sector data under the revised methodology incorporated information estimated directly from new sources for 1988 and subsequent years.

Expenditure amounts prior to 1988 were estimated using trend data. Therefore, readers should exercise caution when using the private-sector expenditure data for small provinces and for years prior to 1988.

**Health insurance** claims by category and premiums are collected from 8 not-for-profit insurance companies and the Canadian Life and Health Insurance Association, which surveys its member companies. The difference between claims and premiums is allocated to the category of prepayment administration, which relates to the cost of providing health insurance programs. Currently, health care spending data by insurance companies providing casualty insurance is not included in the estimates.

**Out-of-pocket** health expenditures are based on data from the SHS, formerly the Family Expenditure Survey, fielded by Statistics Canada. Only category data from Section P of the survey on direct costs for health care is used; the SHS categories of other medicines, drugs and pharmaceuticals (i.e., not prescribed by a doctor) and hospital care are replaced with data from other sources as described below. National health expenditure estimates are equal to the average expenditure per household for each category multiplied by the estimated number of households.

The SHS is an annual survey that began in 1996. Prior to 1996, full surveys that included both urban and rural areas were carried out in 1986 and 1992. In 1990, a survey was conducted that included only metropolitan areas. In years when complete surveys are carried out, data is available for the 10 provinces and for 17 urban centres. The urban centres include Yellowknife and Whitehorse, which are used to derive estimates of expenditure in the territories. Metropolitan expenditures per household tend to be somewhat higher than provincial estimates. All relevant categories were updated in complete survey years. In years when only urban surveys were carried out, the percentage changes in urban expenditures within each province or territory were used to update category estimates from complete survey years.

Between 1992 and 1996, when no surveys were conducted, provincial growth rates of the Statistics Canada variables of personal expenditure on medical care and dental care, drugs and drug sundries, and other health care were used to impute missing years. Starting in 2000, the SHS is conducted in the territories only every second year. For 2000, 2002 and each year thereafter, out-of-pocket estimates in the territories for physicians, dental care, eye care and other professional services, prescribed drugs and other health goods and services are estimated by CIHI. The SHS category of other medicines, drugs and pharmaceuticals is replaced with information purchased from the Nielsen Company, which tracks consumer sales of non-prescribed drugs sold in Canada at retail. Each year, the Nielsen Company reports retail sales data for 2 consistent years for more than 50 non-prescribed drug categories. Data is

reported by sales channel,<sup>iii</sup> total dollar sales volume and regional sales distribution for 5 regions that include 9 provinces. Newfoundland and Labrador and the territories are not included. The data is processed by classifying the non-prescribed drug categories as either over-the-counter drugs or personal health supplies. Regional sales amounts are separated into 9 provinces, and estimates for Newfoundland and Labrador and the territories are calculated using provincial distributions of direct costs for health care from the SHS. Lastly, appropriate provincial and federal sales taxes are incorporated into the estimates.

In 2010, the SHS underwent a major redesign by Statistics Canada: the reference period for prescribed drugs changed from 12 months to 3 months, and the result was annualized by multiplying by 4. An objective of the redesign was to better adapt collection methods and reference periods. The 2010 growth rates of out-of-pocket prescribed drugs exceeded 30% for most provinces and were almost 50% in some provinces. Since 2010 in the provinces and 2015 in the 3 territorial capitals, the SHS has combined the use of a questionnaire and an expenditure diary. As a result, there is a break in the series of out-of-pocket spending across the provinces and territories, which ultimately impacts private spending across the provinces and territories.

The SHS category of hospital care is not used; instead the out-of-pocket component of hospital care is estimated based on revenues from patient services from Statistics Canada's Annual Return of Health Care Facilities (HS-2) prior to 1994–1995 and from CIHI's Canadian MIS Database (CMDB) thereafter.

Private-sector estimates of other institutions are derived from data from Statistics Canada's Residential Care Facilities Survey (RCF). Data used from the survey includes income to facilities from co-insurance or self-pay of residents, differentials for preferred accommodation and sundry earnings.

The **non-consumption** component of the private sector includes non-patient revenue to hospitals, such as ancillary operations, donations and investment income. This data is derived from Statistics Canada's HS-2 prior to 1994–1995 and from the CMDB thereafter.

The non-consumption portion of the private sector also includes expenditures for biomedical and health care research by Canadian faculties of medicine derived from medical education statistics published by the Association of Faculties of Medicine of Canada. Included are amounts for research funded by national and provincial not-for-profit foundations such as the Heart and Stroke Foundation of Canada, the National Cancer Institute of Canada and the Canadian Cancer Society, to name only a few. In addition, funding from local sources, internal university sources, university and unaffiliated hospitals and foreign sources is also included. The sum of these amounts is provincially distributed according to the reported distribution of total amounts spent on research by the various faculties of medicine across the country.

---

iii. As a general rule, Statistics Canada definitions govern the classification of stores by class of trade. Sales channels include drug stores, food stores with pharmacies, grocery banners, mass merchandisers and warehouse clubs, which are estimated from the Nielsen Company's household panel data.

Capital expenditure in the private sector is also included as a non-consumption component category. Additional information on the calculation of capital can be found in the Calculation methods section under Capital expenditure and in the Forecasting methods section.

## **Federal direct**

Data on federal direct health care spending is estimated from information provided by federal government organizations supplemented with information from the national public accounts. Federal government health care spending is generally provided according to the province in which the expenditure was made. Some data, however, is provided only at the national level; in these cases it is distributed by the appropriate provincial/territorial population.

Historically, Public Health and Administration in the federal direct sector have been reported as 1 combined category. In an attempt to break out the category into separate components for public health and administration, an analysis of more detailed data available from 1988 to 2003 was undertaken. The estimated distribution between the categories during this period was applied to the historical data from 1975 to 1987 to produce separate estimates for public health and administration for the entire time series.

## **Municipal government**

Municipal government health care spending up to 2009 is based on information provided by the Public Sector Statistics Division, formerly known as the Public Institutions Division, of Statistics Canada.

## **Social security funds**

In Canada, social security funds include the health care spending by workers' compensation boards and the Drug Insurance Fund component of the MSSS drug subsidy program. The workers' compensation board data is derived from special tabulations from each provincial and territorial workers' compensation board of its medical aid expenditures. Income replacement and occupational rehabilitation are not included. Items included as medical aid that do not meet the national health expenditure definition of health expenditures, such as funeral expenses, clothing expenses, hotel accommodation and non-medical transportation, are excluded.

The workers' compensation boards' data is supplemented after 1996 with the portion of the RAMQ's drug program that is not funded by the MSSS. See the definition of social security funds in the Concepts and definitions section of this document for additional information.

# Calculation methods

## Calculation of average annual rate of growth

The average annual rate of growth is the constant annual rate necessary for a value at the beginning of a period to grow to a value at the end of a period over the number of compounding years in the period. The formula used to calculate the average annual rate of growth is

$$e^{(\ln(\text{value at end of period}) - \ln(\text{value at beginning of period})) \div T} - 1$$

where the constant  $e$  equals 2.718, which is the base of the natural logarithm, and  $T$  equals the number of years in the period.

## Calculation of calendar year

Some information sources provide data in fiscal years. Calendar year data was calculated by adding three-quarters of 1 fiscal year to one-quarter of the previous fiscal year.

## Calculation of constant dollars

Real health expenditure and real per capita health expenditure are presented in constant (1997) dollars. Constant dollar expenditure was calculated using price indices for public and private expenditures in each province and territory. The indices are the implicit price indices (IPIs) for government current expenditure, which are used to deflate public-sector health care spending, and the health component of the consumer price index (CPI), which is used to deflate private-sector health care spending. Statistics Canada developed both sets of indices. A more complete explanation of the methodology for calculating IPIs is available in Statistics Canada publications.<sup>2</sup>

In the health expenditure series, public and private expenditures are adjusted separately in each province using the appropriate index. Adjusted values are summed to obtain Canada totals at constant dollar values. Consequently, the overall IPI of the health expenditure series reflects the mix of public and private expenditures reported in NHEX.

The government current expenditure index is forecast for the latest year in NHEX reports for the provinces and territories. The forecasts are based on The Conference Board of Canada's forecasts of this index for Canada, Ontario and Quebec and CIHI's forecasts for the remaining provinces.

The CPI (health) is forecast to December of the latest year in NHEX reports based on the average of the monthly index up to April of the same year, which is the latest information available prior to the publication of the annual report.

## Calculation of total health expenditure as a percentage of gross domestic product

The GDP at market prices<sup>iv</sup> was used to express total health expenditure as a percentage of GDP. National GDP figures for Canada were used rather than the sum of provincial/territorial GDP to calculate the total health expenditure-to-GDP ratio for Canada.

The GDP figures provided by Statistics Canada were revised (upward) in 2013 as part of its historical revision of the Canadian System of National Accounts (CSNA) due to the implementation of the new international standards published in the *System of National Accounts 2008* (SNA 2008). Revised GDP figures for Canada and the provinces/territories are available from 1981 to 2013. No attempt was made by CIHI to estimate Canada and provincial/territorial GDP prior to 1981. Forecasts of GDP figures at both the national and provincial/territorial levels for the latest year were prepared by CIHI by applying The Conference Board of Canada's latest available forecasted growth rate of GDP to the previous year's GDP figures from Statistics Canada.

## Calculation of per capita dollars

Per capita health expenditures were calculated using the most recent revised population estimates from the Demography Division of Statistics Canada. This takes into account the results of the census adjustment for net census under-count, non-permanent residents and returning Canadians. Population figures for the latest year are projections from the Demography Division of Statistics Canada.

## Calculation of total health expenditure

Total health expenditure refers to the sum of the public and private sectors. Canada refers to the sum of the 10 provinces and 3 territories. Total health care spending in constant (1997) dollars is the sum of public-sector health care spending in constant (1997) dollars and private-sector health care spending in constant (1997) dollars. Canada average is the sum of provincial/territorial expenditures divided by the sum of provincial/territorial data of another variable, such as population.

---

iv. Information provided by the National Accounts and Environment Division of Statistics Canada.

## Capital expenditure

Prior to a major methodology review in 1995, several categories in the private sector were estimated using a residual method, whereby public-sector spending was subtracted from an estimated total. The remainder was allocated entirely to the private sector. Following a major methodology review in the early 1990s, Capital expenditure remained the only category that was estimated this way. In 1998, the method of calculating capital expenditure was reviewed and revised. Capital expenditure for the private sector and provincial and municipal government sectors is now estimated from the annual Capital and Repair Expenditures Survey (CAPEX) obtained from Statistics Canada. Capital expenditure in the federal direct sector is obtained from the national public accounts and federal departments that provide health services. There are no capital expenditures in the social security funds sector. The implications of this change are twofold: capital expenditure in all sectors is based on full-cost or cash-basis accounting principles, and Capital is the only category of expenditure in which spending is categorized as private or public based on ownership of the facility in which the investment is made. This convention has been adopted due to data limitations.

## Forecasting methods

Provincial government–sector health spending forecasts are based on provincial main estimates or on the growth rates of a consistent set of major health programs of provincial health departments reported in provincial main estimates and budgets. In the case of territorial government forecasts of the Northwest Territories and Nunavut, estimates were based on amounts reported in their main estimates. In other sectors, figures for these 2 territories were calculated by developing a forecast for the Northwest Territories including Nunavut. The share of Nunavut spending in the last year of actual data of the combined total of the Northwest Territories and Nunavut was used as a proxy to break out the forecasts for the Northwest Territories and Nunavut for the latest years.

The 2015 figures for Capital expenditure in the provincial government sector, the municipal government sector and the private sector are estimated based on actual figures from Statistics Canada. The 2016 Capital figures are based on preliminary actual data, while 2017 capital data is based on intentions.

Forecasts for federal direct health care spending are based on information from the national public accounts and the Treasury Board of Canada's main estimates. Forecasts for workers' compensation boards, municipal government and the private sector were made entirely based on econometric analysis of time series trends. For each specific category, such as Drugs and Other Institutions, up to 40 different univariate forecasting specifications were evaluated, and the best one (based on the root mean square error of prediction) was selected. The functional forms studied included the exponential smoothing family (simple, double, Holt, Brown, Winters, damped trend, etc.), time trends and ARIMA specifications. Logarithmic transformations were used when the data warranted their use. A LOESS smoothing technique was used as well to help in generating better forecasts in some cases by capturing recent information in the series.

Forecasts of health expenditures are identified in the figures in NHEX reports by special symbols and in NHEX data tables by the letter “f.”

Gross domestic product figures at both the national and provincial/territorial levels were forecast for 2016 and 2017 by CIHI by applying The Conference Board of Canada’s forecasted growth rate of GDP of this year to the previous year’s GDP figures from Statistics Canada.

The government current expenditure price index forecasts are based on The Conference Board of Canada’s latest forecasts of this index for Canada, Ontario and Quebec and CIHI’s forecasts for the remaining provinces.

The CPI (health) was forecast to December of the latest year based on the average of the monthly index up to April of the same year, which was the latest information available prior to the publication of the annual NHEX report.

## Age and sex distribution methods

The Series E data tables present provincial government health expenditure for selected categories of spending by sex and age groupings. Total provincial/territorial government expenditure by age, sex and province/territory is available for 1998 onward. The 5 categories presented are Hospitals, Other Institutions, Physicians, Other Professionals and Drugs. The method of distributing the 5 categories and total is explained below. The data reported in Series E of the data tables is not age–sex standardized.

### Hospitals

The distribution of provincial government hospital expenditure by age and sex is based on information from CIHI’s Discharge Abstract Database (DAD)<sup>v</sup> and Hospital Morbidity Database (HMDB). CIHI’s Case Mix Group (CMG) grouping methodology was used to group patient discharge information into homogenous groups, based on clinical and resource utilization characteristics. Currently, the CMG can be grouped back by a maximum of 5 years. Therefore, for the period from 1995–1996 to 1996–1997, the 2001 methodology was employed, while for the period from 1997–1998 to 2002–2003, the 2002 methodology was used. The 2003 CMG methodology was used for 2003–2004 to 2005–2006. After the grouper redevelopment, the CMG+ methodology has been in place since 2006. Thus the 2006 CMG+ methodology was used for 2006–2007, the 2012 CMG+ grouper was used for 2007–2008 and the 2013 CMG+ grouper was used for the period from 2008–2009 to 2012–2013. For the most recent 2 years (2014–2015 and 2015–2016), the 2016 CMG+ grouper and 2017 CMG+ grouper were used.

---

v. The Discharge Abstract Database receives information from participating hospitals that represent about 85% of all hospital discharges in Canada. The database contains clinical, demographic and administrative data for inpatient acute, chronic and rehabilitation care and day surgery.

Based on the CMG grouping methodology, patients are assigned to a group according to diagnosis and surgical procedures. Within each group, patients are further classified into a complexity level<sup>vi</sup> based on the number and type of comorbid diagnoses and age. Once the patient is grouped, a Resource Intensity Weight (RIW)<sup>vii</sup> is assigned. The assigned RIWs are then aggregated to generate total weighted cases by age and sex.

The provincial government hospital expenditure estimate for each province is allocated to a given age group based on the weighted cases in that age group relative to total weighted cases. Weighted case information from the DAD and the HMDB is for acute inpatient care only. Weighted cases for the majority of hospital-based ambulatory care (day surgery, emergency departments and clinics) are currently limited to some facilities in a couple of provinces. Nevertheless, acute inpatient weighted cases are used as a proxy to distribute the national health expenditure estimate of hospital expenditure financed by provincial governments, which includes inpatient and ambulatory care. CIHI investigated the reasonableness of using the acute inpatient data as a proxy to distribute comprehensive provincial government hospital expenditures by comparing 1998–1999 weighted cases calculated from Alberta’s Ambulatory Care data set with the Alberta acute inpatient weighted cases from the DAD/HMDB. The analysis showed that the distribution of ambulatory care weighted cases differs from inpatient weighted cases primarily in the senior age groups. The impact of including the ambulatory care weighted cases with the inpatient weighted cases is to lower per capita spending in the senior age groups from what it would have been based on the inpatient weighted cases only.

Data from the DAD/HMDB covers 11 jurisdictions across Canada; the territories are combined due to the small number of facilities. Yukon, the Northwest Territories and Nunavut (1999 onward) were distributed according to a combined territorial distribution and further distributed based on population. Data for Prince Edward Island and Saskatchewan from the DAD for 1995–1996 to 1997–1998 represents about 85% of total acute hospitalizations within each province; however, from 1998–1999 onward the DAD represents 100% coverage in these 2 provinces. Data for 2002–2003 to 2006–2007 in Quebec, as well as for 2003–2004 in Manitoba, was unavailable and has been estimated based on an analysis of the historical series.

Caution should be exercised when comparing age and sex expenditure estimates across provinces, particularly with respect to Manitoba. Hospital utilization data in Manitoba is reported to CIHI differently than in other provinces and territories. In addition to acute inpatient care, Manitoba’s weighted cases include chronic, rehabilitative and long-term hospital care, which results in higher weights applied to senior age groups and ultimately higher spending in those age groups.

---

vi. Following extensive consultation with experts in the field, it is believed that this data has not been substantially affected by recent concerns regarding complexity.

vii. RIWs are resource allocation algorithms developed by CIHI for estimating the relative hospital resources used for a typical case. See [CIHI's website](#) for more information.

## Physicians

The distribution of provincial government Physicians expenditure by age and sex is based on information from CIHI's National Physician Database (NPDB). The NPDB contains data on the socio-demographic and billing activities of fee-for-service physicians, as well as on the age and sex of patients. NPDB data is used as a proxy to distribute all physicians' services expenditure from NHEX. NHEX includes primarily professional fees paid by provincial medical care insurance plans to physicians in private practice, but it also includes alternative payment methods such as salaries and sessional and capitation payments.

Fiscal year 1996–1997 data was unavailable from the NPDB for Nova Scotia and was estimated using growth rates in the population by age and sex applied to the 1995–1996 fee-for-service data from the NPDB. Data for 1995–1996 was also unavailable from the NPDB for New Brunswick. Similar to Nova Scotia, it was estimated using growth rates in the population by age and sex applied to 1994–1995 fee-for-service data from the NPDB. Yukon fee-for-service data from 1995–1996 onward was used to estimate the Northwest Territories by applying Yukon fee-for-service per capita spending by age and sex to the Northwest Territories population for 1995–1996 onward. Similar to the Northwest Territories, Nunavut for 1999–2000 onward was estimated using Yukon data. Data was collected in fiscal year and converted to calendar year (see Calculation methods).

Data provided by the NPDB for the latest year is a preliminary estimate.

## Other Institutions

Statistics Canada's RCF was used to estimate the provincial/territorial age and sex distribution for other institutions. Facilities for delinquents, transients and others were excluded from the age–sex distribution. Only facilities financed to provide a level of care for type II or higher were considered for the estimation. These levels of care require a minimum of at least 1.5 hours a day of medical and/or professional nursing supervision. Patient counts by age and sex and by predominant level of care within each facility were used to create the distributions.

In order for a facility's patient count to be included, it was also necessary for the facility to report both income from provincial/territorial government sources and days of care for provincial government–funded clients. Within a particular facility type, patient counts by age and sex were weighted based on the predominant level of care. Weights were generated using the estimated cost per patient for a particular type of care relative to type II. That is, type II care was the basis and had a weight of 1. Once patient counts by age and sex, level of care and facility type were assigned weights, the patient counts were aggregated to create total weighted provincial or territorial patient counts. A distribution across age and sex was generated and then applied to the appropriate provincial/territorial NHEX figure for other institutions. The age groups from the RCF ( $\leq 10$ , 11 to 17, 18 to 44, 45 to 64, 65 to 69, 70 to 74, 75 to 79, 80 to 84 and 85+) were expanded into 5-year age groups by CIHI using population and DAD/HMDB weighted cases.

At the time of publication of the most recent NHEX report, data was unavailable for Quebec for all years. The weighted patient counts for Canada (minus Quebec) from the RCF were used as a proxy for Quebec's distribution of Other Institutions expenditure.

## Drugs

Provincial government prescribed drug expenditure primarily includes drugs that are dispensed through provincial drug subsidy programs. The level of coverage under these programs varies across the country. Universal drug plans with first dollar coverage for all residents are currently not available in any province. Most provincial government plans provide prescribed drugs to seniors and welfare recipients. Manitoba, Saskatchewan and British Columbia provide some coverage to all residents with an assortment of substantial individual deductibles and copayments. Similarly, Quebec instituted a universal plan in 1997 that requires Quebec residents to be covered under the provincial plan if a private group plan, usually available through an employer, is not available.

CIHI requested drug claims that were paid in a given year by age and sex from each provincial drug subsidy program. Some data from 2005–2006 was obtained from CIHI's National Prescription Drug Utilization Information System (NPDUIS) Database. Drug claim information by age and sex is currently unavailable from Nunavut only.

The Newfoundland and Labrador Prescription Drug Program (NLPDP) supplied expenditure data by age and sex from 2007–2008 onward. Data collected from the NLPDP consists of 5 main plans (the Foundation Plan, 65Plus Plan, Access Plan, Assurance Plan and Select Needs Plan) and prescription drug claims paid by the Department of Health and Community Services.

Data from Nova Scotia consists of the Seniors Pharmacare Program and prescription drug claims paid by the Department of Community Services through the Income Assistance Program and Family Benefits Program. Data from the Special Drug Program was unavailable; expenditure for this plan was distributed using data from the Department of Community Services.

Data collected from the New Brunswick Prescription Drug Program consists of 10 different drug plans: Seniors Plan (A), Cystic Fibrosis Plan (B), Social Development (Individuals in Licensed Residential Facilities) (E), Social Development (F), Children in Care (G), Multiple Sclerosis (H), Organ Transplant (R), Human Growth Hormone (T), HIV (U) and Nursing Home (V). However, there is no data available for Special Authorization (SA) (for drugs not normally covered under the provincial formulary). Beginning in October 1996, claims under SA are included in 6 other plans (A, B, G, R, T and V) if the claimant is a beneficiary of one of these plans. In September 1997, this was expanded to include plans E and F. Minor plans for which age–sex data was not available were distributed using the overall distribution of plans for which data was available.

The MSSS supplied data on its drug subsidy program in calendar year. The plans included coverage for seniors, income security recipients and others. Data for 1997 onward also included a general client group representing recipients whose drug claims are paid through the self-financed Drug Insurance Fund by the premiums of subscribers to the plan and not the provincial government. Consequently, the age–sex distribution of this group was not included with the rest of the provincial government program.<sup>viii</sup>

The Ontario Drug Benefits (ODB) program supplied age–sex data, which included combined prescription drug claims paid by the Ministry of Health and Long-Term Care and the Ministry of Community Services, as well as data for the Trillium Drug Program, which was implemented in April 1995. The Special Drug Program does not have an age–sex profile; its expenditure was therefore applied to the ODB distribution.

Manitoba was unable to provide data for 1996–1997 because of the Drug Programs Information Network (DPIN) conversion from a calendar year to a fiscal year system. This resulted in a 15-month year from January 1996 to April 1997. The Department of Health’s Pharmacare plan supplied data on drug claims paid for 1997–1998 onward. Data for the Ministry of Family Services, Employment and Income Assistance Division’s drug plan was supplied for 1997–1998 onward. The figures reported for Manitoba in 1997 are based on fiscal year data for 1997–1998.

Data supplied by the Saskatchewan Drug Plan and Extended Benefits Branch was reported by calendar year.

Alberta Health provided expenditure data by age and sex on its prescription drug programs from 1995–1996 onward. Data was supplied for all 4 of Alberta’s prescription drug plans: Seniors, Widow’s Pension, Regular and Palliative Care. Alberta Human Resources and Employment provided data for its prescription drug expenditure under the Employment and Income Assistance programs (formerly under Alberta Family and Social Services) for 1995–1996 to 1998–1999 and 2000–2001 onward. The age–sex distribution for 1999–2000 Alberta Human Resources and Employment’s drug plan is based on 1998–1999 data.

British Columbia’s Ministry of Health Services supplied claims paid by age and sex of the client in calendar year from 1996 onward for each plan administered by the PharmaCare program. NHEX drug plan expenditures for British Columbia were converted to calendar year and then applied to the distribution of the appropriate data supplied by the province.

Yukon’s Department of Health and Social Services supplied drug expenditure claims for 3 administered drug plans: Seniors, Child Drug Plan and Chronic Care Drug Plan. Data from 1995–1996 to 2004–2005 was provided for each plan, with the exception of the Child Drug Plan, which was implemented in 1997–1998. The Northwest Territories Department of Health and Social Services supplied data by age and sex for prescription drug claims paid for Extended Health Benefits.

---

viii. See the definition of social security funds in the Concepts and definitions section of this document.

The provincial government drug estimate at the program level is allocated to a given age group based on the value of claims paid in that age group relative to total claims paid. In provinces with more than one program, the age–sex–distributed programs were combined to represent a total estimate for the province. Most data was collected in fiscal year and converted to calendar year (see Calculation methods).

## Other Professionals

Provincial/territorial governments provide a variety of health services delivered by health professionals other than physicians, including primarily dentists, optometrists, chiropractors and physiotherapists.

All provinces provide various programs for seniors and children, as well as programs for income assistance recipients. However, the services provided vary considerably across Canada. For instance, Ontario, Quebec and British Columbia provide physiotherapy services to residents, while other provinces do not. Chiropractic services are provided through provincial insurance plans from Ontario west to British Columbia, but nowhere else in Canada. Target populations, copayments and deductibles also vary from province to province. CIHI requested from each province data for claims that were paid for by provincial/territorial governments in a given year, by age, sex and type of service provided by other health care professionals. Details of data availability and estimation methods are described below.

Data was unavailable from Prince Edward Island, New Brunswick and Nunavut. The remaining provinces and territories were able to supply data by age and sex for approximately 75% or more of other professional services. When a province or territory was unable to supply 100% of services, CIHI estimated the age and sex distribution for these services by using data from programs from other provinces with similar coverage and eligibility levels.

The provincial government expenditure estimates for Other Professionals at the program level are allocated to a given age group based on the value of claims paid in that age group relative to total claims paid. In provinces with more than one program, the age–sex–distributed programs were combined to represent a total estimate for the provinces' Other Professionals expenditure. Most data was collected in fiscal year and converted to calendar year (see Calculation methods).

## Total provincial government health expenditure by age and sex

To age–sex standardize total provincial government health expenditures, it is necessary that all categories of expenditure be distributed by age and sex for each province. Unfortunately, age–sex distributions for all provincial/territorial government expenditures are currently not available in all provinces and territories. Consequently, CIHI estimated the missing data using the following methods. The age–sex distribution of drug subsidy programs for Nunavut was estimated for 1998 onward using the distribution of drug subsidy programs in the Northwest Territories. The age–sex

distributions of the category Other Professionals in Prince Edward Island, New Brunswick and Nunavut (1999 onward) were estimated for 1998 onward. The age–sex distributions of these provinces were based on the distributions in other provinces of other health care provider programs that had similar beneficiaries and copayment plans. Dental expenditure by age and sex in Prince Edward Island was based on Newfoundland and Labrador Dental Health Plan clients age 3 to 16. Similarly, New Brunswick’s dental expenditure for the Youth Income Assistance Plan was based on clients up to age 17 from the Newfoundland and Labrador dental plan. New Brunswick’s age and sex distribution for the Income Assistance Optometry Plan was based on Saskatchewan Health’s Supplementary Health Optometry plan. As was the case with Nunavut’s drug expenditure, Nunavut’s Other Professionals category expenditure was based on the age–sex distribution for the Northwest Territories. Quebec’s physiotherapy expenditure was distributed across a combined age–sex distribution of Ontario and British Columbia’s fee-for-service physiotherapy plans.

Capital expenditure was estimated for all provinces and territories using the general provincial/territorial populations by age and sex. This method was used based on 2 criteria: 1) capital investments in health care institutions typically last for decades, and those who do not use institutional services in a given year may use them in the future; and 2) given the uncertainty of illness, the availability of facilities has a value for all who potentially would use them if the need arose.

The remaining categories of Public Health, Administration and Other Health Spending were also estimated using the general provincial/territorial populations by age and sex based on the following rationale. Public health and health research benefit the entire population, and it would be difficult to attribute them in different proportions to specific age and sex groups. Prepayment administration expenditures are accounted for mainly by the universal hospital and physicians’ services plans. The rationale for distributing them according to the general population rather than based on utilization is because prepayment administration expenses are made up largely of the costs of registration systems for eligible residents, which cover the total population, and claims processing costs. The convention of allocating ambulance expenditure by population distributions is not believed to result in significant error of the total provincial expenditure distributions due to its small share of the other health care spending category.

## **Age–sex standardization of provincial government expenditures**

For the purpose of age–sex standardization, CIHI used a direct method and the 2011 Canadian population as the reference population. Standardized expenditures by category were calculated by multiplying the male and female population of Canada in each of the 19 age groups by the expenditure per capita for each age group and sex by province and territory. Male and female standardized expenditure was aggregated and then divided by the total Canada population to generate the standardized per capita spending for a particular category by province and territory.

# Major changes from previous years

In the process of compiling the national health expenditure series from year to year, new information becomes available, methods and concepts are refined and data sources are improved. The data is revised to incorporate these enhancements. This section refers to the annual report published in 2017.

## Revision history

### Provincial government sector

Historical revisions were made for Nova Scotia from 2010 to 2014, for the Northwest Territories from 2010 to 2012, and for Nunavut from 2013 onward, as well as for New Brunswick in 2014 due to methodology refinement.

**Table 1** Differences from previously reported provincial government–sector data by province/territory and Canada, 2010 to 2014 (\$ millions)

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.	Canada
2010	—	—	110.6	—	—	—	—	—	—	—	—	28.3	—	139.0
2011	—	—	153.9	—	—	—	—	—	—	—	—	37.2	—	191.2
2012	—	—	163.9	—	—	—	—	—	—	—	—	9.2	—	173.1
2013	—	—	178.5	—	—	—	—	—	—	—	—	—	-0.2	178.2
2014	—	—	199.8	0.2	—	—	—	—	—	—	—	—	1.6	201.7

**Note**

— No significant change from the previous year.

**Source**

National Health Expenditure Database, Canadian Institute for Health Information.

## Private sector

The changes from 2012 to 2014 across jurisdictions were due to updated spending on non-prescribed drugs.

**Table 2** Differences from previously reported private-sector data, by province/territory and Canada, 2012 to 2014 (\$ millions)

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.	Canada
2012	-1.8	0.9	5.9	4.8	27.9	50.4	9.4	7.6	30.3	13.2	0.1	0.1	0.1	148.9
2013	-1.9	0.8	5.4	3.9	34.8	68.7	5.1	4.1	18.0	18.2	0.1	0.1	0.1	157.4
2014	-1.7	0.4	6.2	4.3	38.9	95.8	10.1	4.3	5.7	18.3	0.1	0.1	0.1	182.7

**Source**

National Health Expenditure Database, Canadian Institute for Health Information.

## Federal direct sector

The historical revisions shown in Table 3 are largely due to methodology refinement.

**Table 3** Differences from previously reported federal direct-sector data, by province/territory and Canada, 2009 to 2014 (\$ millions)

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.	Canada
2009	2.4	-0.3	-2.1	0.6	2.4	-2.8	1.8	-1.8	1.6	-2.4	-3.2	2.2	1.6	0.0
2010	3.3	-0.5	-2.9	0.7	2.5	-3.0	1.9	-1.9	1.8	-2.6	-3.0	2.0	1.7	0.0
2011	5.1	-0.1	-8.7	5.0	2.5	-3.1	1.7	-1.9	1.8	-2.9	-2.9	1.7	1.9	0.0
2012	2.9	-0.5	-2.0	1.0	1.9	-2.4	1.2	-1.6	1.4	-2.4	-3.2	1.0	2.7	0.0
2013	1.7	-0.6	1.1	-0.6	1.4	-1.7	0.7	-1.2	0.9	-1.9	-3.5	0.6	3.2	0.0
2014	6.8	-0.8	-1.2	-2.5	-1.5	-6.6	0.1	-1.9	-0.8	-3.8	-3.7	—	3.9	-12.1

**Note**

— No significant change from the previous year.

**Source**

National Health Expenditure Database, Canadian Institute for Health Information.

## Social security fund sector

The historical revision shown in Quebec in 2014 is due to updated data from RAMQ's annual report.

**Table 4** Differences from previously reported social security fund–sector data, by province/territory and Canada, 2014 (\$ millions)

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.	Canada
2014	—	—	—	—	-2.5	—	—	—	—	—	—	—	—	-2.5

**Note**

— No significant change from the previous year.

**Source**

National Health Expenditure Database, Canadian Institute for Health Information.

## Age and sex expenditure data

Changes to the age–sex distributions from the previous year's report occurred due to methodology revisions and new information from data sources. For more detailed information, please contact the NHEX team by telephone at 613-241-7860 or by email at [nhex@cihi.ca](mailto:nhex@cihi.ca).

## Economic and demographic data

Statistics Canada recently revised its population estimates back to 2012. The estimates in the NHEX report are now based on the latest released data of March 2017.

# Sources of data

National health expenditure estimates are compiled based on information from the following sources.

## Provincial government sector

- Provincial public accounts and main estimates.
- Provincial departments of health annual reports and statistical supplements where available.
- Annual reports of various foundations, agencies and commissions.
- Special tabulations and specific information from various provincial departments reporting health expenditures.
- Federal transfers as a part of provincial government spending:
  - EPF, CHT, CST — Federal–Provincial Relations Division, federal Department of Finance.
  - CAP — Cost Shared Programs Division, Human Resources and Development Canada.
  - Contributions to the governments of the Northwest Territories and Yukon — Public Accounts of Canada, Department of Indian Affairs and Northern Development.
  - Health Resource Fund — Health Canada.

## Federal direct sector

- Public Accounts of Canada.
- Main estimates of Treasury Board of Canada.
- Special tabulations/information from
  - Health Canada;
  - Department of Veterans Affairs;
  - Department of National Defence;
  - Public Safety Canada;
  - Statistics Canada;
  - Citizenship and Immigration Canada; and
  - Several organizations that are responsible for administering research funds from the federal government, such as the Canada Foundation for Innovation, Canadian Foundation for Healthcare Improvement and Canadian Institute for Advanced Research.

## Municipal government sector

- Special tabulation purchased from the Public Sector Statistics Division of Statistics Canada.

## Social security funds sector

- Special tabulations on medical aid spending provided by the provincial/territorial workers' compensation boards.
- Annual reports of provincial/territorial workers' compensation boards.
- Special tabulations from the MSSS.

## Private sector

- Private insurance component:
  - The not-for-profit portion is captured from special tabulations provided by the not-for-profit insurance companies.
  - The commercial portion is captured by a special tabulation provided by the Canadian Life and Health Insurance Association.
- Out-of-pocket component:
  - Survey of Household Spending, Statistics Canada, except for the following categories:
    - **Hospital accommodation** (adjusted revenues from *patient services*) — Annual Return of Health Care Facilities, fielded by Statistics Canada to 1994–1995, and the CMDB, administered by CIHI from 1995–1996 onward.
    - **Other institutions** — RCF fielded by Statistics Canada.
    - **Over-the-counter drugs** and **personal health supplies** — Market Review of Selected Drug Categories at Retail, a special tabulation purchased from the Nielsen Company Canada.
- Non-consumption component:
  - **Hospital accommodation** (adjusted revenues from non-patient services) — Annual Return of Health Care Facilities, Part 2, fielded by Statistics Canada to 1994–1995, and the CMDB, from 1995–1996 onward.
  - **Capital expenditures** — Statistics Canada.
  - **Health research** — Association of Faculties of Medicine of Canada, Canadian Medical Education Statistics, Expenditure for Biomedical and Health Care Research of Canadian Faculties of Medicine by Source of Funds.

## Age and sex data

- CIHI's DAD and HMDB.
- CIHI's NPDB and NPDUIS Database.
- Special tabulations provided by provincial/territorial government departments responsible for administering drug and other health benefit programs.
- Statistics Canada's Residential Care Facilities Survey.

## Economic and demographic data

- Gross domestic product:
  - CANSIM Table 384-0038, Statistics Canada.
  - Purchased from The Conference Board of Canada (GDP growth rates) for the latest year.
- Population — Demography Division, Statistics Canada.
- Provincial government expenditure — Special tabulation purchased from the Public Sector Statistics Division of Statistics Canada. Since 2009, data has been extracted and estimated from provincial public accounts, budgets and main estimates.
- Price indices:
  - Income and Expenditure Accounts Division and Prices Division, Statistics Canada.
  - Purchased from The Conference Board of Canada for the latest year.

# References

1. Health Canada. [Canada Health Act Annual Report](#). 2014.
2. Statistics Canada. [Guide to the Income and Expenditure Accounts](#). 2008.
3. Organisation for Economic Co-operation and Development. [OECD Health Statistics 2017](#). June 2017.



**CIHI Ottawa**

495 Richmond Road  
Suite 600  
Ottawa, Ont.  
K2A 4H6

**613-241-7860**

**CIHI Toronto**

4110 Yonge Street  
Suite 300  
Toronto, Ont.  
M2P 2B7

**416-481-2002**

**CIHI Victoria**

880 Douglas Street  
Suite 600  
Victoria, B.C.  
V8W 2B7

**250-220-4100**

**CIHI Montréal**

1010 Sherbrooke Street West  
Suite 602  
Montréal, Que.  
H3A 2R7

**514-842-2226**

cihi.ca

16040-0917

