National Health Expenditure Trends

2023

Methodology Notes

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1 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

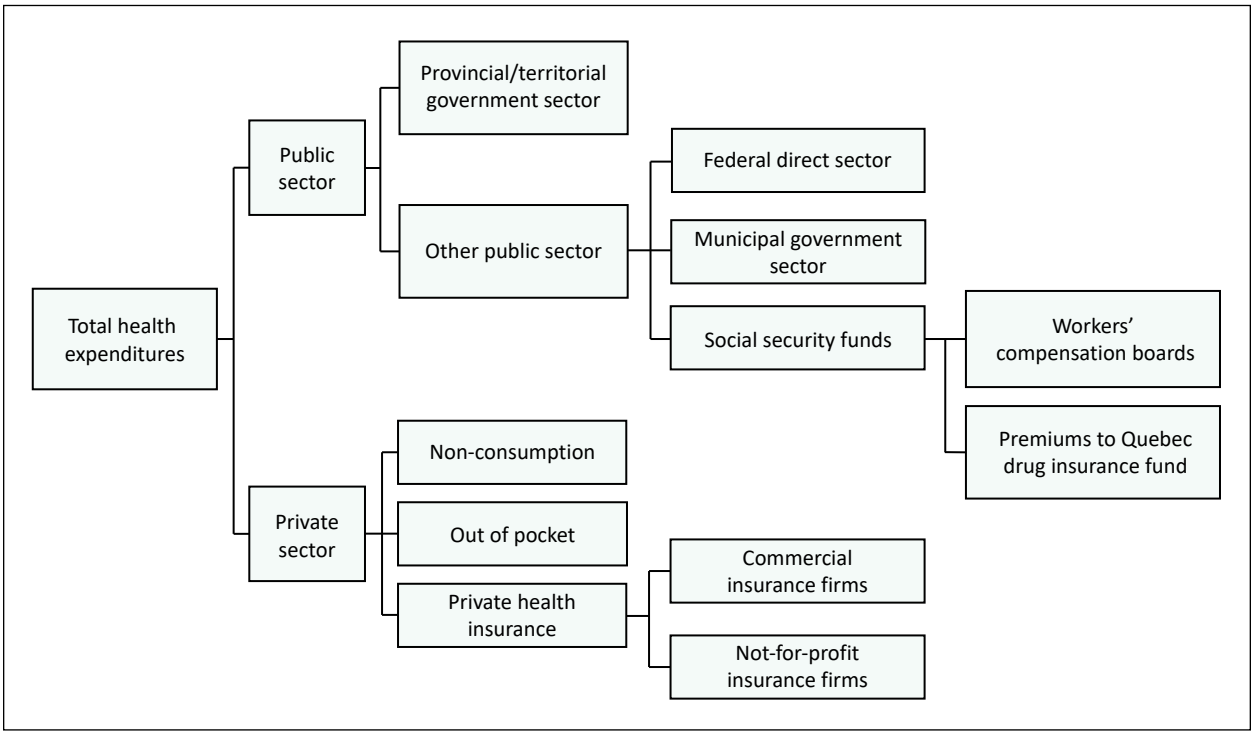
Health expenditure — Includes any type of expenditure for which the primary objective is to improve or prevent the deterioration of health status.

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.

The variables and concepts used to report national health expenditures in Canada are based on a system of classification that is consistent with international standards developed by the Organisation for Economic Cooperation and Development (OECD) for reporting health expenditures.

Please note that throughout this document and other NHEX products (e.g., snapshot, infographics), numbers may not add to the total due to rounding.

Figure 1 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/territorial 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/territorial 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/territorial government health transfers to municipal governments are included in the provincial/territorial government sector.

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

1. The *provincial/territorial government sector* includes health spending from provincial/territorial government funds, federal health transfers to the provinces/territories and provincial/territorial 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/territories.
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. Designated funds transferred by provincial/territorial governments for health purposes are not included in the municipal sector but are included with provincial/territorial 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/territorial boards commonly refer to as medical aid. Non–health related items often reported by the workers' compensation boards, such as funeral expenses, travel and clothing, are excluded.

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/territorial government sector) and by the amounts collected by the Drug Insurance Fund as premiums and proceeds (social security funds sector).

Private sector — Includes spending from private sources without distinguishing between public and private providers of goods and services. Therefore, publicly funded health services that are privately delivered are included in the public sector's health expenditures, rather than in the private sector's. It 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-consumption expenditure (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. In these facilities, a mix of health and social services is provided; health services are largely at the level of nursing care, in combination with personal care services. The medical components of care are much less intensive than those provided in hospitals. 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) and primary care expenditures.

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.

Other Professionals — Services at the aggregate level represent expenditures for allied health professionals such as dentists, denturists, chiropractors, optometrists, massage therapists, osteopaths, physiotherapists, podiatrists, psychologists, nurses and naturopaths. Discrete identification of many of the professionals included under Other Professionals is often not possible. 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, naturopaths, etc.

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.

Capital — Includes expenditures on construction, machinery and equipment, and computer software and databases of hospitals, clinics, first-aid stations and residential care facilities.

Public Health — 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. (Data is currently available for the public sector only.)

Administration — Expenditures related to the cost of providing health insurance programs by the government and private health insurance companies and all costs 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, Drugs, Physicians and Other Institutions.

Other Health Spending

Other Health Spending: Home and Community Care (HCC) — CIHI has been undertaking data development for home and community care spending. The concept and definition of home and community care have been expanded to include home support and community-based services. See details in Section 6: Ongoing quality improvement.

Other Health Spending: Net of HCC — At the aggregate level, includes expenditures on health research, medical transportation (ambulances), hearing aids, other appliances and prostheses, 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.
- *Other* — Expenditures for items such as medical transportation (ambulances), hearing aids, other appliances, training of health workers and voluntary health associations.

COVID-19 Response Funding — Includes government spending on health-related activities as a time-limited emergency response to the COVID-19 pandemic.

Other terms

Federal transfers — Refer to the various federal, provincial and territorial health financing arrangements that may be used to fund the delivery of health and health-related services. The major funds and transfers include the Canada Assistance Plan (1966), Established Programs Financing (1977), Canada Health and Social Transfer (1995), Health Reform Transfer (2003), Canada Health Transfer (2004), Canada Social Transfer (2004), Equalization (2007), Territorial Formula Financing (2007) 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. Targeted transfer mechanisms were also created in the past, including the Health Transition Fund (1997 to 2000), Medical Equipment Fund (2000 to 2001), Primary Health Care Transition Fund (2001 to 2006), Diagnostic/Medical Equipment Fund (2003 to 2005), Public Health and Immunization Fund (2004 to 2006), Wait Times Reduction Fund (2004 to 2008), Human Papillomavirus Immunization Trust (2007 to 2009) and Patient Wait Times Guarantee Trust (2007 to 2009), and most recently funds from Health Canada to improve access to mental health and addictions services, as well as home and community care (2017 to 2026).

Gross domestic product (GDP)[1] — 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.

Purchasing power parity (PPP)[2] — 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.

Data limitations

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.

2 Guidance from the National Health Expenditure Expert Advisory Group

Every year, the NHEX team consults with the National Health Expenditure Expert Advisory Group for its advice and constructive comments related to national health expenditures. During the annual meeting, the members discuss updated health expenditure trends, highlights of the previous release and issues to monitor in the future. The group provides advice and recommendations about data quality enhancements, methodology improvements, product development, and research and analytical work related to health expenditure in Canada.

For example, the Expert Advisory Group has provided

- Guidance to develop CIHI's 2011 report *Health Care Cost Drivers: The Facts.*, based on a review of the underlying drivers of the Hospitals, Physicians and Drugs expenditure categories;
- A recommendation to develop a chartbook on provincial/territorial health spending;
- A recommendation to create an open data file to allow users to download NHEX data into their business intelligence tools (which is now used by jurisdictions to populate their interactive data information tools);
- Guidance on potential new data sources to advance development of information on home and community care spending, which resulted in the acquisition of new data from Statistics Canada (analysis ongoing); and
- Guidance to develop new econometric models for use internally to evaluate data quality.

Following are the Expert Advisory Group members:

- Richard Plain, PhD, University of Alberta (retired)
- Jeremiah Hurley, PhD, McMaster University
- Livio Di Matteo, PhD, Lakehead University
- Michael Wolfson, PhD, University of Ottawa
- Colin Busby, Research Director, Institute for Research on Public Policy
- Kimberlyn McGrail, PhD, University of British Columbia
- Rosalie Wyonch, C.D. Howe Institute
- Yves Dussault, ministère de la Santé et des Services sociaux du Québec
- Alan Diener, Health Canada
- Martin Hébert, Commissaire à la santé et au bien-être
- Lawson Greenburg, Statistics Canada
- Ann Chapman, Director, Spending and Primary Care, CIHI

3 NHEX coding standards and data validation with provincial/territorial ministries

The coding standards for 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. The NHEX coding standards are listed in the following table. The corresponding reference page numbers of the OECD's *A System of Health Accounts 2011*[3] are also provided.

Table 1 NHEX coding standards

NHEX category (code)	Coding standards
Health Expenditure	This includes the final consumption expenditure of resident units on health care goods and services. The definition includes all activities that have the primary purpose of improving, maintaining and preventing the deterioration of the health status of persons; and mitigating the consequences of ill health through the application of qualified health knowledge (medical, paramedical and nursing knowledge, including technology, and traditional, complementary and alternative medicine). It also includes health care goods and services consumed by residents while abroad. It excludes the consumption of health care goods and services by non-residents of Canada.[3 (pp. 38, 52)]
Hospitals (GH)	This includes the following licensed establishments that are primarily engaged in providing acute care, extended and chronic care, rehabilitation and convalescent care, and psychiatric care: • General hospitals (GH) • Mental health hospitals (MH) • Specialized hospitals (other than mental health hospitals) It also includes nursing stations and outpost hospitals. It excludes establishments that are referred to as hospitals but that are primarily engaged in providing inpatient long-term nursing and rehabilitation services to persons requiring convalescence, and facilities that specialize in the long-term care of persons diagnosed with intellectual disabilities or mental health problems, or in substance abuse programs.[3 (pp. 131, 133)]

NHEX category (code)	Coding standards
Other Institutions (SC)	This includes residential care types of facilities (for persons who are 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. In these facilities, a mix of health and social services is provided; health services are largely at the level of nursing care, in combination with personal care services. The medical components of care are much less intensive than those provided in hospitals. It excludes services or facilities solely of a domiciliary or custodial nature and facilities for transients or delinquents.[3 (p. 133)]
Physicians (PS)	This includes primarily professional fees paid by provincial/territorial medical care plans to physicians in private practice. It includes both general medical practitioners and medical specialists (other than dentists) with a doctor of medicine degree who are primarily engaged in the independent practice of general or specialized medicine, including psychiatry, cardiology, osteopathy, homeopathy, surgery and others. This group also includes traditional, complementary and alternative medicine professionals with a corresponding medical education. These practitioners can operate as individual practitioners or in a group practice in their own or rented offices (e.g., centres, clinics) or independently in the facilities of others, such as hospitals or health maintenance organization–type medical centres. It excludes the remuneration of physicians who are on the payrolls of hospitals and are not explicitly identified; these expenditures are included in the Hospitals category.[3 (pp. 129, 136)]
Other Professionals (OP)	This includes paramedical and other independent health practitioners (other than medical professionals: general or specialist physicians) — such as psychotherapists, audiologists, and physical, occupational and speech therapists — who are primarily engaged in providing care to outpatients. Other examples include the following: • Psychologists (PY) • Dentists (DS) • Denturists (DT) • Chiropractors (CH) • Optometrists (OP) • Orthoptists (OR) • Podiatrists (PD) • Osteopaths (OS) • Naturopaths (NP) • Nurses (NS) • Physiotherapists (PT) • Massage therapists (MT) • Eyeglasses (EG) • Other health professionals (PO) Discrete identification of many of the professionals included under Other Professionals is often not possible. This category excludes physicians (PS) and the services of health professionals provided in institutional settings and in home care programs.[3 (pp. 136, 139)]

NHEX category (code)	Coding standards
Drugs (Rx)	This includes pharmaceutical products and non-durable medical goods intended for use in the diagnosis, cure, mitigation or treatment of disease. It includes medicinal preparations, branded and generic medicines, drugs, patent medicines, serums and vaccines, and oral contraceptives. Fluids required for dialysis — as well as gases used in health care, such as oxygen — should also be included when the patient or relative purchases them directly. This category can be further divided, as follows: • Prescribed drugs (RX): This includes all pharmaceuticals, including branded and generic pharmaceutical products that are provided in response to a prescription issued by a licensed medical practitioner or pharmacist. • Over-the-counter drugs (NX): This includes all pharmaceuticals, including branded and generic pharmaceutical products that do not require a prescription. Inclusions in this category should be linked to the health purpose. • Other medical non-durable goods (personal health supplies [PX]): This includes adhesive and non-adhesive bandages, hypodermic syringes, first-aid kits, hot-water bottles and ice bags, medical hosiery items (such as elastic stockings and knee supports), and condoms and other mechanical contraceptive devices. This subcategory also includes medical non-durable goods that have been prescribed by a licensed medical practitioner. It excludes drugs dispensed in hospitals, other institutions, home care or other ambulatory settings; veterinary products; and articles used for personal hygiene, such as medicinal soaps.[3 (pp. 98–99)]
Capital Expenditures (CE)	This includes expenditures on construction of, computer software and databases for, and machinery and equipment for hospitals, clinics, first-aid stations and residential care facilities.[3 (pp. 252–254)] It excludes losses associated with damage caused by war or natural disasters; rental fees paid for the use of equipment or buildings; and fees, commissions, royalties, etc., payable under licensing arrangements.
Administration (AD)	**Prepayment Administration (PA)** This includes expenditures related to the cost of providing health insurance programs (including both public and private insurance programs).
	Other Administration (AD) This includes all costs related to the infrastructure needed to operate health departments, such as expenses for information systems, finance, planning, policy development, and the formulation and administration of government policy; the setting of standards; the regulation, licensing or supervision of producers; management of collecting funds; and the administration, monitoring and evaluation of such resources. It excludes the administrative expenditures of primary health care providers (such as hospitals and physicians), as well as administrative costs related to health services provided by secondary health care providers. It excludes the administrative costs of health goods and services provided.[3 (pp. 53, 493–494)]

NHEX category (code)	Coding standards
Public Health (PH)	**Prevention and Promotion Programs (PP)** This includes expenditures for items such as measures to prevent the spread of communicable disease, food and drug safety, health inspections, health promotion activities, community mental health programs, public health nursing, maternal and child health, family planning and counselling, school health services (such as interventions against smoking and against alcohol and substance abuse), prevention of communicable and non-communicable diseases, public health environmental surveillance and public information on environmental conditions It excludes individual preventive care and blood banks.[3 (pp. 112–113)]
	Occupational Health (OH) This includes a wide variety of health services, such as surveillance of employee health (routine medical check-ups) and therapeutic care (including emergency health care services), on or off business premises. It excludes remuneration in kind of health care goods and services that constitute household actual final consumption rather than intermediate consumption of the business.[3 (p. 113)]
Health Research (HR)	This includes 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 in the Hospitals or Drugs category, respectively.
Ambulances (AM)	This includes transportation in a specially equipped surface vehicle or by a designated air ambulance in the case of emergencies at patients' homes or outside, as well as in the case of illness, as a component of the treatment process (for instance, transferring patients between health care providers, or transporting patients to dialysis or chemotherapy).[3 (pp. 96–97, 142)]
Home Health (HH)	This includes health professional services provided at home, such as the following: • Case management, assessment and administration • Home care nursing clinics • Palliative or end-of-life care at home, or in a home-like or hospice setting • At-home services to apply/help with home dialysis and intravenous therapy • Personal care services • Support related to medications, and to the use of medical equipment and supplies • Counselling • 24-hour home care • Occupational and vocational therapy • Dietary and nutritional services • Speech therapy • Audiology • Ostomy care It also includes long-term care services of a social care nature (such as home help) as part of a package of home-based care, if such services cannot be separately accounted for and are not the dominant component of the package.[3 (pp. 95, 141)]

NHEX category (code)	Coding standards
Personal Care (PC)	This includes help with activities of daily living, such as eating, bathing, washing, dressing, getting in and out of bed, getting to and from the toilet, and managing incontinence.[3 (p. 91)]
Home Support (HS)	This includes non-professional services provided at home, including assistance with instrumental activities of daily living, such as shopping, laundry, vacuuming, cooking, performing housework and managing finances; personal care, if it is included in the service package and cannot be separated; home maintenance and adaptation; self-managed care; and caregiver support, such as respite care and financial assistance. It excludes social long-term care services, in and of themselves.[3 (p. 91)]
Community-Based Services (AS)	This includes community-assistance services to support individuals who are in need due to aging or health reasons to live independently at home, such as adult day services, meal programs, transportation, health education, socialization programs to prevent isolation and out-of-home respite services.
Home Care Mixed (HC)	This includes service packages or programs mixed with more than one home care element that cannot be separated.
Hearing Aids (HA)	This includes electronic devices used to amplify sound and worn by individuals to improve hearing. It includes cleaning and adjustment services, and batteries. It excludes audiological diagnosis and treatment by physicians, hearing implants and audiological training.[3 (p. 99)]
Health Appliances and Other Prostheses (AP)	This includes medical aids and equipment used to enhance mobility or bodily function, such as wheelchairs, walkers, trusses, artificial limbs, home oxygen, canes and dogs for people who are blind, and specialized telematic equipment for emergency calls from patients' homes and/or for the remote monitoring of medical parameters; orthopedic appliances and other prosthetics: orthopedic shoes, artificial limbs and other prosthetic devices; orthopedic braces and supports; surgical belts, trusses and supports; and neck braces. It excludes glasses and vision products, and hearing aids.[3 (p. 99)]
Training of Health Workers (TP)	This includes on-the-job training programs that include concomitant care of patients.
COVID-19 Response Funding (ZC)	Government spending on health-related activities as a time-limited emergency response to the COVID-19 pandemic. See Section 7 for further details on data sources and limitations.

For the provincial/territorial government sector, data is extracted annually from the public accounts of provincial/territorial governments. Programs and/or program items are classified into health expenditure categories according to accepted NHEX coding standards (Table 1) and standardized methods and definitions used in estimating national health expenditure. Data from the public accounts is supplemented with information from annual reports and annual statistical reports of provincial/territorial government departments when available, as well as information provided by provincial/territorial government officials.

Total provincial/territorial government health spending figures include spending for health services reported by the provincial/territorial ministry of health as well as by other departments that report spending on health according to national health accounts definitions.

During the preparation of NHEX reports, a package of information, including CIHI's estimates of provincial/territorial government health expenditure and definitions, is submitted to each provincial/territorial ministry of health for its review and feedback. This is to ensure that the NHEX estimates reflect the provincial/territorial ministry's internal estimates.

4 CIHI's annual information quality assessment

National health expenditure data is collected from diverse sources and includes varying classes of financial information. It is collected according to established national and international standards, including the *Standards for Management Information Systems in Canadian Health Service Organizations* (MIS Standards) and the OECD's *System of Health Accounts*. CIHI's analysts and external experts continue to improve the quality of the data to provide the most complete and objective estimates possible.

NHEX has been participating in CIHI's Information Quality Assessment since 2003. *CIHI's Data Source Assessment Tool*[4] is CIHI's corporate tool to assess, document and improve data quality by identifying strengths, limitations and areas of improvement.

CIHI uses 5 dimensions to assess quality relative to users' needs:

- **Relevance:** Does the information meet users' current and potential future needs?
- **Accuracy and reliability:** Does the information correctly and consistently describe what it was designed to measure?
- **Comparability and coherence:** Is the information consistent over time and across providers and can it be easily combined with other sources?
- **Timeliness and punctuality:** Is the information current and released on schedule?
- **Accessibility and clarity:** Is the information and its supporting documentation easily accessed and clearly presented in a way that can be understood?

NHEX meets most of the criteria of CIHI's Information Quality Assessment.

For a more detailed overview of how CIHI assesses the quality of its data sources, please refer to *CIHI's Data Source Assessment Tool*.

5 Reconciliation with other CIHI data sources

Hospital spending in NHEX and the Canadian MIS Database

Both NHEX and the Canadian MIS Database (CMDB) collect hospital expenditure data. An internal analysis comparing the 2 data holdings is conducted annually to understand their differences and to monitor changes over time.

While data sources differ, NHEX and CMDB data are aligned. NHEX takes a “top down” approach, in that the data is collected from administrative public accounts at the provincial/territorial level, while the CMDB takes a “bottom up” approach, in that data is received at the facility and regional health authority levels and then aggregated to the provincial/territorial and national levels.

Several factors may contribute to the differences in hospital expenditure estimates that were identified through a detailed reconciliation between the databases:

- Hospitals in Canada obtain revenues from provincial/territorial ministries of health, other public funders and private sources (e.g., preferred accommodation fees, parking and cafeteria sales, donations). Consistent with international standards and the OECD’s *System of Health Accounts*, NHEX distinguishes among the sources and reports the expenditure under corresponding funders. When comparing the expenditure data from the 2 databases, it is important to account for this distinction in NHEX.
- NHEX includes payments for hospital services provided to out-of-province/-territory residents in Canada.
- NHEX data is at an aggregate level without detailed breakdowns (e.g., for drugs, capital and physician compensation). Expenditures for physicians who are paid by hospitals cannot be explicitly identified and are included in the Hospitals category (where applicable).

Physician spending in NHEX and the National Physician Database

NHEX includes a category for physician expenditures. Another data source, CIHI's National Physician Database (NPDB), provides information on clinical payments to physicians for insured medical services provided in Canada's health care systems. Internal analysis comparing the 2 data holdings is conducted annually to ensure that the data is aligned.

Several factors may contribute to the differences in physician expenditure estimates that were identified through a detailed reconciliation between the databases:

- The data sources for the 2 databases are different. Macro-level physician spending is collected in NHEX from public accounts at the provincial/territorial level based on international standards. The micro-level NPDB administrative data comes from provincial and territorial medical health care insurance plans using a standardized set of data elements.
- Payments to entitled imaging and laboratory specialists, including radiologists and pathologists, are excluded from NPDB publications; the exception is when jurisdictions do not submit physician-level data, payments to radiologists and pathologists may be included. By contrast, all these payments are part of the physician expenditures included in NHEX, even though they may not be explicitly identified at the program level.
- Other items are included in the NHEX frame, which may contribute to differences between the 2 databases. NHEX includes spending on physician recruitment and retention, training and education, and out-of-province/-territory medical payments.

Drug spending in NHEX and the National Prescription Drug Utilization Information System

NHEX includes a category for drug expenditures. Another data source, CIHI's National Prescription Drug Utilization Information System (NPDUIS), captures standardized, comparative information on public drug programs, including spending in Canada. Internal analysis comparing drug spending in NHEX and NPDUIS is conducted annually to ensure that the data is aligned.

The data source for drug spending in NHEX is different from that for NPDUIS. Provincial/territorial government prescribed drug expenditure in NHEX primarily includes drugs that are dispensed through provincial/territorial drug subsidy programs. Its data source is the provincial/territorial public accounts and special data requests made to ministries of health.

NPDUIS includes claim-level data adjudicated by public drug programs and submitted by the ministry of health. The amount paid by the drug program toward an individual's prescription costs is reported, including the drug cost, professional fees paid to the pharmacy and the markup charged by the pharmacy. This amount may or may not reflect the impact of any rebates from drug manufacturers.

NHEX drug spending includes administration costs of pharmacare programs and drug spending from the ministry health and other ministries.

NHEX and Statistics Canada's Government Finance Statistics

Statistics Canada (Public Sector Statistics Division) publishes estimates of government health expenditure as part of its comprehensive reporting of all government expenditures, the Government Finance Statistics (GFS). GFS data is extracted from administrative files and derived from other Statistics Canada surveys and/or other sources.[5]

The GFS public-sector health spending estimates are comparable to those reported in NHEX, even though different classification methods are applied and a narrower definition of health expenditure is used in the GFS. Here are some factors that might contribute to differences between the 2 databases:

- The public sector in NHEX covers the provincial and territorial government sector, municipal government sector, federal direct sector and social security funds sector, while the GFS covers federal general government, provincial and territorial governments, local general government, social security funds, Indigenous general government and government business enterprises.
- NHEX reports data based on responsibility for payment rather than on source of funds, while the GFS captures all revenue that health-sector entities report. For example,
  - The GFS captures revenue from donations and out-of-pocket patient payments, which NHEX considers private-sector expenditure.
  - The Social Security Fund category in the GFS includes the sub-sectors Canada Pension Plan (CPP) and Quebec Pension Plan (QPP). The Social Security Fund category in NHEX includes social insurance programs captured by provincial government in the GFS.

6 Ongoing quality improvement

Forecasts

NHEX contains actual expenditures from 1975 to 2021. To improve the timeliness of the data, health expenditures are forecasted for the latest 2 years so that a time series is available up to the current year. Preliminary estimates for 2022 and 2023 are identified in the data tables by the letter “f.” These preliminary estimates are subject to revision when actual data becomes available in subsequent years. Therefore, users should exercise caution when interpreting trends.

Provincial/territorial government health spending forecasts are based on the main estimates and budgets that are published earlier in the year; the forecasts are reviewed by the jurisdictions prior to publication. Depending on the jurisdiction,

- The numbers reported in the main estimates or budgets are used as the amounts for provincial/territorial government health spending for the forecast years; or
- Growth rates that are derived based on the main estimates or budgets are applied to the last year that has actual numbers to get the forecast numbers for the latest 2 years.

When deciding whether to use the numbers reported in the budgets or the derived growth rates, the NHEX team evaluates how close budget numbers have been to actual numbers in that jurisdiction in the past.

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 governments and the private sector are made based entirely 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 autoregressive integrated moving average (ARIMA) specifications. Logarithmic transformations were used when the data warranted their use. A locally estimated scatterplot smoothing (LOESS) technique was used as well to help in generating better forecasts in some cases by capturing recent information in the series.

For Capital expenditures, estimates are obtained from Statistics Canada. The 2022 figures are based on preliminary actual data, while 2023 figures are based on intentions.

GDP figures at both the national and provincial/territorial levels are forecast for 2022 and 2023 by applying The Conference Board of Canada's forecasted growth rate of GDP for the year to the previous year's GDP figures from Statistics Canada.

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

The health component of the consumer price index (CPI) is forecast to December of the latest year 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 NHEX report.

Quality assurance assessment

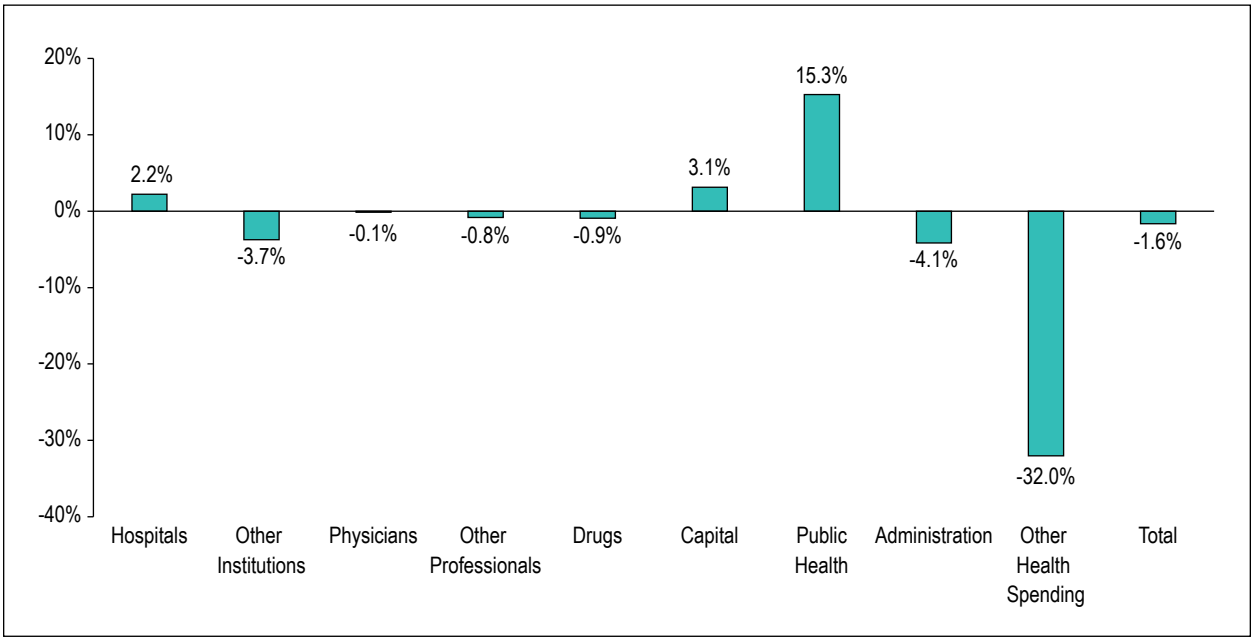
For quality assurance, an assessment of forecast accuracy is conducted annually. The purpose of this assessment is to monitor and improve the accuracy of the forecasts, and to ensure transparency. The assessment is conducted by sector: total health expenditure, provincial/territorial government health expenditure, public health expenditure and private health expenditure. Comparisons of accuracy between the provinces and territories and comparisons of accuracy between the uses of funds are performed. One component of this analysis is a comparison of preliminary estimates with actuals when the data becomes available. To do the comparison, the forecast errors are calculated as follows:

$$\text{Forecast error} = ([\text{Forecast} - \text{Actual}] \div \text{Actual}) \times 100\%$$

$$\text{1-year error} = ([\text{Last year's forecast} - \text{Actual}] \div \text{Actual}) \times 100\%$$

For example, in the 2019 report, 2017 figures are actual, and the 1-year error is calculated based on the 2017 forecast in the 2018 report. Figure 2 presents the forecast error for provincial/territorial government spending by use of funds.

Figure 2 Forecast accuracy for provincial/territorial government expenditure by use of funds



Source
National Health Expenditure Database, Canadian Institute for Health Information.

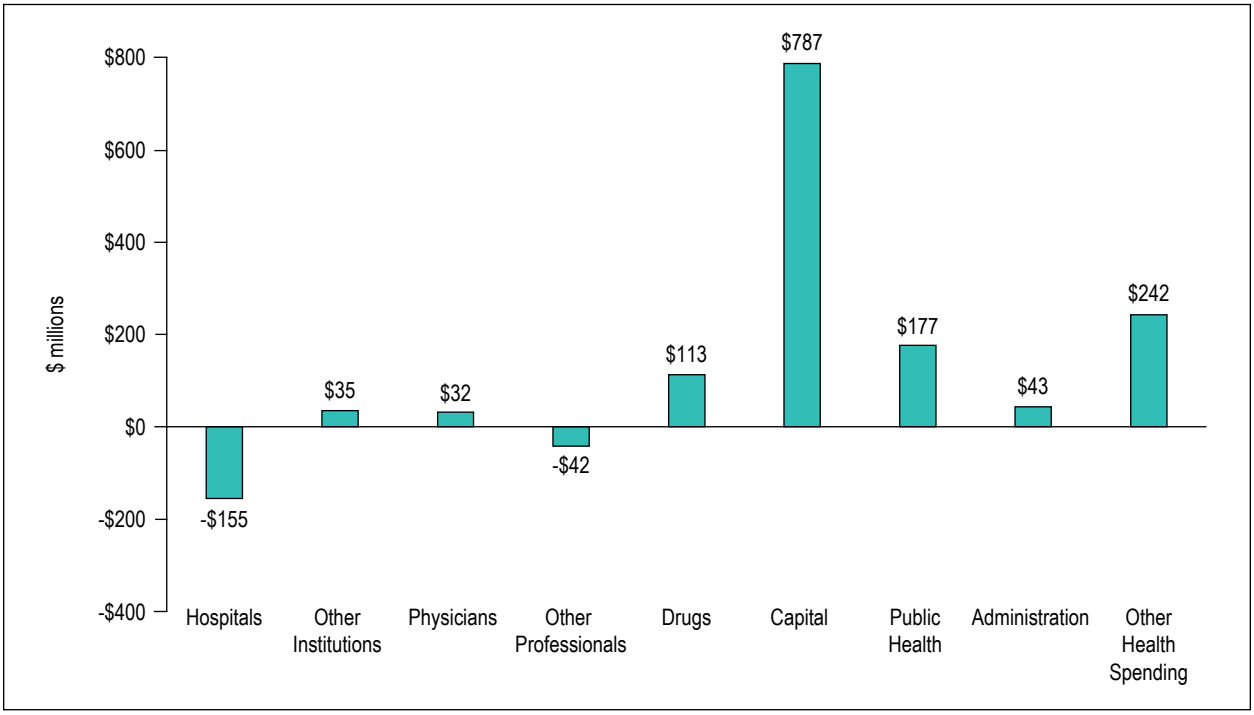
The big variance seen in the Other Health Spending category is mainly due to the revision of the home and community care methodology in the 2019 report. In the 2019 report, the definition of home and community care was revised to include home support and community-based services in addition to home health services. Program-level spending data specific to home and community care services provided by provincial and territorial health and other ministries was collected to fill data gaps. As a result of these efforts, estimates of public spending by provincial and territorial governments on home and community care were revised back to 2012–2013, based on the broader definition. In the 2019 production cycle, 2017 figures were actual, and the 1-year error was calculated based on the 2017 forecast in the 2018 report. In the 2018 production cycle, the 2017 forecast didn't factor into the revised home and community care expenditure method. Therefore, the 1-year forecast error for 2017 is large.

The big variance in the Public Health category is mainly due to the revision of Quebec data.

Something to note is that these uses of funds differ greatly in size. In the 2019 NHEX numbers, Hospitals made up 36% of provincial/territorial health expenses and Physicians 22%. Other Institutions made up 12%, Other Health Spending 9%, Drugs 7% and Public Health 6%. At the other end of the scale, Other Professionals made up about 1% of provincial/territorial government spending (most spending on these services is private);

Administration also made up about 1%. For categories that account for a small share of total spending, big forecast variances won't result in large dollar amounts. For a better sense of the forecast accuracy in each category, Figure 3 presents the variations in dollars, calculated by multiplying the average revisions during the period 2014 to 2018 by health spending in 2019.[6]

Figure 3 Impacts of variations in health spending after adjusting for category size, 2019



Sources
C.D. Howe Institute. *Commentary No. 566 — There Is No Try: Sustainable Healthcare Requires Reining in Spending Overshoots*. 2020; National Health Expenditure Database, Canadian Institute for Health Information.

Since the share of hospital spending is relatively large, a smaller variance (-0.2%) represents a significant dollar amount of $155 million (in this case, an underspend). Conversely, the share of spending on administration is smaller in a relative sense such that a much larger variance (2.5%) in spending in percentage terms represents only $43 million (in this case, an overspend). Similar to spending on administration, a large variance (-1.8%) in spending on other professionals in percentage terms represents only $42 million (in this case, an underspend).

5-year forecasts

Although health expenditures are forecasted for the latest 2 years in NHEX reports, 5-year forecasts of national health expenditures based on econometric models are conducted annually as an internal data quality exercise.

The 5-year forecasts of health expenditures are derived using macroeconometric models for public- and private-sector health expenditure. The 2 models are summed to provide total projected health expenditure. Autoregressive econometric models are used due to their time series nature and reliance on the 1-year lagged relative sector health expenditure, which proves to be highly statistically significant. A +/- 4% range of the model's estimate is used to show the projected year's health expenditure range based on the performance of historical iterations of the model.

The public-sector model uses independent variables of 1-year lagged public-sector health expenditure; 1-, 2- and 3-year lagged nominal GDP; population; population age 65+; current, 1- and 2-year lagged health and social transfers; and total provincial/territorial program spending.

The private-sector model uses independent variables of 1-year lagged private-sector health expenditure; current, 1- and 2-year lagged GDP; population; and population age 65+.

Statistics Canada data is used for the variables population and population age 65+. GDP and health and social services data are sourced from Finance Canada. The remainder of the data is taken from the NHEX database.

Home and community care spending

Historically and because of data limitations, home and community care spending has not been shown as a separate category in NHEX. In the past, data was embedded in the residual category Other Health Spending.

The variation in definitions, mix of services and funding sources across jurisdictions creates challenges in identifying a complete estimate of home and community care spending in NHEX. Unlike hospital or physician services, home and community care are not insured services legislated by the *Canada Health Act*.[7] Each jurisdiction (federal, provincial and territorial) has developed its own unique home and community care system. The definition of what is included in the basket of home and community care services differs across jurisdictions. The provincial/territorial ministries of health and their regional health authorities are responsible for most home and community care programs. Other ministries, such as social or community services, may also provide support to assist residents with illness, special needs or age-related challenges while living alone. In fact, in a given jurisdiction, the delivery of services may cut across ministries. The mix of public and private funding also varies across provinces and territories. Some publicly funded services, such as non–health professional services, may require user fees, which are paid by third parties or individuals. Canadians may also purchase services at their own expense. Refer to CIHI's Shared Health Priorities progress report[8] for more information.

CIHI has undertaken several initiatives to address the limitations and enhance the quality of public home and community care spending data. The definition has been revised to include home support and community-based services in addition to home health services. The broader concept of home and community care covers services provided through home care programs as well as other programs that support individuals with health and aging concerns to live at home independently. The common services include assessment and case management, nursing, physiotherapy, occupational therapy, homemaking services, and palliative care and end-of-life care at home; depending on the jurisdiction, other services may include home maintenance and repair, adult day services, meal programs, transportation, health education, socialization programs to prevent isolation and respite services. Some services could be provided in home-like settings such as group homes.[9] These services aim to help individuals with health or aging concerns live at home and to support caregivers. The aggregate-level public accounts data for provincial and territorial government spending in NHEX was reviewed for completeness. Program-level spending data specific to home and community care services provided by provincial and territorial health and other ministries was collected to fill data gaps. Preliminary estimates and the revised definitions were shared with jurisdictions for review and feedback.

As a result of these efforts, estimates of public spending by provincial and territorial governments on home and community care were revised back to 2012–2013, based on the broader definition. The estimates are $6.3 billion for 2012–2013, $6.8 billion for 2013–2014, $7.1 billion for 2014–2015, $8.8 billion for 2015–2016, $9.2 billion for 2016–2017, $9.5 billion for 2017–2018, $10.2 billion for 2018–2019, $10.9 billion for 2019–2020, $11.4 billion for 2020–2021 and $12.3 billion for 2021–2022. A series break is observed between 2014–2015 and 2015–2016, since data for Quebec was not available prior to 2015–2016 but is included in the estimates thereafter. The estimates by each provincial/territorial government are reported in a separate category in the relevant NHEX data tables. Prior to 2012–2013 (2015–2016 for Quebec), home care estimates, mostly based on the old definition at the time, were embedded in the residual category Other Health Spending.

While efforts to report on home and community care spending have achieved the goal of the initiative and the data has provided a broader view and more complete picture of this area, there is still room to fill remaining data gaps and improve comparability across provinces and territories. CIHI continues to work with data providers to better understand their programs and improve the quality of the data. Further, the data enhancement is currently implemented for the provincial and territorial government sector only; home and community care spending data for other sectors still remains in the category Other Health Spending and cannot be separated.

Capital expenditure

Capital expenditure estimates in NHEX are currently obtained from Statistics Canada's annual Capital and Repair Expenditures Survey (CAPEX).

As part of its quality assurance process, the NHEX team reviewed Statistics Canada's quality indicators, which are ranked on a scale from A to F (A = excellent; B = very good; C = good; D = acceptable; E = poor, use with caution; F = too unreliable to be published). In addition, data was compared with other sources. Capital expenditure data from CAPEX was compared with data from the CMDB and that obtained from provincial/territorial public accounts.

The results of the analysis show that there is no single best data source. Each data source has its own limitations and gaps. As a result, NHEX continues to explore new data sources and methods to improve its estimates of capital expenditure.

7 Data sources and methods

The following sections briefly describe some of the major technical points associated with the compilation of the health expenditure estimates.

Hierarchy of classification

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

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.

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 officials. Total provincial/territorial 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/territorial government assumes them. Once assumed by the provincial/territorial 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.

In 2019, the method of estimating Alberta's provincial government health expenditures was revised to better reflect the current delivery of its health care system. The main differences between the methods relate to Alberta's regional cost allocation across NHEX categories. Reclassifications and refinements were made to better align with NHEX definitions and improve comparability with other CIHI data holdings. These changes imply a break in the series between 2009–2010 and 2010–2011. In particular, the following are observed:

- No change in total health spending.
- An increase in expenditures in 2 categories: Public Health and Other Health Spending.
- A decrease in expenditures in 2 categories: Hospitals and Other Institutions.

In 2019, the method of estimating British Columbia's provincial government health expenditures was revised to better reflect the current delivery of its health care system. The main differences between the methods relate to B.C.'s Regional Health Services and Provincial Health Services expenditures allocation across NHEX categories. Reclassifications and refinements were made using data from the financial statements of the individual regional health authorities, which improved overall data quality and comparability with other CIHI data holdings. These changes imply a break in the series in 2011–2012. In particular, the following are observed:

- No change in total health spending.
- An increase in expenditures in 2 categories: Other Institutions and Other Health Spending.
- A decrease in expenditures in 2 categories: Hospitals and Public Health.

In addition, expenditure for the Developmental Disabilities program from Community Living British Columbia was reviewed, specifically identified and added to British Columbia's provincial government health expenditure. Its results impact the Other Institutions and Home and Community Care categories.

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[i] in 2015–2016, which amended the organization and governance of the health and social services network.

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

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).

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 2010–2011 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.

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 not-for-profit insurance companies and the Canadian Life and Health Insurance Association (CLHIA), which surveys its member companies. The difference between claims and premiums is allocated to the category of prepayment administration, which includes operating costs, provisions for future benefits, dividends and experience rating refunds, federal and provincial/territorial taxes (e.g., premium taxes, capital and income taxes) and profit margin. Health care spending by casualty insurance companies with corporate affiliations to life insurance companies is included in the estimates. Since 2018, the new CLHIA survey data is the only source for health insurance claims because it also covers not-for-profit insurance companies. As a result, spending on physician care, other health care goods and other health services cannot be identified.

Out-of-pocket health expenditures are based mostly on data from the Survey of Household Spending (SHS), formerly the Family Expenditure Survey, fielded by Statistics Canada. From the SHS health care category, only data on direct costs is used; for data on other medicines, drugs and pharmaceuticals (i.e., not prescribed by a doctor) and hospital care, NHEX uses other data 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/territorial 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/territorial 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 was 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,[ii] total dollar sales volume and regional sales distribution for 5 regions that include 9 provinces. 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 were separated into 9 provinces, and estimates for the territories, and for Newfoundland and Labrador prior to 2017, were calculated using provincial distributions of direct costs for health care from the SHS. Starting in 2017, regional sales amounts are separated into 10 provinces. 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, 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 CMDB thereafter.

In 2017, the SHS moved to a 2-year production cycle with its biennial survey. As a result, there was no SHS data in 2018, 2020 and 2021. In the absence of SHS data from Statistics Canada, CPI was applied to the 2017 SHS data to estimate 2018 SHS data in NHEX. To fill the gap years in 2020 and 2021, CIHI estimated out-of-pocket spending based on historical years of SHS data. Caution should be exercised when interpreting survey estimates due to its limitations. For more information on SHS quality indicators, such as coefficients of variation, non-response rates and imputation rates, see Survey of Household Spending (SHS).

ii. 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.

Out-of-pocket estimates of other institutions are derived from data from Statistics Canada's Residential Care Facilities Survey (RCF) (now known as the Private Nursing and Residential Care Facilities Survey, or NRCF). Data used from the survey includes income to facilities from coinsurance or self-pay of residents, differentials for preferred accommodation and sundry earnings.

After the RCF was terminated in July 2012 and the last data was published for reference year 2010–2011, CIHI teamed up with Statistics Canada to collect data for the next 3 fiscal years, though from fewer facilities. Since 2014–2015, data from Statistics Canada's NRCF has been used. The private-sector spending for Other Institutions is calculated as the difference between the total from the NRCF and the public sector in NHEX.

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.

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 under Calculation methods in Section 7: Data sources and methods and under Forecasts in Section 6: Ongoing quality improvement.

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/territory in which the expenditure occurred. Some data, however, is provided only at the national or regional 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 is based on information from Statistics Canada up to 2008. Since then, Statistics Canada has reported government statistics based on the Government Finance Statistics (GFS) accounting framework. As a result, the consolidated municipal government–sector data on health is currently not available. After the methodology review of municipal health spending in NHEX, the data is now estimated based on the growth rates calculated from annual reports or financial statements published by various cities, when publications are available. Historical revisions have been made from 2009 to the present year.

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.

COVID-19 response funding by governments

The federal, provincial and territorial governments have included COVID-19 response funding in their public accounts, budgets and main estimates. The COVID-19 pandemic initially started in Canada in early 2020 and receded in 2022. Therefore, COVID-19 spending is available only in fiscal years 2019–2020, 2020–2021 and 2021–2022, both at the Canada level and for each province and territory. Starting in 2022–2023, COVID-19 response funding is not forecasted as a stand-alone spending category. With COVID-19 response activities being incorporated into operational budgets, COVID-19 spending cannot be separated out from NHEX spending categories such as Hospitals, Long-Term Care, Public Health and Administration. As the pandemic started in early 2020, all COVID-19 response funding for the 2019–2020 fiscal year is included in the 2020 calendar year. When converting fiscal year data to calendar year, one-quarter of fiscal year 2021–2022 COVID-19 response funding is included in 2022.

Data sources

Provincial and territorial government–sector data is extracted from provincial/territorial government public accounts and main estimates, supplemented with information provided by provincial/territorial government officials.

Federal direct–sector data is gathered from the GC InfoBase — COVID-19 Authorities and Expenditures and from the 2021 federal budget. Health funding measures announced by the Government of Canada are a combination of funds for direct spending by the federal government and fund transfers to the provinces and territories. As national health expenditures are reported based on the principle of *responsibility for payment*, federal COVID-19 funding transfers to the provinces/territories are included in the provincial/territorial government sector. To avoid double counting, federal-sector COVID-19 response funding is consolidated by removing the transfers to the provinces and territories. For example, The Safe Restart Agreement (SRA) is a federal investment to help provinces and territories safely restart their economies. Some of the health-related funds were transferred to provinces and territories on a per capita basis. As a result, health care support funding in this program is not counted as direct spending by the federal government.

The COVID-19 funding estimates in both the provincial/territorial government and federal direct sectors are subject to revision when actual data becomes available in subsequent years. Due to the uncertainties brought about by the pandemic, forecasts may experience larger variance than usual when they become actual figures.

Support services funding related to COVID-19 but not directly related to health is considered to be spending on social services and is removed from NHEX where identified.

Limitations

Due to uncertainties related to the pandemic, there is limited information from governments on COVID-19 response funding broken down by health spending category. Some jurisdictions have partial COVID-19 spending at a category level. Some provinces can identify only total COVID-19 spending with no further details at a category level. It is also possible that some health spending categories (e.g., Hospitals) may include some COVID-19 spending that cannot be identified separately. Therefore, identifying COVID-19 spending exclusively from other spending categories is a current limitation. As a result, total COVID-19 Response Funding is reported in NHEX as a stand-alone category wherever explicitly identified for 2019–2020, 2020–2021 and 2021–2022. Once more detailed information is available at the spending category level for COVID-19 funds, it is anticipated that related categories, such as Public Health, Long-Term Care and Hospitals, may be affected.

The COVID-19 Response Funding category in the NHEX data tables (Series A to Series H) refers to government funding, which includes provincial/territorial governments and/or federal direct government. COVID-19 spending in the private sector, municipal government sector, workers' compensation boards sector and social security sector has not been identified.

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. In the absence of a universal health care price index, 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 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.[1] Additionally, for the calculation of constant dollars by fiscal year, IPIs for the calendar year were used as a proxy.

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.

In 2022, annual growth in the CPI rose to a 40-year high of 6.8%.[10] This increase in the CPI — which captures the cost of a fixed basket of goods and services relevant to Canadian consumers — reflects inflationary pressures occurring broadly across the economy. The price of final domestic demand (FDD), which captures not only the price pressures experienced by households but also those faced by businesses and government, has risen at a similar rate as CPI inflation. The GDP deflator, the price of goods and services produced domestically, has risen even faster because of export prices.

In 2022, while inflation was felt across the economy, its impact on health care spending was dampened by existing annual or multi-year provider contracts. The annual growth rate of the health component of the CPI was 2.8%, while IPI growth was 4.7% in 2022. Overall, total health care inflation in NHEX was 3.7% in 2022. Generally, health inflation is expected to lag behind overall inflation in the economy.

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

The GDP at market prices[iii] 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 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.

iii. 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 remained the only category that was estimated this way. In 1998, the method of calculating capital expenditures was reviewed and revised. Capital expenditure for the private sector and provincial/territorial and municipal government sectors is now estimated from the annual 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 implication of this change is that Capital is the only category of expenditure in which spending is categorized as private or public based on ownership/financial control of the facility in which the investment is made. This convention has been adopted due to data limitations. Software expenditure is excluded from NHEX Capital estimates due to data unavailability.

The latest year of data represents capital intentions. These may be revised when actual expenditures become available. As observed by the OECD, “capital spending fluctuates more than current spending from year to year, particularly in small economies, as capital projects on construction (i.e., building of hospitals and other health care facilities) and investment programmes on new equipment (e.g., medical and ICT equipment) are implemented. Decisions on capital spending also tend to be more affected by economic cycles, with spending on health system infrastructure and equipment often a prime target for reduction or postponement during downturns.”[11]

Age and sex distribution methods

The Series E data tables present provincial/territorial 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/territorial government hospital expenditure by age and sex is based on information from CIHI's Discharge Abstract Database (DAD)[iv] and Hospital Morbidity Database (HMDB). The provincial/territorial 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. The total weighted cases are generated based on the assigned Resource Intensity Weights (RIWs).

Based on CIHI's Case Mix Group (CMG/CMG+) grouping methodology, patients are assigned to a group according to their diagnoses and surgical procedures. Within each group, patients are further adjusted for factor effects.[v] Once the patient has been grouped, an RIW[vi] is assigned.

CIHI's CMG grouping methodology was used to group patient discharge information into homogenous groups, based on clinical and resource utilization characteristics. Historically, the CMG or CMG+ can be grouped back by a maximum of 5 years. Therefore, the methodology updated in different years was employed for different time periods, as follows:

- 2001 CMG methodology for 1995–1996 to 1996–1997;
- 2002 CMG methodology for 1997–1998 to 2002–2003;
- 2003 CMG methodology for 2003–2004 to 2005–2006;
- 2006 CMG+ methodology for 2006–2007;
- 2012 CMG+ methodology for 2007–2008; and
- 2013 CMG+ methodology for 2008–2009 to 2012–2013.

This difference in methodology presents challenges in meaningfully comparing RIW by fiscal year, but it does allow for a relatively reasonable breakdown of inpatient activity by age group.

Since 2013–2014, the annually updated CMG+ methodology has been used.

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iv. 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.

v. See the infographic *Case Mix Group+ for typical patients* for a description of typical cases and factor effects.

vi. RIWs are resource allocation algorithms developed by CIHI to estimate the relative hospital resources used for a typical case. See the resource indicators page of CIHI's website for more information.

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/territorial governments, which includes inpatient and ambulatory care. CIHI investigated the reasonableness of using the acute inpatient data as a proxy to distribute comprehensive provincial/territorial 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 10 provinces and territories combined; 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 and Quebec. 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. Quebec data does not adhere to the DAD coding guidelines, and CIHI's expected length of stay (ELOS) and RIW values are not adjusted for Quebec data. Weighted cases data assigned to HMDB data should be used cautiously.

To learn more about the DAD/HMDB data, please contact the Clinical Administrative Databases team at cad@cihi.ca or the Financial Standards and Information team at fsi@cihi.ca.

Physicians

The distribution of provincial/territorial government Physicians expenditure by age and sex is based on information from CIHI's 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/territorial 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

Up to 2015, 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.

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 counts of patients who were funded by provincial/territorial governments. 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 (≤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.

After the RCF was terminated, Statistics Canada's 2016 Collective Dwelling Census was used to estimate the provincial/territorial age and sex distribution for other institutions in 2016. 2 types of collective dwelling are used for this analysis: nursing home and/or residence for senior citizens; and residential care facility, such as a group home for persons with disabilities or addictions. Since 2017, the profile of residents in CIHI's Continuing Care Reporting System (CCRS) has been used to estimate the age and sex distribution for Other Institutions.

Drugs

Provincial/territorial government prescribed drug expenditure primarily includes drugs that are dispensed through provincial/territorial 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/territory. Most provincial/territorial 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/territorial drug subsidy program. Some data from 2005–2006 was obtained from CIHI's NPDUIS. Drug claim information by age and sex is currently unavailable for Quebec, the Northwest Territories and Nunavut.

Provincial drug expenditures for Newfoundland and Labrador are distributed by age and sex based on the data received from the Newfoundland and Labrador Prescription Drug Program (NLPDP). 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. Prior to 2007–2008, drug expenditures were distributed by age and sex using the distribution of some New Brunswick drug plans as a proxy, based on their eligibility criteria.

Provincial drug expenditures for Nova Scotia are distributed by age and sex based on the data received from the Nova Scotia Seniors Pharmacare Program and prescription drug claims paid by the Department of Community Services through the Income Assistance Program, Family Benefits Program and Family Pharmacare Program.

Up to 2007–2008, provincial drug expenditures for New Brunswick were distributed by age and sex based on the special data request made to the New Brunswick drug program. From 2008–2009 onward, they are distributed by age and sex based on NPDUIS data.

Up to 2009, the Quebec MSSS supplied data on its drug subsidy program by calendar year. From 2010 onward, the Quebec provincial drug plan data by age and sex downloaded from the RAMQ's website is used to distribute provincial drug expenditures. The plans include coverage for seniors, income security recipients and others. Data for 1997 onward also includes 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 is not included with the rest of the provincial government program.[vii]

The Ontario Drug Benefits (ODB) program supplies age–sex data, which includes combined prescription drug claims paid by the Ministry of Health, Ministry of Long-Term Care and 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 is therefore applied to the ODB distribution. From 2014 to the present, NPDUIS data is used to distribute the Ontario provincial drug expenditures by age and sex.

Up to 2004, provincial drug expenditures for Manitoba were distributed by age and sex based on the data supplied by Manitoba. 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. From 2005 to the present, NPDUIS data is used to distribute Manitoba provincial drug expenditures by age and sex.

Provincial drug expenditures for Saskatchewan are distributed by age and sex based on the data supplied by the Saskatchewan Drug Plan and Extended Benefits Branch by calendar year.

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

From 1995–1996 to 2002–2003, provincial drug expenditures for Alberta were distributed by age and sex based on data supplied by Alberta Health. 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 for 2000–2001 onward. The age–sex distribution for 1999–2000 Alberta Human Resources and Employment's drug plan is based on 1998–1999 data. From 2003–2004 to 2006–2007, the age and sex distribution for Alberta's 4 prescription drug plans based on 2002–2003 data was used in the calculation. From 2007 to the present, NPDUIS data is used to distribute Alberta provincial drug expenditures by age and sex.

From 1996 to 2014, British Columbia's Ministry of Health Services supplied claims paid by age and sex of the client in calendar year 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. From 2015 to the present, NPDUIS data is used to distribute British Columbia provincial drug expenditures by age and sex.

Up to 2014, Yukon government drug expenditures were distributed by age and sex based on the data supplied by Yukon's Department of Health and Social Services. The data supplied included 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. From 2015 to the present, NPDUIS data is used to distribute Yukon drug expenditures by age and sex.

Northwest Territories drug spending is distributed by age and sex based on the data supplied by the Northwest Territories Department of Health and Social Services.

Nunavut's Drugs category expenditure is based on the age–sex distribution for the Northwest Territories drug plans.

The provincial/territorial 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 are 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. Target populations, copayments and deductibles also vary from one province/territory to another. CIHI requested from each province/territory 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/territories with similar coverage and eligibility levels. The age–sex distributions of the category Other Professionals for Prince Edward Island, New Brunswick and Nunavut (1999 onward) were estimated for 1998 onward. 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. British Columbia's dental and optical spending from the Ministry of Social Development and Economic Security and Manitoba's dental and optical spending from Manitoba Family Services was distributed across the age and sex distribution of the Saskatchewan Supplementary Health Dental Program and Optical Program spending separately. Alberta's optical spending from Alberta Human Resources was distributed across the age and sex distribution of Saskatchewan's Supplementary Health Optical Program spending.

The provincial/territorial 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/territories with more than one program, the age–sex-distributed programs were combined to represent a total estimate for the provincial/territorial Other Professionals expenditure. Most data was collected in fiscal year and converted to calendar year (see Calculation methods).

Total provincial/territorial government health expenditure by age and sex

To age–sex standardize total provincial/territorial government health expenditures, it is necessary that all categories of expenditure be distributed by age and sex for each province and territory. 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.

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 other health expenditure by population distributions is not believed to result in significant error of the total provincial/territorial expenditure distributions.

Age–sex standardization of provincial/territorial government expenditures

For the purpose of age–sex standardization, CIHI used a direct method. 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 data released in 2022.

Revision history

Provincial/territorial government sector

The changes from 2012 onward for British Columbia and in 2020 for Manitoba and the Northwest Territories were primarily due to a methodology refinement. In addition, historical revisions were made for Ontario in 2019 and 2020 and for Nunavut in 2020 due to the availability of new information from the ministry.

Table 2 Differences from previously reported provincial/territorial government–sector data by province/territory and Canada, 2012 to 2020 ($ 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	—	—	—	—	—	—	—	—	—	37.1	—	—	—	37.1
2013	—	—	—	—	—	—	—	—	—	49.2	—	—	—	49.2
2014	—	—	—	—	—	—	—	—	—	50.9	—	—	—	50.9
2015	—	—	—	—	—	—	—	—	—	55.2	—	—	—	55.2
2016	—	—	—	—	—	—	—	—	—	58.8	—	—	—	58.8
2017	—	—	—	—	—	—	—	—	—	65.6	—	—	—	65.6
2018	—	—	—	—	—	—	—	—	—	114.6	—	—	—	114.6
2019	—	—	—	—	—	-39.9	—	—	—	157.9	—	—	—	117.9
2020	—	—	—	—	—	272.2	0.7	—	—	249.3	—	-47.2	1.0	476. 0

Note

— No significant change from the previous year.

Source

National Health Expenditure Database, Canadian Institute for Health Information.

Private sector

The changes from 2014 onward for Newfoundland and Labrador and British Columbia, from 2017 onward for Prince Edward Island and from 2018 onward for the Northwest Territories and Nunavut were due to a methodology refinement for Hospitals. In addition, the changes across jurisdictions from 2019 onward were due to source data updates for Health Research.

Table 3 Differences from previously reported private-sector data, by province/territory and Canada, 2014 to 2020 ($ 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	-0.1	—	—	—	—	—	—	—	—	0.2	—	—	—	0.1
2015	-0.1	—	—	—	—	—	—	—	—	-0.3	—	—	—	-0.4
2016	-0.1	—	—	—	—	—	—	—	—	-0.6	—	—	—	-0.6
2017	-0.1	0.2	—	—	—	—	—	—	—	-0.7	—	—	—	-0.6
2018	—	0.1	—	—	—	—	—	—	—	259.2	—	19.8	3.4	282.4
2019	-1.1	—	-7.2	5.2	239.5	152.3	7.6	1.6	-13.4	-23.7	—	6.6	1.1	368.6
2020	2.8	-0.1	-50.0	7.9	167.1	103.0	-3.2	-6.4	27.5	-229.6	-4.6	0.8	-0.1	15.2

Note

— No significant change from the previous year.

Source

National Health Expenditure Database, Canadian Institute for Health Information.

Social security funds sector

The changes for Alberta from 2000 onward and for British Columbia from 2019 onward were due to a methodology refinement. Historical revisions for Newfoundland and Labrador from 2015 onward were due to the availability of new information.

Table 4 Differences from previously reported social security funds–sector data, by province/territory and Canada, 2000 to 2020 ($ 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
2000	—	—	—	—	—	—	—	—	106.0	—	—	—	—	106.0
2001	—	—	—	—	—	—	—	—	129.0	—	—	—	—	129.0
2002	—	—	—	—	—	—	—	—	112.3	—	—	—	—	112.3
2003	—	—	—	—	—	—	—	—	130.0	—	—	—	—	130.0
2004	—	—	—	—	—	—	—	—	116.3	—	—	—	—	116.3
2005	—	—	—	—	—	—	—	—	95.6	—	—	—	—	95.6
2006	—	—	—	—	—	—	—	—	57.8	—	—	—	—	57.8
2007	—	—	—	—	—	—	—	—	63.1	—	—	—	—	63.1
2008	—	—	—	—	—	—	—	—	36.7	—	—	—	—	36.7
2009	—	—	—	—	—	—	—	—	39.5	—	—	—	—	39.5
2010	—	—	—	—	—	—	—	—	55.5	—	—	—	—	55.5
2011	—	—	—	—	—	—	—	—	61.4	—	—	—	—	61.4
2012	—	—	—	—	—	—	—	—	50.4	—	—	—	—	50.4
2013	—	—	—	—	—	—	—	—	53.8	—	—	—	—	53.8
2014	—	—	—	—	—	—	—	—	61.9	—	—	—	—	61.9
2015	-0.6	—	—	—	—	—	—	—	76.0	—	—	—	—	75.4
2016	-0.5	—	—	—	—	—	—	—	48.2	—	—	—	—	47.7
2017	-0.2	—	—	—	—	—	—	—	62.9	—	—	—	—	62.7
2018	-1.6	—	—	—	—	—	—	—	67.7	—	—	—	—	66.1
2019	-1.1	—	—	—	—	—	—	—	110.7	3.4	—	—	—	113.1
2020	-4.0	—	—	—	—	—	—	—	78.5	3.5	—	—	—	78.0

Note

— No significant change from the previous year.

Source

National Health Expenditure Database, Canadian Institute for Health Information.

Federal direct sector

The changes in 2020 across jurisdictions were due to a methodology refinement.

Table 5 Differences from previously reported federal direct–sector data, by province/territory and Canada, 2020 ($ 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
2020	5.1	1.5	15.8	15.9	9.9	-20.7	3.7	0.7	-24.8	-3.1	—	0.1	0.1	4.1

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.

Economic and demographic data

Statistics Canada recently revised its population estimates back to 2020. The estimates in the NHEX report are now based on the latest released data of December 2022.

Sources of data

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

Provincial/territorial government sector

- Provincial/territorial public accounts and main estimates.
- Provincial/territorial 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/territorial departments reporting health expenditures.

Federal direct sector

- Public Accounts of Canada.
- Main estimates of Treasury Board of Canada.
- Special tabulations/information from
  - Indigenous Services 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, the Canadian Foundation for Healthcare Improvement and the Canadian Institute for Advanced Research.

Municipal government sector

- Special tabulation from Statistics Canada.
- Annual reports or financial statements of various cities.

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 Quebec MSSS.

Private sector

- Private insurance component:
  - Until 2017, the not-for-profit portion is captured from special tabulations provided by the not-for-profit insurance companies. Starting in 2018, it is captured from a special tabulation provided by the Canadian Life and Health Insurance Association.
  - The commercial portion is captured from a special tabulation provided by the Canadian Life and Health Insurance Association.
- Out-of-pocket component:
  - SHS, Statistics Canada, except for the following categories:
    - **Hospital accommodation** (adjusted revenues from *patient services*) — Annual Return of Health Care Facilities, fielded by Statistics Canada in 1994–1995, and the CMDB, administered by CIHI from 1995–1996 onward.
    - **Other institutions —** RCF/NRCF 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.
- Special tabulations provided by provincial/territorial government departments responsible for administering drug and other health benefit programs.
- Statistics Canada's RCF.
- Statistics Canada's Collective Dwelling Census.

Economic and demographic data

- GDP:
  - Table 36-10-0222-01 (formerly CANSIM 384-0038), Statistics Canada.
  - Purchased from The Conference Board of Canada (GDP growth rates) for the latest year.
- Population — Demography Division, Statistics Canada.
- Provincial/territorial government expenditure — Special tabulation purchased from the Public Sector Statistics Division of Statistics Canada.
- Price indices:
  - Income and Expenditure Accounts Division and Prices Division, Statistics Canada.
  - Purchased from The Conference Board of Canada for the latest year.

Contact us

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.

Appendix

Text alternative for figures

Figure 2: Forecast accuracy for provincial/territorial government expenditure by use of funds

NHEX category	Hospitals	Other Institutions	Physicians	Other Professionals	Drugs	Capital	Public Health	Administration	Other Health Spending	Total
Percentage accuracy	2.2	-3.7	-0.1	-0.8	-0.9	3.1	15.3	-4.1	-32.0	**-1.6**

Source
National Health Expenditure Database, Canadian Institute for Health Information.

Figure 3: Impacts of variations in health spending after adjusting for category size, 2019

NHEX category	Hospitals	Other Institutions	Physicians	Other Professionals	Drugs	Capital	Public Health	Administration	Other Health Spending
Millions of dollars	-155	35	32	-42	113	787	177	43	242

Sources
C.D. Howe Institute. *Commentary No. 566 — There Is No Try: Sustainable Healthcare Requires Reining in Spending Overshoots*. 2020; National Health Expenditure Database, Canadian Institute for Health Information.

References

1. Statistics Canada. *Guide to the Income and Expenditure Accounts*.
2. Organisation for Economic Co-operation and Development. OECD Health Statistics 2023. 2023.
3. Organisation for Economic Co-operation and Development, Eurostat, World Health Organization. *A System of Health Accounts 2011: Revised Edition*. 2017.
4. Canadian Institute for Health Information. *CIHI's Data Source Assessment Tool*. 2017.
5. Statistics Canada. *Moving From the Financial Management System to Government Finance Statistics*. 2010.
6. C.D. Howe Institute. *Commentary No. 566 — There Is No Try: Sustainable Healthcare Requires Reining in Spending Overshoots*. 2020.
7. Health Canada. *Canada Health Act Annual Report 2013–2014*. 2014.
8. Canadian Institute for Health Information. *Selecting Pan-Canadian Indicators for Access to Mental Health and Addiction Services, and to Home and Community Care: Progress Report*. 2018.
9. Hollander MJ, Walker ER. *Report of Continuing Care Organization and Terminology*. 1998.
10. Statistics Canada. Insights on inflation in Canada. Accessed August 29, 2023.
11. Organisation for Economic Co-operation and Development. *Health at a Glance 2019*. 2019.

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