Health Care Cost Drivers: The Facts.

Spending and Workforce

Canadian Institute for Health Information
Institut canadien d'information sur la santé

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To help improve Canada's health system and the well-being of Canadians by being a leading source of unbiased, credible and comparable information that will enable health leaders to make better-informed decisions.

Table of Contents

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Executive Summary

Total spending on health care in Canada is projected to reach $200 billion in 2011. The Canadian Institute for Health Information (CIHI) tracks health care spending in Canada in its National Health Expenditure Database (NHEX). CIHI's annual report, *National Health Expenditure Trends, 1975 to 2011*, contains historical information on health expenditures from 1975 to 2009 and forecasts for 2010 and 2011.

Both the public sector (governments) and private sector (primarily private insurance and out-of-pocket payments) finance Canada's health care system. Over the last decade, the public sector accounted for about 70% of the total health care bill. Public-sector health care spending in Canada has continued to rise, and this growth has raised questions about the fiscal sustainability of public health care.

This study of health care cost drivers is a companion to CIHI's annual report on national health expenditure trends. With the expiry of the 2004 health accord within the next three years, Canadians need a better understanding of the underlying drivers of health care costs. This report presents a summary of CIHI's analysis of data and sheds light on the underlying factors that explain recent trends in public-sector health spending.

It is first useful to put recent health spending growth into perspective by looking at trends over a longer period of time. It should be noted that there have been variations in the pace of health spending growth over the last 35 years. The growth of public-sector health spending since 1975 can be divided into three phases: a growth phase from 1976 to 1991; a short period of retrenchment and disinvestment from 1992 to 1996, when governments dealt with fiscal deficits; and a growth phase that averaged 3.5% per year, after adjusting for inflation, from 1997 until 2008, during which time health care became a top priority for Canadians. During this latter period, major investments were made in health care, including spending on physicians, drugs, hospitals and advanced diagnostics.

This study examines the growth in spending from 1998 to 2008 that is attributable to underlying health care cost drivers, principally demographics (population growth and aging), price inflation, technology and utilization. During the 10-year period examined in this study, total public-sector spending on health care increased at an average annual rate of 7.4%. Forecasts in CIHI's most recent annual report show a slowing of this rate of growth.

As is the case for many countries in the Organisation for Economic Co-operation and Development (OECD), over the last decade, health spending growth has exceeded the rate of economic growth. As a share of Canada's overall economy, public-sector health care spending reached a peak of 8.5% of gross domestic product (GDP) during the recession year of 2009. The health-to-GDP ratio is

forecast to decline slightly to 8.1% in 2011, due to the post-recession economic recovery. This ratio is higher than that of the late 1970s, when it was just more than 5%, which reflects a trend of spending more on health care as income rises.

From a fiscal policy perspective, the period from 1998 to 2008 saw public-sector health spending grow at more than double the rate of revenue growth. This was achieved with the fiscal dividend governments earned as a result of eliminating deficits and bringing debt loads down in the 1990s. However, not all of the fiscal dividend was invested in health care. The reduction in the interest that governments had to pay on outstanding debt also allowed them to divert resources to overall program spending, including health care, and tax reduction.

Canada's population has grown, and health system decision-makers need to consider the implications of a growing population on potential demand for health care services in the future. During the study period, population growth contributed an average of 1% per year to the increase in health expenditures.

Like many industrialized countries, Canada is undergoing a demographic shift, with the baby boom cohort, Canada's largest population group in recent history, beginning to turn 65 years old. The common belief is that an aging population will lead to greater demands for health care services and accelerated growth in health spending. Contrary to common perception, population aging has been a very modest cost driver overall. Population aging contributed an annual average growth of only 0.8%. The effects of population aging vary across Canada, as a consequence of differing demographic profiles. There is a noticeable east–west gradient in Canada: the impact of aging is more significant in the Atlantic region and Quebec than in Ontario, Western Canada and the northern territories.

Demographic factors, at a combined 1.8%, have been a relatively modest contributor to the 7.4% per year growth in health spending. In contrast, price effects have been a significant driver of overall health spending. While there are no measures of total health-sector inflation, it may be viewed in relation to general economy-wide inflation. General inflation, as measured by the GDP deflator, averaged 2.8% per year from 1998 to 2008; various measures suggest that health sector–specific inflation exceeded that of the general economy. For example, health human resources are a significant input into the provision of health care, and earnings of health professionals have increased at a higher rate than in the general economy.

Physician spending has been among the fastest-growing health categories in recent years, increasing at an annual rate of 6.8% per year from 1998 to 2008. More than one-half of this growth, 3.6% per year, is attributable to increases in physician fee schedules. The remuneration that doctors received grew faster than the average weekly wages of other health and social services workers during the past decade, although physician compensation grew more slowly than the prices of other public goods and services from 1975 until 1998.

Price inflation has also been a significant factor in the growth in hospital costs. Compensation constitutes 60% of the total cost of hospital budgets. Compensation for the hospital workforce—the largest majority of whom are nurses—has grown faster than compensation in non-health sectors since 1998.

Health-sector price inflation has been well above the rate of general inflation for core medicare services such as physicians and hospitals. Much of this inflation is associated with increases in remuneration, as employers and governments compete for a limited pool of human resources. In contrast, drug price inflation has remained in check due to price regulation of patented drugs, lapsing of some major patents and the substitution of lower-price generics for brand name drugs. On average, Canadian generic prices in 2008 were approximately 60% of the prices of brand name pharmaceuticals. Since 2010, most provincial governments have either implemented or revised generic pricing policies, with maximum allowable prices ranging from 25% to 56% of brand name products.

Over the period from 1998 to 2007, prescription drug expenditures grew at an annual average rate of 10.1% per year. Increased utilization has been a major driver of drug spending in Canada. The story is complex, as it involves both an increase in volume, contributing 6.2% per year, and a change in the mix of drug types, which added 2% per year. Volume increases were far more important than changes in the mix of drugs in the growth in retail spending in three major prescription drug categories: antihypertensive drugs, cholesterol-lowering drugs and gastrointestinal drugs. However, for immunosuppressant drugs, which can be used for rheumatoid arthritis or Crohn’s disease, changes in the mix of drugs rather than volume increases were far more important contributors to the growth in spending.

Utilization effects contributed an average of 1.5% per year to the growth in physician spending. From 2003 to 2008, Canada experienced a significant increase in the number of physicians per 1,000 population. This was due to higher medical school enrolment and graduation in Canada as well as increased immigration of international medical graduates. Physicians in Canada make decisions that have a direct impact on the utilization of health care. Doctors have the authority to write drug prescriptions, which strongly influences the volume and type of pharmaceuticals used by Canadians. Physicians are also primarily responsible for determining the number of patients who require care in hospital and further diagnostic tests.

The past decade has seen changes in the utilization of hospital care. While there has been a slight decrease in the number of beds, there has been a modest increase in the average length of stay and a slight increase in the average amount of resources consumed by inpatients. The volume of hospital discharges declined steeply in the 1990s, when there was a conscious shift from inpatient to outpatient procedures. Inpatient-to-outpatient shifting continues but at a more

moderate pace than was observed in the 1990s. An increasing number of computed tomography (CT) and magnetic resonance imaging (MRI) scanners has been installed and is in operation in Canadian hospitals. The use of medical imaging technology, with its ability to detect more anomalies, has contributed to growth in hospital services. Between 2003–2004 and 2009–2010, the number of CT and MRI scans nearly doubled.

The impact of technological change as a cost driver has been difficult to quantify. Technologies referred to in this study may include medical devices and equipment (such as imaging), surgical improvements (such as robotic devices), information and communications technology (such as computers, electronic health records and telehealth) and prescription drugs. Technological change involves two aspects: the introduction of new products (for example, new cancer drugs) and techniques (for example, bariatric surgery); and changes in clinical practices and patient demand due to the existence of new products and techniques.

Technological change is a major underlying cost driver for public and private prescription drug plans, with changes in the number and types of drugs being developed affecting drug spending. However, in the last decade, the trend in the number of new drug approvals was on a decline. The decrease in new drug development, along with the introduction of high-utilization generics, likely contributed to slower growth in drug spending since 2005.

The reference period of this study, 1998 to 2008, may be quite different than what is likely to be faced in the future. The following key issues need to be considered as the health care system evolves to better serve the needs of Canadians.

Issues to Monitor in the Future

- Weaker prospects for economic growth combined with fiscal deficits and fewer savings from debt service charges could have a dampening effect on the future growth of health spending.
- As the percentage of the population age 80 and older increases, decision-makers will be faced with the challenge of determining the best ways to provide care for older adults. The challenge will be to find the appropriate use of hospital care, long-term institutional care and community care for older Canadians that balances access, quality and appropriateness of care on the one hand and cost on the other.
- Price inflation is a significant cost driver. Managing health-specific price inflation for core medicare goods and services, including doctors, nurses, other health care professionals and advanced diagnostics, will be a challenge.
- A rapid increase in physician remuneration places considerable cost pressures on all governments.

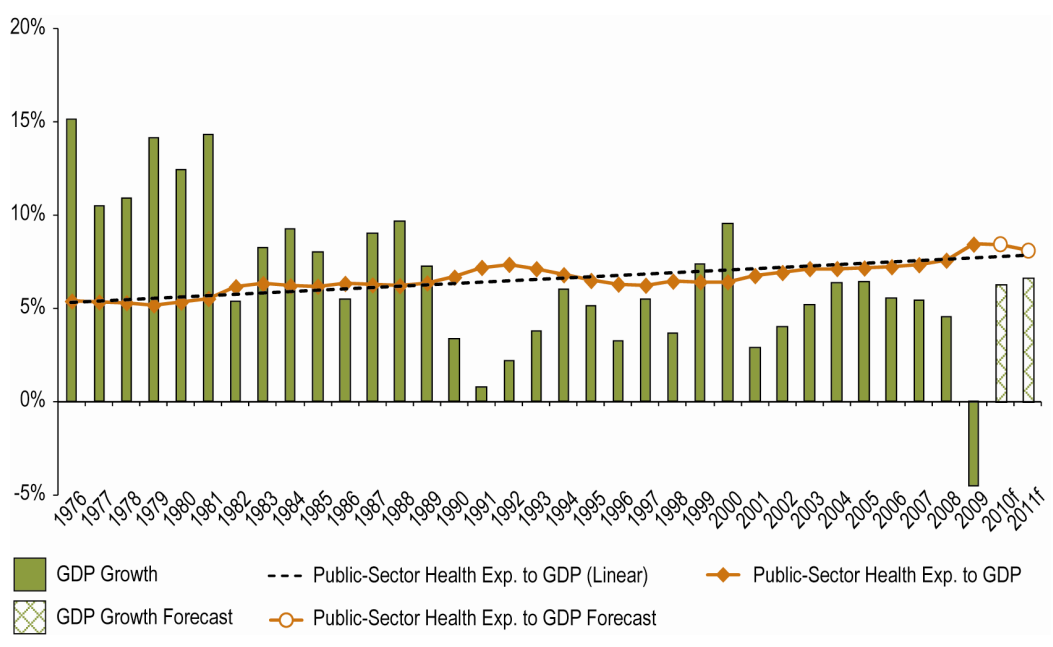
- The scope of practice of non-physician health professionals is changing. Governments are examining whether other professionals (such as pharmacists or nurse practitioners) can complement physician services more effectively or whether they can provide the same services currently being provided by general practitioners but at less expense.
- Another area worth monitoring is the cost of providing hospital care. In the past decade, the growth in hospital operating spending has been driven by higher remuneration and more staff to deliver more services, such as diagnostic imaging. Continued shifts to ambulatory care, which mitigate costs, will be a trend to monitor.
- Health system leaders and managers will need to scrutinize and carefully manage the introduction of new drugs and other technologies based upon the trade-off between clinical benefits and their value relative to other health system investments.
- Trends in utilization and the impact of patent expirations will be an issue for drugs in the future. The generic share of the Canadian prescription drug market is expected to increase in the coming years, as patents on many blockbuster medicines expire.

In conclusion, health care system policy- and decision-makers will continue to be challenged to innovate and reform how health care is provided. The provision of health care in Canada continues to evolve. The introduction of interprofessional collaboration to provide team-based care, expansion in the scope of practice for some non-physician providers, increased focus on patient-centred care, emphasis on integration and continuity of care, shifting to ambulatory care, ensuring affordability of drugs and providing incentives to health care providers to meet the needs of their patient population are just a few examples of the continuing transformation of the Canadian health care system.

Introduction: The Sustainability Question

For more than a decade, Canadians have been debating the fiscal sustainability of public health care for one main reason: public-sector spending on health care, whether measured as a percentage of the economy or in dollars, has been trending upwards. In total, public-sector spending on health care reached $121 billion in 2008, an average annual increase of 7.4% since 1998. According to the latest forecasts presented in *National Health Expenditure Trends, 1975 to 2011*,[1] an annual report from the Canadian Institute for Health Information (CIHI), public-sector health spending as a share of gross domestic product (GDP) is projected to be 8.1% in 2011 (Figure 1).

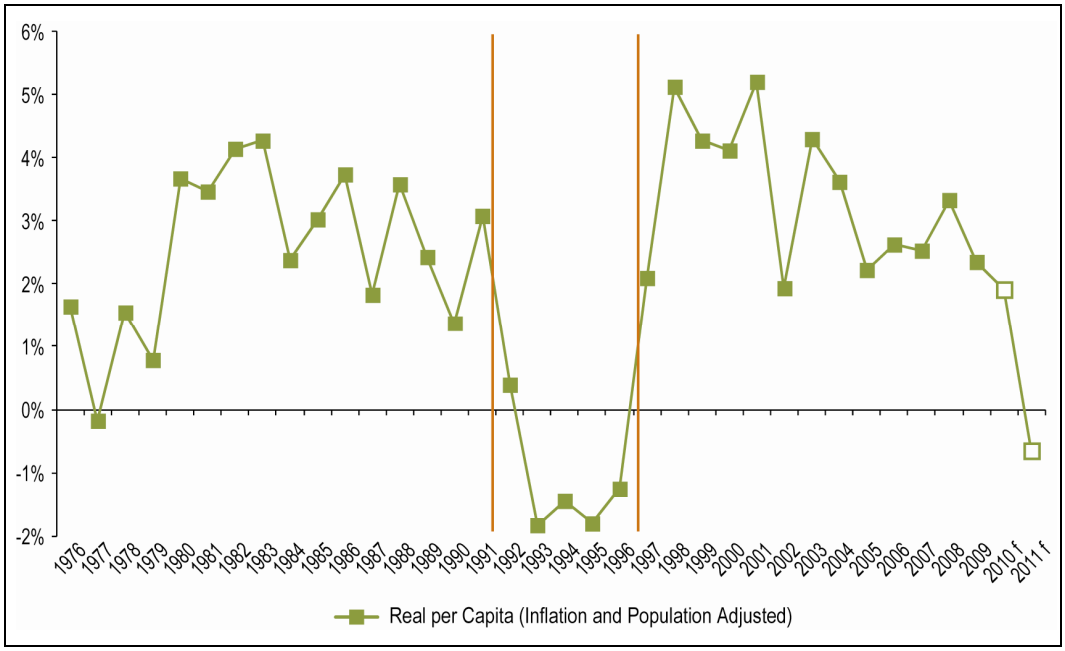
Figure 1: Public-Sector Health Expenditure as a Proportion of GDP and GDP Growth



Sources
National Health Expenditure Database, Canadian Institute for Health Information; Statistics Canada.

It is helpful to examine the story of health spending after adjusting for inflation and population growth. As the following figure illustrates, there have been three phases in the growth of public-sector health spending since 1975: a growth phase from 1976 to 1991; a second period of retrenchment and disinvestment from 1992 to 1996; and a third phase of growth that averaged 3.5% per year from 1997 until 2008.

Figure 2: Public-Sector Health Expenditure per Capita, Three Phases, Annual Growth Rates in Constant 1997 Dollars, Canada, 1976 to 2011



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

Canadians are not alone in their concern about rising health care costs and what they may mean for the future of publicly funded health care. In almost all high-income countries, there are similar trends and concerns as well as debates concerning the sustainability of public health care. Since the majority of health spending is through the public purse in most of the wealthier countries in the Organisation for Economic Co-operation and Development (OECD), there have been numerous studies and analyses of this data, producing different interpretations.

From one perspective, rising public spending on health care is leaving less and less room for other public-sector expenditures; it is therefore a cost disease endangering the rest of the body politic.[2] A contrary view is that this growth has not caused crowding out and that there has been sufficient room for the growth of other public expenditures, even when taking into consideration major tax reductions by governments in recent years.[3, 4] From yet another perspective, spending more on public health care is a collective choice, and that as long as the public is willing to devote more resources to this sector relative to other public spending, this in itself is not a problem.[5]

Since 1997, CIHI has published an annual report on health expenditure trends. During the past year, in the face of continuing health expenditure increases and in response to the demand by decision-makers for more evidence on cost trends, CIHI analyzed data for the period 1998 to 2008 to estimate how much of the

growth in spending is attributable to underlying health care cost drivers, such as population growth, aging, technological change, increases in utilization and health-sector inflation above the rate of general inflation.

The purpose of this report is to provide an overview of the results of this study through a narrative that connects the most important dots in sector-specific cost studies. Beyond providing a synopsis of the data on cost drivers in Canada, the report also highlights areas that decision-makers may wish to examine further in their efforts to govern and manage their respective health systems.

Federal/Provincial/Territorial Health Systems

It is often said that there is no such thing as a national health care system in Canada but rather 14 publicly funded health systems. In fact, Canada is made up of highly decentralized systems—10 provincial, 3 territorial and 1 federal—with many points of decision-making and influence inside them. Decisions in one system often influence other systems. Some aspects of health care are not meant to be part of public health care systems at all, such as the supply of privately funded dental and vision care services, over-the-counter medicines and health products.

Public health care is governed and coordinated by democratically elected governments and their health system administrators. Roughly 30% of health care is funded privately, including most dental and vision care, as well as complementary and alternative therapies and medicinal products. This portion does not fall under the public system. However, since 70% is collectively financed, almost entirely through general taxation, the resulting expenditures are accountable to various governments in Canada and, through these governments, to the people of Canada. This report focuses principally on public-sector health expenditures, as it is these health services and goods that are also the focus of health system decision-makers, particularly in the lead-up to the renegotiation of the 2004 federal/provincial/territorial health accord.

There is one major exception to this demarcation between public and private funding. Prescription drug therapies straddle the public–private divide like no other health category in Canada.[1] Unlike physicians, who in 2008 received more than 98% of their funding from public sources, and hospitals, which got 91% of their funding from the public purse,[i] only 46% of prescription drug therapies were

i. Income generated from private sources accounted for 9% of hospital spending. This included out-of-pocket and insurance expenditures for patient services (such as preferred accommodation, care of non-residents, chronic care copayments and uninsured services) and non-patient revenues (such as earnings from investments, food services, real estate, parking, rentals and donations).

paid for by public funds in Canada. The remaining 54% was paid for through private health insurance or directly out of pocket by Canadians. This relationship between the public and private funding of prescription drugs continues to this day, and any cost pressures that may eventually result in larger gaps in private-sector coverage tend to increase pressures for additional public coverage. Therefore, when it comes to prescription drugs, it is worthwhile examining cost drivers on both sides of the public–private divide.

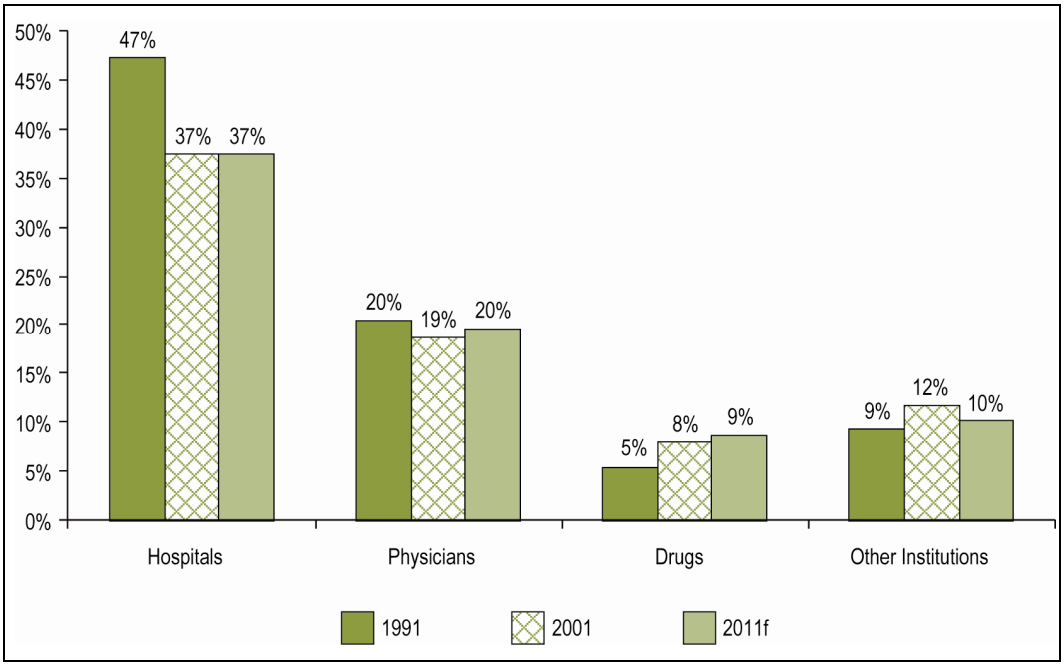
Provincial, territorial and federal health ministries play the key role in the governance of public health care in Canada. Since health care is principally a provincial responsibility under the constitution, provincial health ministries are primarily responsible for funding and administering public health care services. Broadly speaking, these services fall into two categories. The first are services defined as "medically necessary" hospital services or "medically required" physician services under the *Canada Health Act*, which is overseen by Health Canada. The second involves provincial programs and subsidies mainly for long-term care, home care and prescription drug coverage.

Generally known as medicare, insured services have a pan-Canadian character because, under the *Canada Health Act*, provinces and territories are expected to follow the five principles of public administration, accessibility, universality, portability and comprehensiveness. The federal government encourages alignment through its ability to deduct federal transfers to the provinces and territories.[ii] Despite the fact that provinces have the flexibility to fund, administer and even define the basket of services included in medicare, there are more similarities than differences among provincial and territorial health systems in how and what they fund and administer.

In contrast to medicare, the second category of services does not adhere to any unifying national features. Since the 1970s, provincial/territorial governments have invested heavily in providing or subsidizing long-term care (including home, community and continuing care services) and prescription drug plans. During the 1970s, most provincial and territorial governments introduced public drug plans to provide some basic coverage to those individuals—mainly seniors and the poor—not covered by employment-based private insurance plans. Although the Canadian debate on cost drivers often focuses on medicare because of its national character and higher profile, this second category of public-sector health services also involves major expenditures on the part of the provincial and territorial health ministries. Indeed, this second category has been responsible for some of the largest increases in public-sector health care spending. For example, the share of overall spending devoted to drugs has almost doubled in 20 years, as seen in Figure 3.

ii. When the *Canada Health Act* was first introduced in 1984, the federal government deducted funding from transfer payments to some provinces for permitting user fees and extra billing. Since 2000, the federal government's deductions for user fees and extra billing have amounted to $1 million.

Figure 3: Share of Public-Sector Health Expenditure by Use of Funds, Selected Categories, 1991, 2001 and 2011



Note
f = forecast.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

Since ensuring access to these services is so critical to the appropriate use and cost of medicare, health ministries have expended considerable efforts to manage both categories of public-sector services as part of a single system. In most provinces and one territory, health ministries have delegated the daily administration and management of these services to smaller public bodies generically called regional health authorities (RHAs) (they go by various names depending on the province; for example, in Ontario they are referred to as local health integration networks). Accountable for populations within a geographically determined area, RHAs are responsible for allocating resources among services as well as coordinating or integrating service delivery across numerous health sectors, organizations and professions. However, RHAs are not responsible for managing prescription drug plans or physician plans, two areas that continue to be administered centrally by all provincial and territorial ministries.

At the same time, the federal government also has significant responsibilities for health infrastructure in Canada, including health data collection, health research through the Canadian Institutes of Health Research and drug regulation through Health Canada, the Patented Medicine Prices Review Board and the *Patent Act*. In addition, the federal government has responsibility for First Nations and Inuit peoples' health, and it funds a number of programs and services including a non-

insured health benefits program that provides coverage for such items as prescription drugs, dental care, vision care and medical travel. Members of the Royal Canadian Mounted Police and the Canadian Forces, as well as veterans and inmates of federal penitentiaries, also receive health benefits and services from the Government of Canada. The federal government's transfer payments and direct expenditures can be seen as a means of integrating its systems with the provincial and territorial health systems.

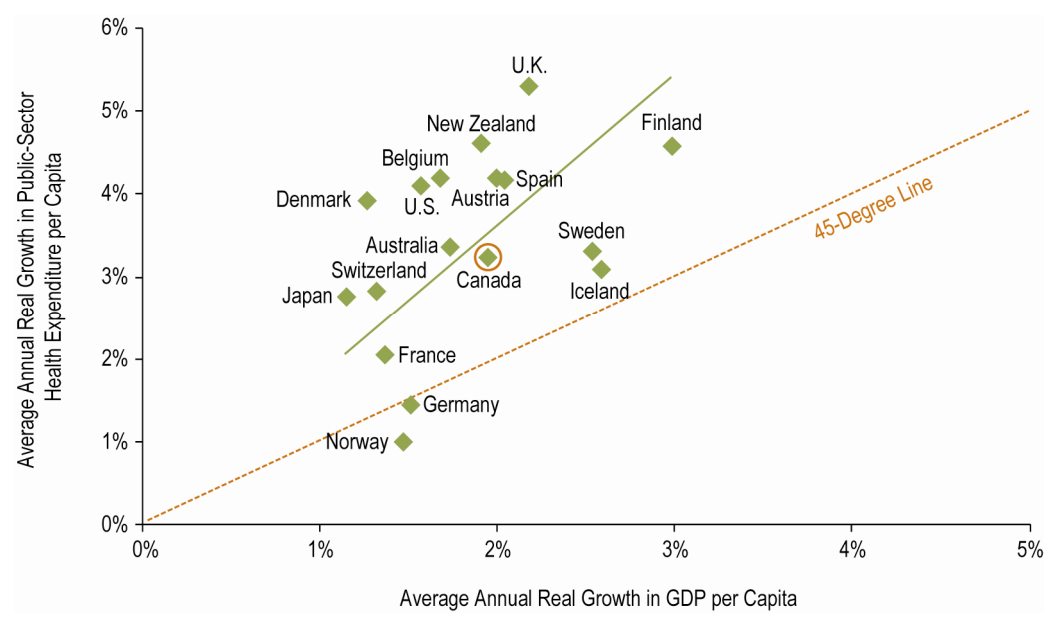
The Canadian Health Care Cost Drivers Story: 1998 to 2008

Policy Context: Decisions to Invest in Health Care

When it comes to health spending, Canada's experience parallels that of other OECD countries. The most obvious similarity is the positive correlation between the growth in the economy and the growth in public-sector health spending between 1998 and 2008. Figure 4 illustrates this by comparing Canada to OECD countries that had government per capita health spending above a threshold of US$2,000 per person in 2008.[iii] Almost all countries are above the 45-degree line, which means that, except for Norway and Germany, the rates of increase in spending were above the rates at which their respective economies were growing in the decade from 1998 until 2008. Canada is on or just slightly below the trend line of OECD countries.

iii. In 2008, there were 18 OECD countries that both met this criterion and had adopted the OECD's comparable system of accounts. The years in which their data became comparable were as follows: Australia, 1998; Austria, 1990; Belgium, 2003; Canada, 1975; Denmark, 2003; Finland, 1995; France, 1995; Germany, 1992; Iceland, 2003; Japan, 1995; Luxembourg, 1999; New Zealand, 2004; Norway, 1997; Spain, 1999; Sweden, 2001; Switzerland, 1995; United Kingdom, 2010; and United States, 1999. Luxembourg was eliminated from this comparison because of its small area and population.

Figure 4: Average Growth in Government Health Expenditures per Capita and GDP per Capita, 1998 to 2008

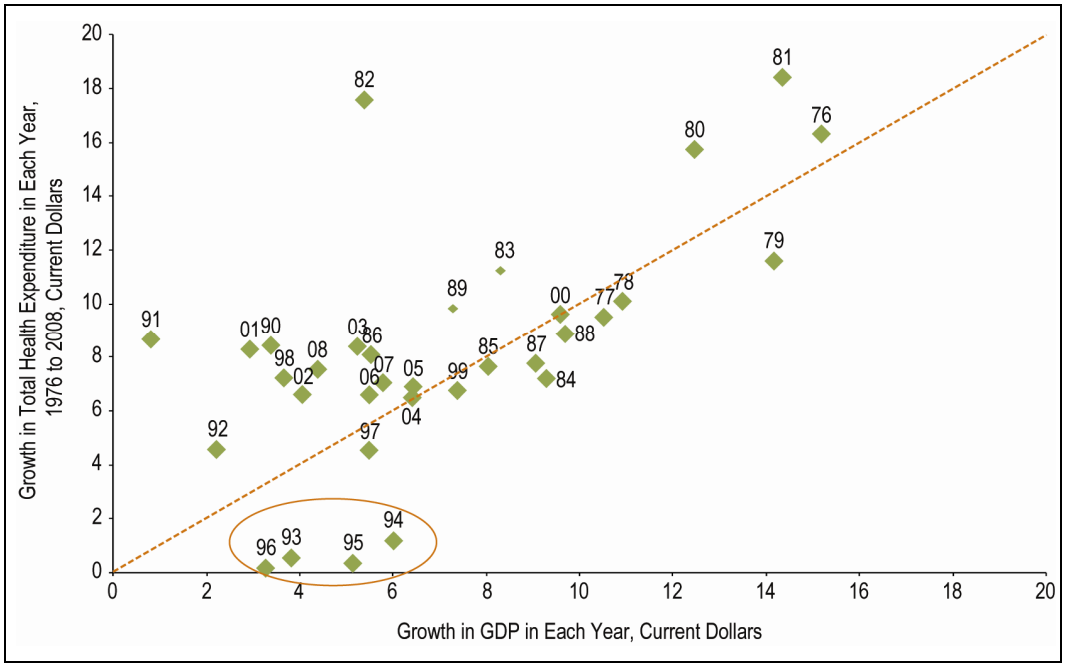


Source

Organisation for Economic Co-operation and Development, *OECD Health Data, 2011* (June edition) (Paris, France: OECD, 2011).

Having put Canada's recent health spending trends in the larger global context, it is useful to examine the Canadian experience over a longer period. The ratio of health spending to GDP has trended upward over the last 35 years, with spikes during recessions (such as in 1981) and declines during post-recession recoveries. As shown in Figure 5, there has been a positive relationship between economic growth and health spending growth in Canada since the mid-1970s. In general, with more economic growth and thus income, more has been spent on health care. The exception is the fiscal restraint period of 1993 to 1996, when governments attempted to reduce or eliminate budget deficits.

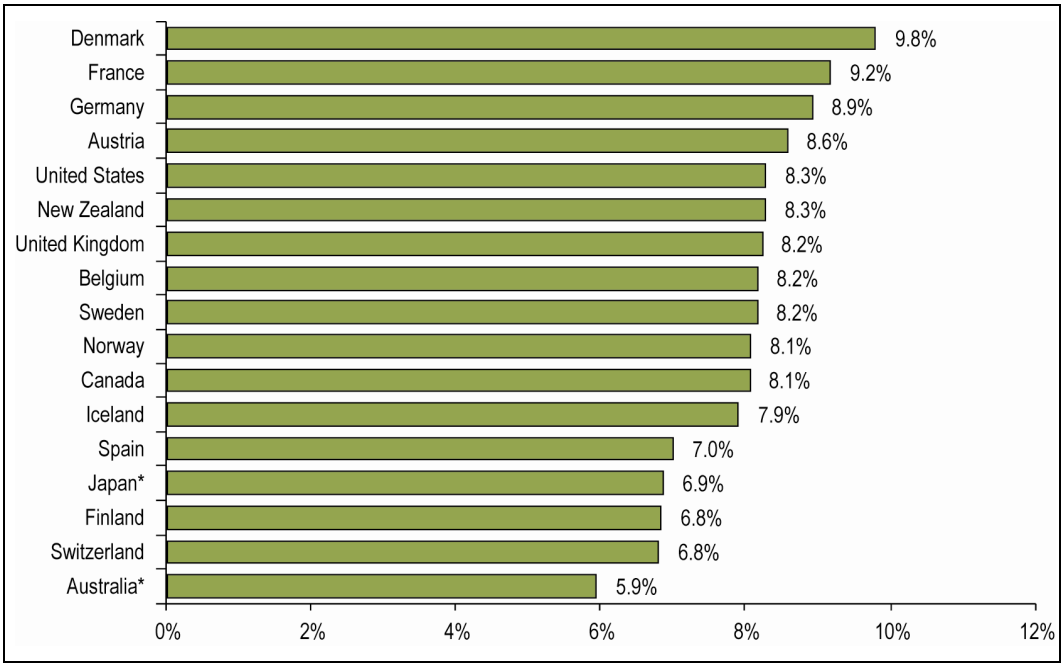
Figure 5: Average Growth in Total Health Expenditures and GDP, Canada, 1976 to 2008



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

With a 70:30 ratio between the public and private shares of total health spending, Canada is at the low end of public spending relative to private spending among OECD countries.[6] What is generally not realized by Canadians is that the United States actually surpassed Canada in terms of both government health care spending per person and the share of the economy devoted to public-sector health care, even before the passage of reforms by Congress expanding insurance coverage in March 2010. As seen in Figure 6, the United States has the fifth-highest public-sector health spending–to-GDP ratio among selected OECD countries. Canada's ratio is higher than Australia's but lower than that of several European countries, including France, Germany and the U.K.

Figure 6: Public-Sector Health Expenditure as a Percentage of GDP, 17 Selected Countries, 2009



Note

* Data is from 2008.

Source

Organisation for Economic Co-operation and Development, *OECD Health Data, 2011* (June edition) (Paris, France: OECD, 2011).

Public-sector health spending, the lion's share of which flows through provincial health ministries, grew at an average annual rate of 7.4% between 1998 and 2008, which was faster than in most other sectors of government spending. This had a dramatic impact on the health budget's share of provincial and territorial spending. In 1998, 33.1% of total program expenditures were allocated to health ministries. Ten years later, the figure had increased to 39.3%. However, as Figure 7 illustrates, the highest percentage was reached by 2004; since that time, health's share of provincial and territorial spending has stabilized.

Figure 7: Total Provincial/Territorial Government Health Expenditures as a Proportion of Total Program Spending (Total Expenditures Less Debt Charges), 1998 to 2008

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

When general inflation and population growth are accounted for, public-sector health spending still grew at an annual average of 3.4% from 1998 until 2008, more than double the rate of the revenue growth of the provincial, territorial and federal governments. However, spending in other major sectors, including transportation, communications and education, also exceeded revenue growth. How was this possible? It was a result of the fiscal dividend that governments earned as a result of eliminating deficits and bringing down debt loads in the 1990s, thereby reducing—very substantially—the interest they had to pay on outstanding debt in the years following. However, not all of the fiscal dividend was invested in government programs such as health care. Some of the dividend was returned to Canadians in the form of major tax cuts, thus also explaining the relatively weak growth of government revenues during the decade.

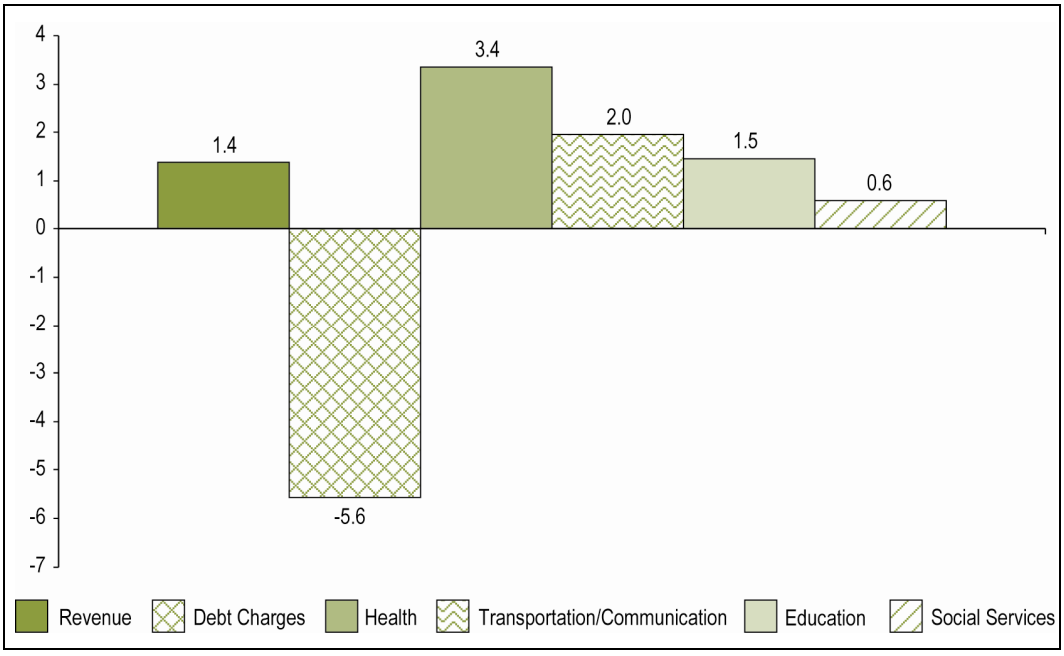
This begs the question as to whether tax cuts brought in after the late 1990s eroded provincial revenue bases, causing revenues to grow more slowly than the economy.[iv] Over the period 1998 to 2008, the average annual growth rate in real per capita public revenues was 1.4%, while the average annual growth rate in real per capita GDP was 1.9% and that of public-sector health spending was 3.4%.[8] As a consequence of tax

iv. Robert Evans maintains that the share of national income devoted to public health insurance has been remarkably stable but that provinces have introduced fiscal measures that reduced their rates of personal and corporate income taxation.[7]

reductions, provincial government revenues have not kept up with general economic growth. At the same time, spending by governments on health care has outstripped the growth in the economy and public revenues by a considerable margin.

The period from 1998 to 2008 is unique because the decline in interest rates reduced government debt service costs and allowed for investments in new programs, expansion of existing programs—including health care—and tax reduction.[v] Whereas the debt interest's share of provincial government spending in Canada was 14% in 1998, by 2008 it had fallen to 8.5%,[9] freeing up a fiscal dividend that allowed governments to meet multiple targets. However, in the wake of the global recession that began in 2008 and the return of large public-sector deficits, combined with lower GDP growth, the foundation for a fiscal dividend is crumbling.

Figure 8: Public-Sector Spending Growth (Health, Transportation/Communications, Education and Social Services) Compared With Revenue and Debt Charges, Average Annual Real per Capita Expenditure Growth, 1998 to 2008



Source
Financial Management System, 2010, Statistics Canada.

v. Balanced budgets after the mid-1990s opened up a fiscal dividend that enabled provinces to spend more on health, even while lowering income and corporate taxes.[3]

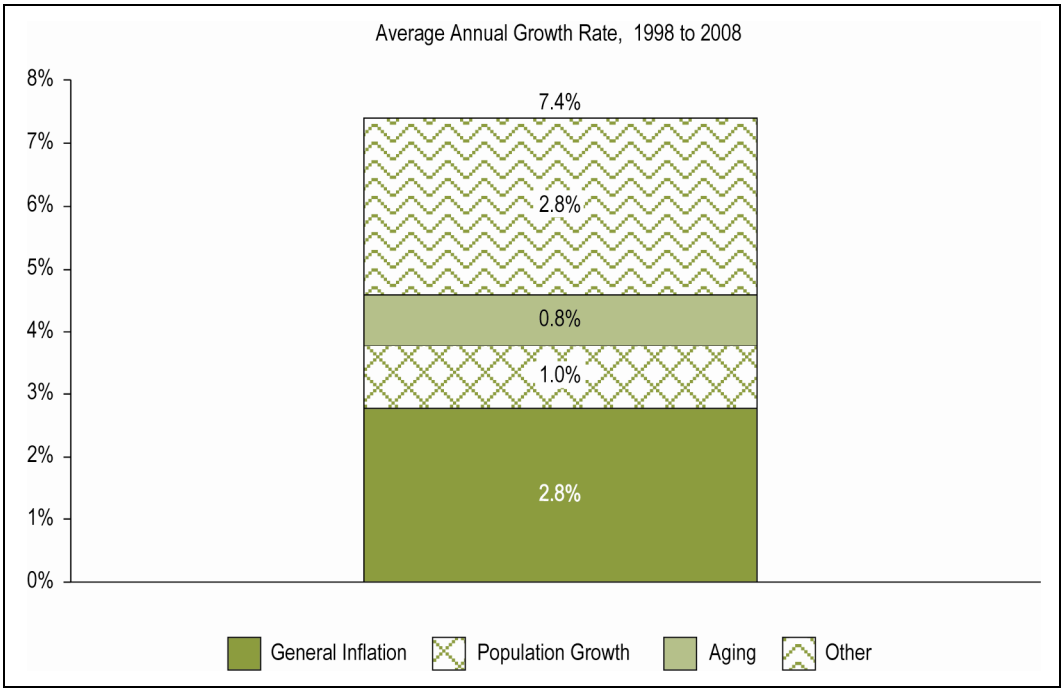
Cost Drivers: Overview

Figure 9 summarizes the actual contribution of each underlying cost driver. Population growth added on average 1.0% per year to public-sector health spending, accounting for 13.5% of total spending growth from 1998 to 2008. Population aging, at 0.8% per year, added even less to the total growth (10.8%). Therefore, contrary to most conventional accounts, demographic factors have been a relatively modest contributor to overall health costs.

Price effects have been a significant driver of overall health spending. While there are no measures of total health-sector inflation, it may be viewed in relation to general economy-wide inflation. General inflation, as measured by the GDP deflator, averaged 2.8% per year from 1998 to 2008, accounting for close to 38% of the overall increase in health spending. Health human resources are a significant input into the provision of health care. Statistics Canada data from the Survey of Employment, Payrolls and Hours show that earnings in the health sector have increased more than the economy average.[10] As health-sector inflation cannot be directly identified, it is one component of the “other” category.

The “other” category includes all other factors, such as changes in technology, increases in service utilization and health-sector inflation above the rate of general inflation. From the perspective of health system decision-makers, this is a critical category, as these factors may be subject to some control. However, it is the category that is the most difficult to decompose into individual factors. In total, this “other” category is responsible for 37.8% of the growth in overall public-sector health spending during the period studied, the same amount as general inflation.

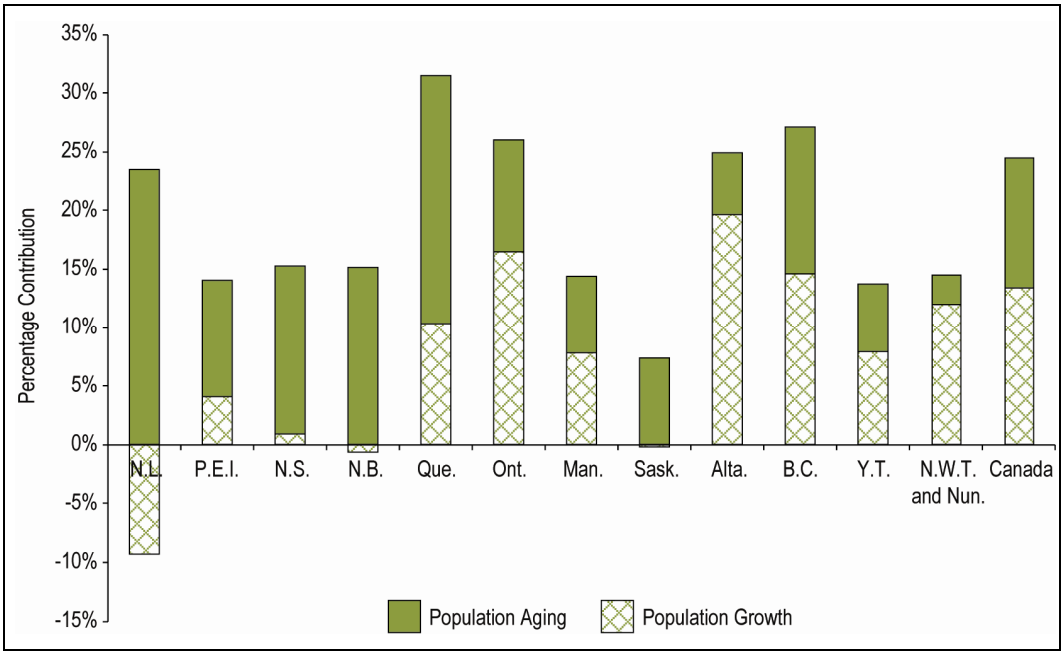
Figure 9: Cost Driver Shares of Average Annual Growth in Public-Sector Health Spending, 1998 to 2008



Sources
National Health Expenditure Database, Canadian Institute for Health Information; GDP Deflator, 2010, Statistics Canada.

It is important to note that Figure 9 presents the Canadian average only and that both population growth and aging vary considerably among provinces and territories. Since these are potentially important factors in determining the demand for health services, it is well worth examining their respective contributions in individual provinces and territories, as shown in Figure 10. In addition, aging does contribute more to growth in health care costs in certain health sectors, something that will be examined in greater depth below.

Figure 10: Contribution of Population Growth and Aging to Growth in Provincial/Territorial Government Health Spending, by Individual Province and Territory, 1998 to 2008



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

As can be seen, there is a noticeable east–west gradient in Canada, in which the impact of aging is more significant in the Atlantic region and Quebec than in Ontario and Western Canada. The different demographic profiles across provinces/territories are a product of numerous factors, including immigration and interprovincial migration. The influx of working-age individuals into a province or territory usually lessens the importance of population aging as a health care cost driver.

Examining Individual Cost Drivers

In this section, individual cost drivers are examined with a view to pinpointing the most severe pressures by health category. In doing this, however, there are some dangers. The first is that cost drivers are intertwined, often a combination of several factors. Also, cost drivers are synergistic in that, while they may not seem like major cost drivers when individually assessed, when combined they can become major drivers of costs. The following example concerning physicians is a case in point.

While spending on physicians is often treated in isolation from spending on other health categories, physicians in Canada make decisions that have direct effects on other health sectors, especially the hospital and drug sectors. On the basis of

their clinical examinations and diagnoses, physicians are primarily responsible for determining the number of patients who require care in hospital and further diagnostic tests. As a consequence of their authority to write drug prescriptions, doctors also strongly influence the volume and type of pharmaceuticals used by Canadians, whether funded through public or private sources.

In other words, there is a synergistic connection between what governments spend on physicians (including the way in which they pay physicians, if this shapes referral and prescription behaviour) and what governments spend on hospitals and prescription drug coverage. As a consequence, it is important to bear such effects in mind when isolating individual health sectors or single cost drivers.

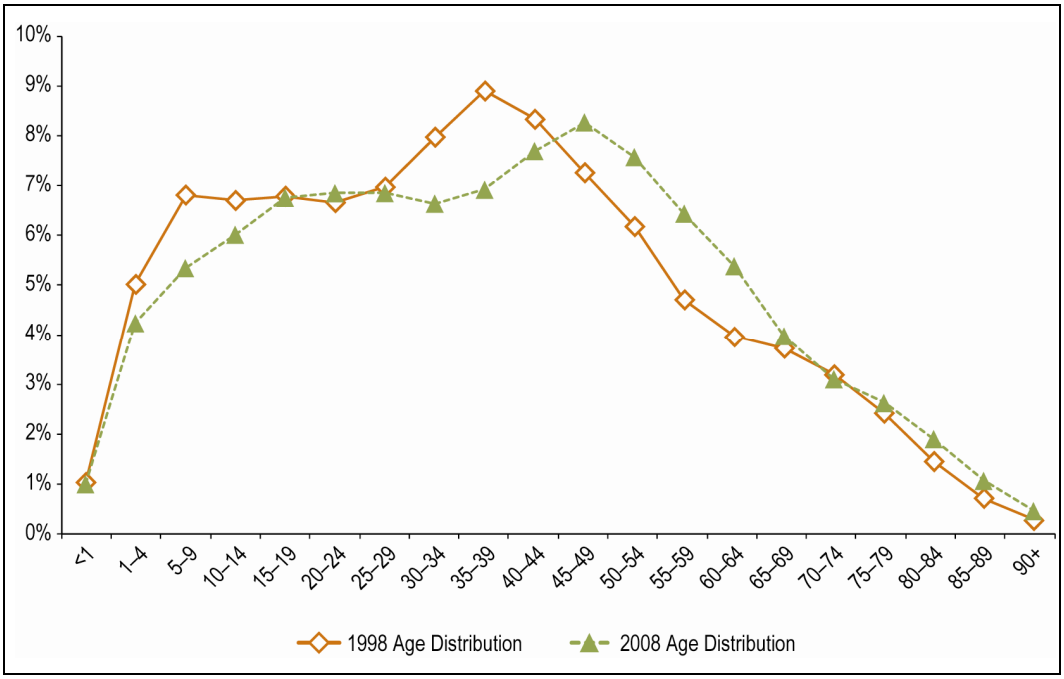
The analysis below focuses on aging as well as the most important cost drivers making up the residual category discussed above, including price inflation unique to the health sector, increases in utilization and technological change.

Population Aging

Canada's population is growing and is a function of changing birth, mortality, immigration and emigration rates. Although these factors are largely outside the control of health system decision-makers, the implications of a growing population in terms of potential demand for health care services in the future need to be considered.

Population aging describes a shift in the age structure of the population. Like many industrialized countries, Canada is undergoing a demographic shift. As seen in Figure 11, while the largest concentration of the population is in the middle age groups (40s and 50s), the baby-boom cohort, Canada's largest in recent history, is beginning to turn 65.

Figure 11: Population Age Distribution, Canada, 1998 and 2008

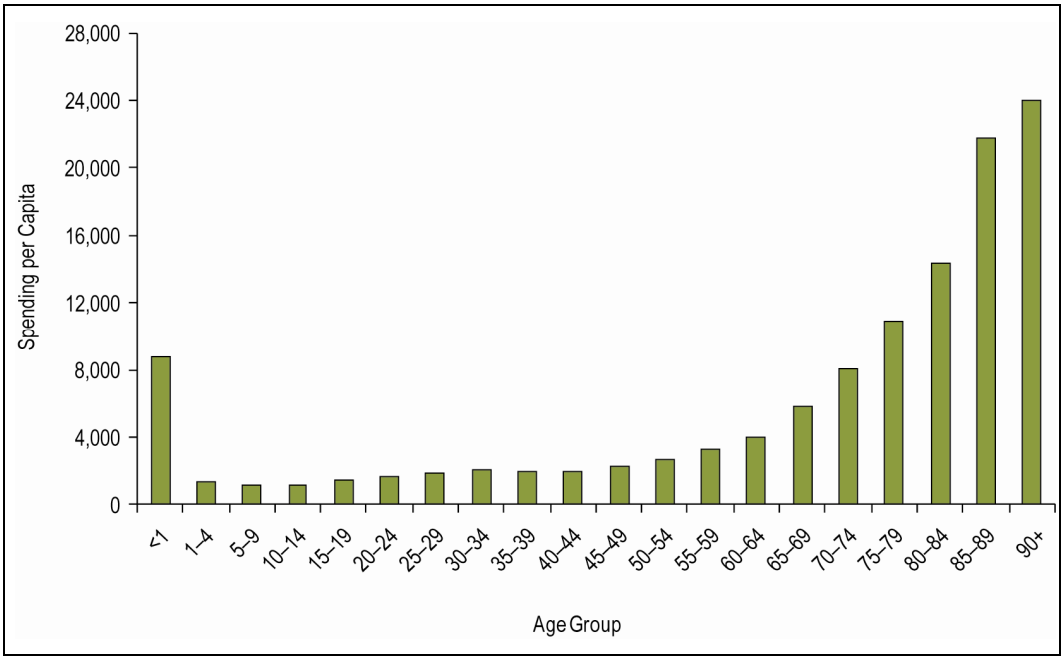


Source
Statistics Canada, *Canada's Population (July 1 Estimates)* (Ottawa, Ont.: Statistics Canada, 2010).

As a consequence, some perceive that an aging population will lead to greater demands for health care services and acceleration in the growth of health spending. However, seniors are a diverse group. As shown in Figure 12, provincial and territorial government health spending varies among the senior age groups. On average, health care spending per person is highest for those age 80 and older.

Older seniors consume more health care dollars largely as a consequence of two factors: the cost of health care in the last few months of life, and the minority of the population with chronic illnesses that tend to require more intensive medical attention with age. Survey data shows a stronger correlation between the presence of multiple chronic diseases and higher utilization of health services than between age and utilization.[11]

Figure 12: Provincial/Territorial Health Expenditure per Capita, by Age Group, 2008



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

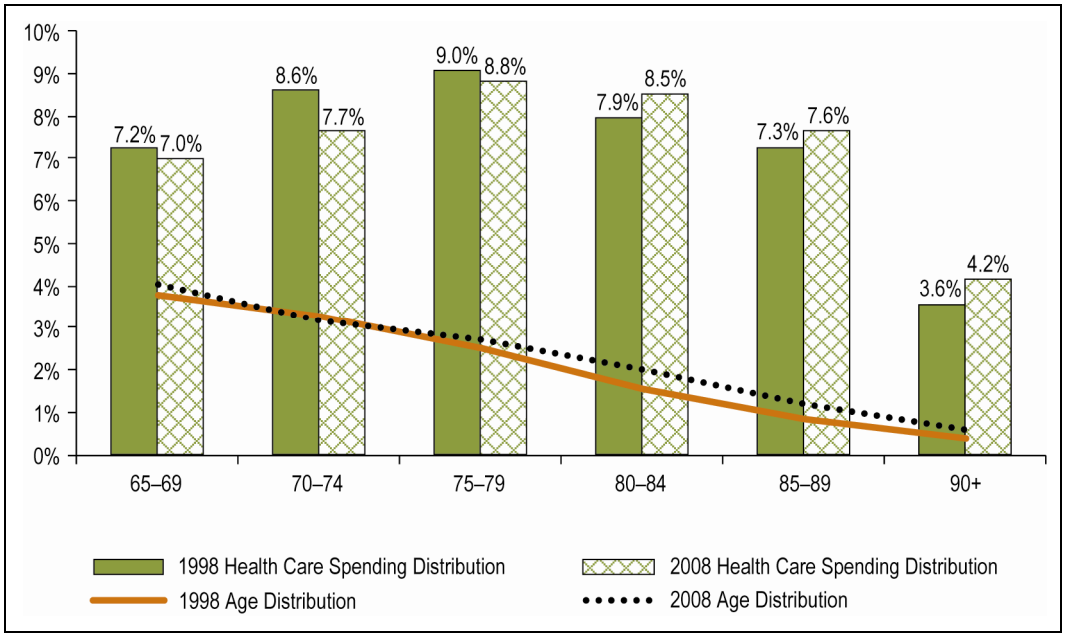
End of Life

There is some evidence that proximity to death rather than aging is the key factor in terms of health expenditure. For example, a study of the experience of 22 OECD countries found that population aging was negatively correlated with health expenditure once proximity to death was controlled for.[12] Another study using the cost-of-dying approach implied that proximity to death rather than aging is the more important cost driver.[13]

While Canadians older than age 65 account for less than 14% of the population, they consume nearly 44% of provincial and territorial government health care dollars.[vi] However, the share spent on Canadian seniors has not changed much over the last decade—from 43.6% in 1998 to 43.8% in 2008. Therefore, the effects of population aging have evolved slowly.

vi. Program design also plays a small role. For example, most provincial and territorial drug plans target seniors for coverage.

Figure 13: Seniors' Share of Provincial/Territorial Government Health Expenditure and Population, by Seniors' Age Group



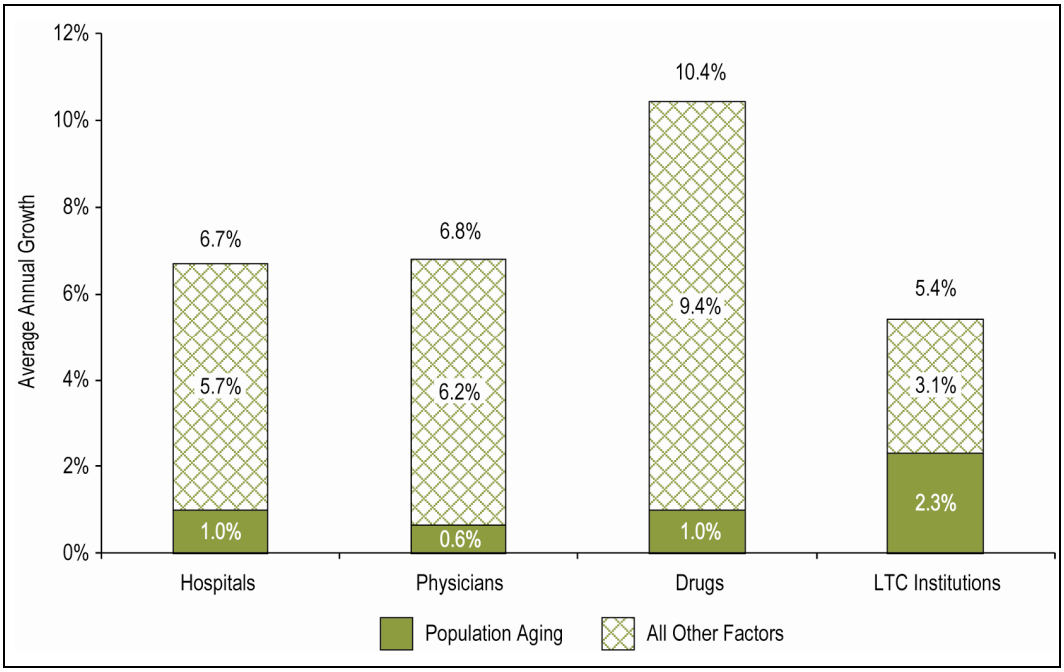
Source
National Health Expenditure Database, Canadian Institute for Health Information.

While population aging has been a relatively modest contributor to costs, the impact simply reflects the aging of the pre–baby boom population to date. Studies in Canada have forecast the impact of aging on future health costs. For example, a 2001 Conference Board of Canada study forecast that an aging population would contribute an average of 0.9% per year to the increase in public-sector health expenditures from 2000 until 2020.[14] Similarly, a recent report by the Office of the Parliamentary Budget Officer projected annual growth due to aging to be 0.9%. This was forecast to increase steadily to 1.2% per year until 2030, before declining sharply in subsequent years.[15]

Yet it could also be the case that the baby boom generation may have different expectations and needs once it reaches age 65, which may affect its future use of the health care system. Figure 14 shows that the effects of aging have varied slightly across categories. While aging contributed an annual average rate of growth of only 0.6% to physician spending, it contributed 2.3% per year on average to the growth in spending on long-term institutional care.

Decision-makers will need to consider the evolution of seniors' health care needs across the continuum of care in the future.

Figure 14: Contribution of Aging to Average Annual Growth for Hospitals, Physicians, Drugs and Long-Term Institutional Care



Note
LTC: long-term care.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

Population Health

While seniors' use of health care tends to increase with age, current trends suggest that today's seniors are healthier than ever before.[16] Canada's seniors are healthy well into their later years, and the health status of younger seniors appears to be similar to adults younger than 65.

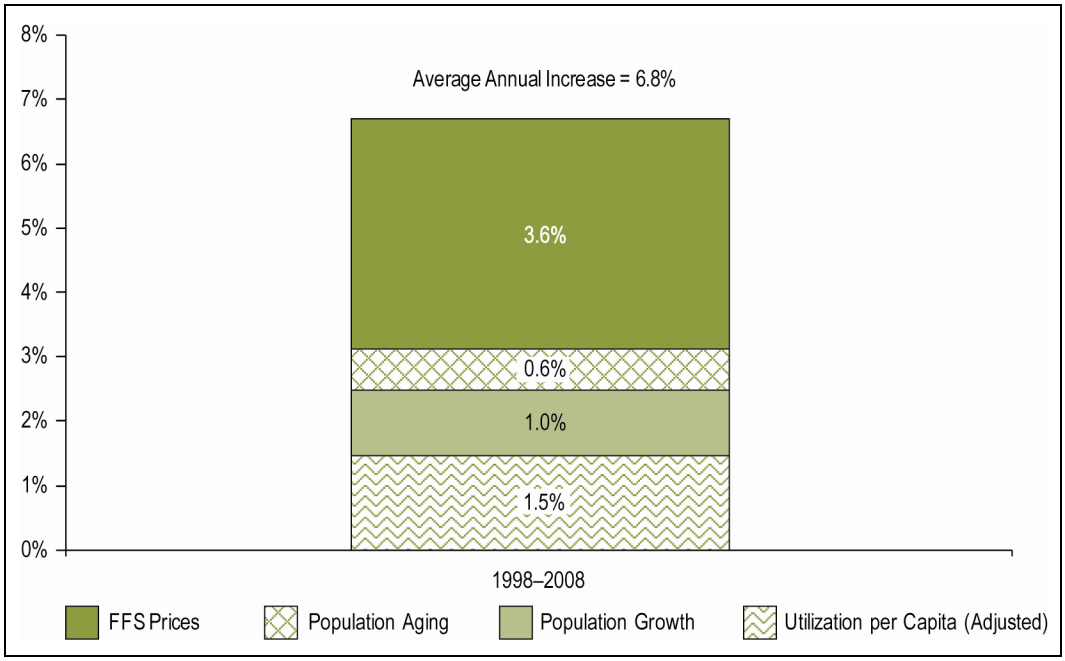
From a population health perspective, socio-economic status is an important determinant of health and, consequently, the use of health care. Given general improvement in the income and education levels of the Canadian population, seniors today are much healthier than before. Improved socio-economic status has also had an impact on seniors' lifestyle choices, such as quitting smoking, regular physical activity, healthy eating habits and abstinence from alcohol.[17] Given these shifts in key determinants of health, the future outlook in terms of the overall health of seniors in Canada seems positive. However, the impact of improved socio-economic status and lifestyle behaviour on health care costs is difficult to determine, as some effects may offset each other. For example, declines in smoking may have a positive impact on health and health care costs, but the increasing prevalence of obesity could have a negative effect. While this complex interaction presents a challenge in terms of pinpointing what the future might hold, it presents an opportunity for continued emphasis on prevention and health promotion.

Health-Sector Price Inflation

The period from 1998 to 2008 was one of general inflation control. Canada's central bank conducted monetary policy with the aim of maintaining inflation within a target range of 1% to 3%. While general inflation is outside the control of health system decision-makers, it is still a factor when negotiating labour contracts.

Labour costs are a significant driver of health-sector inflation. The most notable areas of inflation have been the cost of physician services and the differential between wages in the health and social assistance sector, as defined and measured by Statistics Canada, versus the general economy. Figure 15 illustrates the contributions of four key cost drivers to the average annual growth in physician spending of 6.8% between 1998 and 2008. Increases in fee schedules contributed more than half (3.6% per year) of the growth in this period. Physician compensation grew faster than the prices of other government goods and services from 1998 to 2008, even though it grew more slowly from 1975 until 1998. More importantly, physician remuneration grew faster than the average weekly wages of other health and social services workers during the past decade.

Figure 15: Cost Driver Contributions to Physician Expenditure, 1998 to 2008



Note
FFS: fee-for service.
Source
National Physician Database, Canadian Institute for Health Information.

The relative increases in fees and payments for physician services will be an important issue for health system decision-makers to monitor in the future, as will changes in the scopes of practice of non-physician health professionals. There is increasing interest in exploring whether certain health professionals, such as nurse practitioners and pharmacists, can substitute or complement services currently provided by physicians.

Evolving Scopes of Practice for Health Care Providers

Over the years, the scope of practice of nurses has continued to evolve; an example is the role of the nurse practitioner (NP). NPs are advanced practice registered nurses who have additional education, training and experience. NPs have been regulated in all provinces and territories except Yukon since 2006.[18]

NPs are responsible for assessing patients, ordering and interpreting diagnostic tests, writing prescriptions and performing specific procedures within their legislated scope of practice. NPs work in a wide variety of settings (such as hospitals, public health units and community health care centres), and they consult with physicians and work collaboratively with a number of other health care professionals.

Given that NPs have the ability to provide a wide range of health care services, expanded nursing roles such as that of NPs may be a viable solution to meeting gaps within the health care system.

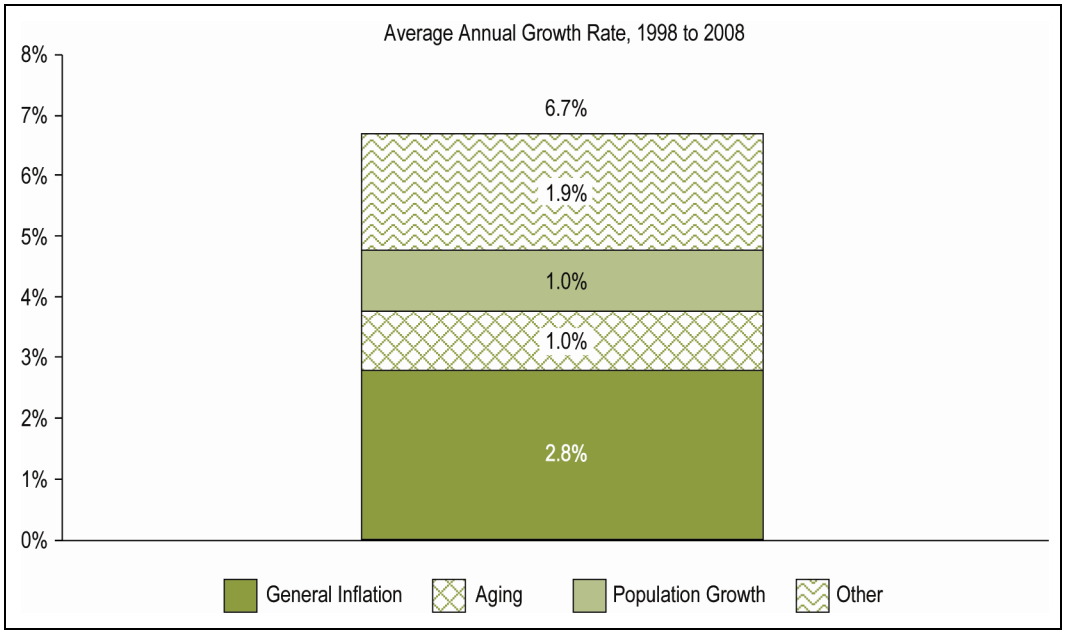
The scope of practice for pharmacists in Canada has also evolved. This follows an international trend that includes primary health care reform, interprofessional collaboration, effective utilization of health human resources and the need to improve safety and outcomes of drug therapy. The evolution has been from a primary focus on dispensing medications to a patient-centred pharmaceutical care approach.

Traditionally in Canada, the authority to prescribe medications has rested with a small number of professionals. With recent changes to legislation or regulation in several Canadian provinces, many pharmacists now have the ability to initiate, continue or modify drug therapy, ranging from renewing a continued care prescription to independent prescribing authority.

This evolution allows pharmacists to play a larger role in ensuring the quality of medication use and optimizing drug therapy to help patients achieve health goals that will improve their quality of life, in collaboration with other health care providers.[19]

Price inflation has also been a major factor in the growth of hospital costs (Figure 16). The health care sector in general is labour intensive, and hospitals are no exception. Compensation constitutes 60% of total hospital costs, and the single largest component of the workforce in hospitals is nurses. Compensation of the hospital workforce has also grown faster than compensation in non-health sectors. Increases in hospital employees' wages have exceeded increases in the Industrial Composite wage rates and the health and social sector component reported in Statistics Canada's Survey of Employment, Payrolls and Hours. The hourly paid hospital employees wage index increased by an average of 3.4% per year between 1998 and 2008. As for general wage costs in the health sector, between 1998 and 2008, nominal hourly wages grew at an average annual rate of 3.1% in the health and social assistance sector, compared with 2.5% in the general economy. This could be due, in part, to the increased demand for health professionals in hospitals.

Figure 16: Cost Driver Contributions to Hospital Expenditures, 1998 to 2008



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

Growth in Health Personnel

The number of physicians per population has increased significantly each year since 2003, mostly because of increases in the number of medical doctors graduating from faculties of medicine in Canada since the early part of the last decade (2002), but also due to increasing numbers of international medical graduates entering the workforce over the same period. Over the period 2003 to 2008, the growth rate in Canada in the number of physicians per 1,000 population exceeded that in six of eight OECD countries with comparable data. However, this higher Canadian growth was in part a catch-up from the period of slower growth due to the restriction of medical school enrolment in the 1990s. Over the period 2000 to 2008, Canada was in the middle in terms of growth rates of physicians per 1,000 population among OECD countries that report comparable data. In terms of medical graduates per 100,000, Canada is still in the bottom third of the OECD countries.[vii]

There were also increases in the number of people working in hospitals from 1999 to 2008. The number of full-time-equivalent employees, calculated from the earned hours in hospitals, increased by a total of 21% over this period. This could be due, in part, to the expansion of hospital services (such as hip and knee replacements and diagnostic imaging).

vii. In Canada in 2007, the last year with complete information available, there were 6.2 medical graduates per 100,000 population, making Canada the fifth-lowest of 32 OECD countries. By 2009, this had risen to 7 per 100,000 population.[20]

In short, compensation has been a cost driver for hospitals for two reasons: higher salaries and wages per employee, and a steady increase in hospital staff.

In the case of drugs, price regulation of patented drugs, lapsing of some major patents and the substitution of lower-price generics for brand name drugs kept drug price inflation in check. For example, while cholesterol-lowering drugs have been the largest contributor to growth in drug costs, the introduction of the first generic in this class dampened spending growth during the study period, and two other brand names within this category will see lower-cost generics increasingly take their place over the coming years. Gastrointestinal drugs were another major category where generic substitution contributed to lowering the spending growth rate.

On average, Canadian generic prices in 2008 were approximately 60% of the prices of brand name pharmaceuticals. Based on available data from the Patented Medicine Prices Review Board, Canada had the highest generic drug prices and, together with Germany, the second-highest patented drug prices among comparator countries. In a major effort to maximize the savings realized by the introduction of generic drugs, public drug programs across Canada have begun to introduce policies limiting the prices of generic drugs to a percentage of the price of the related brand name product. Since 2010, most provincial governments have either implemented or revised generic pricing policies, with maximum allowable prices ranging from 25% to 56% of brand name products.

Technology

The impact of technological change as a cost driver has been difficult to quantify. Results generated by alternative measurement approaches suggest that technology is likely a significant factor making up the residual category.[viii] For example, in its survey of technological change and its impact on health spending, the United States Congressional Budget Office cited a number of studies showing that technology-related changes in medical practice have contributed anywhere from 38% to 65% or more to the growth of real health care spending per capita in the United States.[23]

Despite the fact that technology generally increases costs in the short term, technology can also be a major factor in reducing costs in the medium and long terms. New treatments with one-time costs can reduce spending if they replace other, more costly treatments. If future technological change in genetic treatments eliminates diseases such as glaucoma or heart disease, then new technology may indeed decrease costs. Coronary angiography, for example, improved the diagnosis of heart disease and also lowered the average cost of treatment.[23]

viii. David Cutler has estimated the impact of technology-related change in medical practice as contributing 49% of the growth in real health care spending per capita,[21] while Joseph P. Newhouse has put the contribution at greater than 65%.[22]

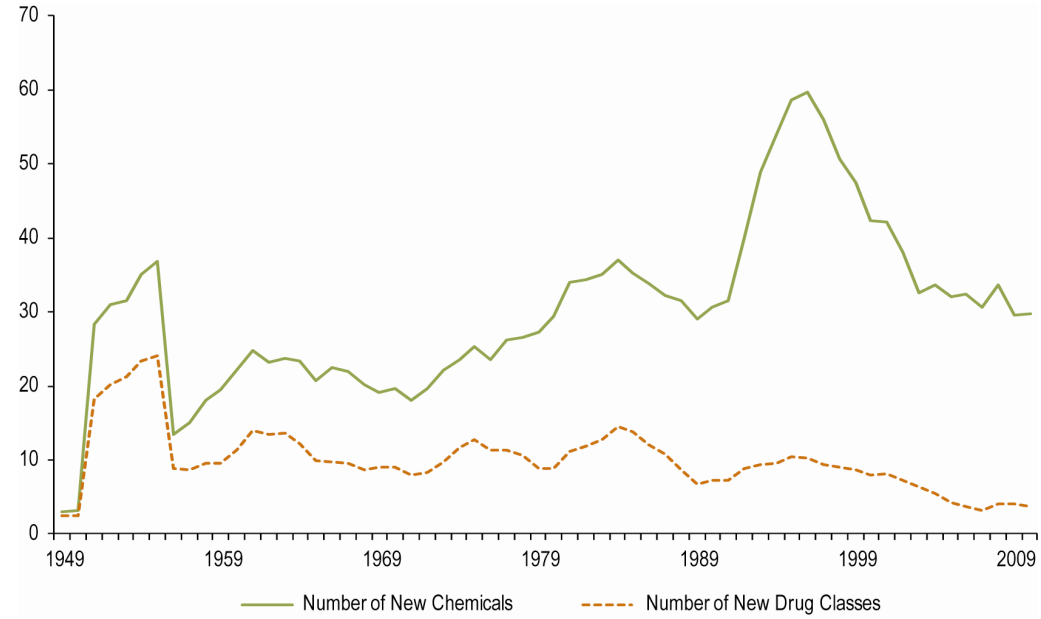
Another way of viewing the distinction is to separate technologies that do not prevent or cure a given disease but only treat symptoms; these tend to increase costs. Technologies that actually prevent and cure diseases have the potential to reduce costs. The first category is particularly prevalent for chronic diseases and conditions such as diabetes, while the second category would include the introduction of coronary angiography.

Technologies referred to in this section may include medical devices and equipment (such as imaging), surgical improvements (such as robotic devices), information and communications technology (such as computers, electronic health records and telehealth) and prescription drugs. Technological change involves two aspects: the introduction of new products (for example, new cancer drugs) and techniques (for example, bariatric surgery); and changes in clinical practices and patient demand due to the existence of new products and techniques. With the accelerating pace at which new technologies appear, there is always pressure on decision-makers—from patients, providers and manufacturers—to expand public coverage and use of these technologies. At the same time, Canadian citizens expect their governments to be prudent stewards in their management of public funds, and policy-makers can exert influence over how new technologies are introduced and used in the system.

Technological change is a major underlying cost driver for public and private prescription drug plans, with changes in the number and types of drugs being developed affecting drug spending. For example, there was a decrease in the number of new drug approvals in the 2000s compared with the 1990s (see Figure 17). In contrast to the total number of new drugs, the number of category-defining drug discoveries has been relatively stable (arguably even on a downward trend since the 1970s). Thus a large portion of the spike of new drug approvals in the 1990s was accounted for by approvals of drugs that were not the first in a drug class.[ix] The decrease in new drug development, along with introduction of high-utilization generics discussed previously, has likely contributed to the slowed growth in drug spending observed since 2005.

ix. These drugs are often referred to as “me-too” drugs, though there are some cases where multiple drugs within a class are considered innovative or breakthroughs.

Figure 17: New Chemicals and New Drug Classes Approved for Sale, Canada, 1949 to 2010



Sources
Drug Product Database, Health Canada; National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

The drug classes that drive pharmaceutical spending in Canada have also changed over the past decade, reflecting shifts in drug development. While drug classes for relatively common conditions—such as hypertension, high cholesterol, ulcers and heart burn, and depression—expanded rapidly in the 1990s and early 2000s, their spending growth rates began to slow toward the end of the decade.[24] A closer look at the last half of the decade revealed an increase in the rate of growth of spending on drugs to treat less common but often more serious conditions, such as cancer and autoimmune diseases.

Both of these classes include newer biologic medications that are derived from natural sources instead of being chemically synthesized. Based upon the importance of cancer drugs and ongoing research and development (currently, cancer drugs account for almost 30% of drugs undergoing late-stage clinical trials), it is likely that these drugs will continue to be an important driver of pharmaceutical spending.

To balance these competing pressures, health system decision-makers tend to rely on health technology assessments (HTAs) to provide guidance in deciding whether or not to introduce a new technology or provide public coverage for a new prescription drug. In Canada, HTA evaluations are conducted by agencies in many provinces as well as by the Canadian Agency for Drugs and Technologies

in Health (CADTH), a not-for-profit agency that delivers evidence-based information about the effectiveness and efficiency of health technologies. The reports and common drug assessments produced by CADTH, as well as those generated by similarly mandated provincial organizations, support provincial ministries of health in making more evidence-informed decisions and policies on what should or should not be included in public health plans.

Increased Utilization

The past decade has seen changes in the utilization of hospital care. While there has been a slight decrease in beds, there has been a modest increase in the average length of stay and a slight increase in the average amount of resources consumed by inpatients. Hospital discharges declined steeply in the 1990s, when there was a conscious shift from inpatient to outpatient procedures. This declining trend continued in the 2000s, but at a moderate pace.

Service Growth

The health care system has seen a growth in services, which is another factor that could drive utilization trends. For example, there has been a significant increase in hip and knee replacement procedures. These are undertaken as a treatment when patients are experiencing severe pain and limited mobility. The surgery provides a relatively low-risk intervention that can provide significant relief from pain and disability by enabling the new joint to move normally. This usually results in considerable improvement in a patient's functional status and quality of life. In 2006–2007, there were 62,196 hospitalizations for hip and knee replacements performed across Canada. This represents a 10-year increase of 101%.[25]

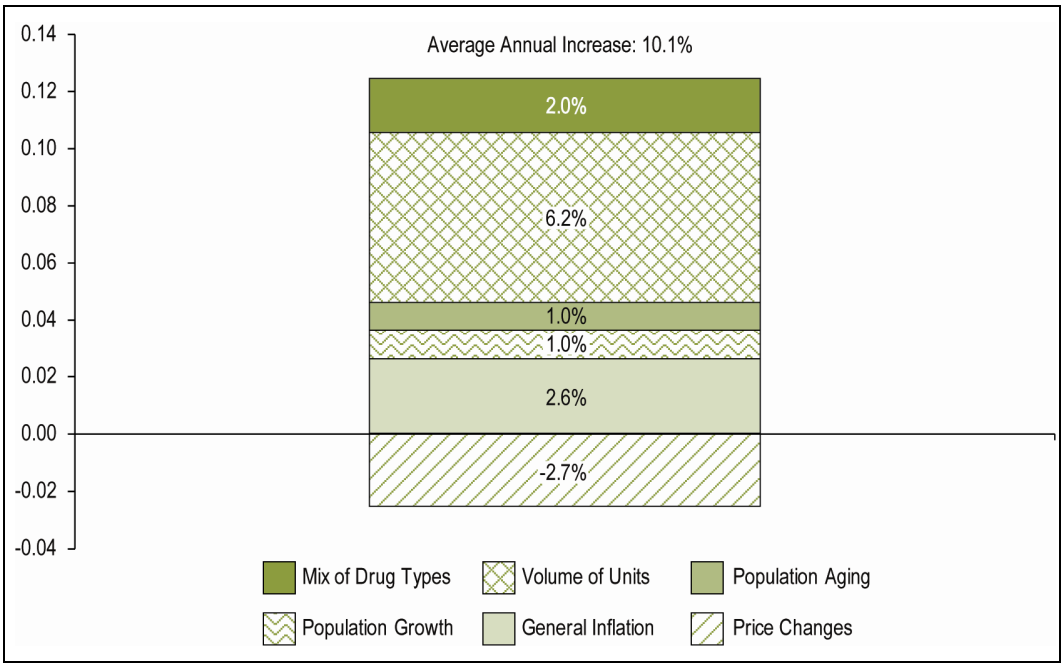
As part of the September 2000, February 2003 and September 2004 federal/provincial/territorial agreements on health care, the federal government provided $3 billion in total to provinces and territories over five years to support investments in diagnostic and medical equipment to improve access to publicly funded diagnostic services. In 2009–2010, 1.4 million magnetic resonance imaging (MRI) exams and 4.2 million computed tomography (CT) exams were performed on Canadian patients. This represents annual increases in the numbers of MRI and CT exams of 6.9% and 6.2%, respectively, and nearly double the number of exams performed in 2003–2004 in the case of MRI.[26]

In the case of long-term care homes, since 2004 the trend in the number of beds per 1,000 seniors has been virtually flat. However, the intensity of use of those beds has increased, as exhibited by the rise in the proportion of residents receiving more intensive care. This is measured in levels of care, with highly intensive (type III) care defined as "that required by a person who is chronically ill and/or has a functional disability (physical or mental)" and who "therefore requires a range of therapeutic services, medical management and skilled nursing care plus provision for psychosocial needs" for months or years.[27] Anything above type III involves the kind of medical and nursing care usually provided in a hospital setting. In 1998, 25% of long-term care residents received

type III or higher care; by 2008, the number of residents requiring this type of intensive care had risen to 33%, in part because of the increasing incidence of dementia and dementia-related conditions among older Canadians.

Prescription drug consumption has also grown, although the story here is more complex, as it involves both an increase in utilization as well a change in the mix of drug types. In the latter case, switching from one drug to another (at least to some extent) involves dropping older drug therapies in favour of newer and often more expensive therapies. While volume increases in isolation can be the result of individuals developing new conditions that are susceptible to drug therapy, they can also be the result of new drugs that are capable of treating or mitigating conditions for which there had, in the past, been no effective drug treatment.

Figure 18: Determinants of the Average Annual Growth in Retail Spending on All Types of Prescription Drugs, Canada, 1998 to 2007



Source
National Prescription Drug Utilization Information System Database, Canadian Institute for Health Information.

From 1998 to 2007, volume increases were far more important than changes in the mix of drugs to the growth in retail spending on three major prescription drug categories, contributing 71% of the growth in antihypertensive drug spending, almost 87% in cholesterol-lowering drug spending and 77% in gastrointestinal drug spending. In the cases of cholesterol-lowering and gastrointestinal drugs, while some of the drugs driving the increased volumes were introduced near the beginning of the period, the first drugs in each class were introduced in the late 1980s. This suggests that technology, as well as increased prevalence of the underlying conditions and changes to treatment guidelines, played a role in the increased utilization of these classes.

In the case of antihypertensive drugs, a relatively new drug class (angiotensin II antagonists) experienced significant increases in use during the study period. Other, older classes, such as ACE inhibitors, diuretics and beta blockers, also experienced increased utilization. Increased diagnosis of hypertension as well as changes to treatment guidelines were likely the main drivers of this growth.

Changes in the mix of drugs rather than volume increases were far more important contributors to the growth in spending on immunosuppressant drugs (which can be used for rheumatoid arthritis or Crohn's disease)—a category that has experienced rapid technological change—where the mix of drugs contributed 61% and changes in volume only 30%.

Cholesterol-Lowering Drugs

Cholesterol-lowering drugs are often used to treat patients with lipid levels above their target value. Target lipid levels vary, depending on an assessment of a patient's risk for heart disease. In general, target levels are lower for patients at a high risk for heart disease than they are for patients considered to be at low risk.

Between 1998 and 2007, retail spending on cholesterol-lowering drugs in Canada grew from $500 million to $1.9 billion, with an average annual growth rate of 14.8%. Almost 90% of this increase in spending was driven by increases in the volume of retail purchases. In Saskatchewan and Manitoba, two provinces for which population-based drug claim data was available, the rate of cholesterol-lowering drug use increased in every year between 2000 and 2007, more than doubling during this period, from 6.2% to 13.9%.

Factors that may have contributed to the increased utilization of cholesterol-lowering drugs include

- An increase in the prevalence of obesity, diabetes and high blood pressure, which are all risk factors for heart disease;[28] and
- Changes in treatment guidelines during this time period, which lowered target lipid levels and in turn increased the number of patients recommended to receive treatment with medication.[29–32]

Although it is likely that each of these factors played a role in the observed increases in the utilization of cholesterol-lowering drugs, without detailed diagnostic information, it is not possible to separate the individual effects of various factors.

Future Issues to Monitor

Between 1998 and 2008, public-sector health spending, the lion's share of which flows through provincial health ministries, grew at an average rate of 7.4% per year. The rate of growth of health spending exceeded the growth in the economy and in government revenues. Governments are currently facing fiscal deficits and potentially fewer savings from debt service charges. In the future, economic and fiscal policy conditions could have a moderating influence on growth in health spending.

Despite the common perception that an aging population is driving up health expenditures, aging has been a relatively modest cost driver overall. As the percentage of the population age 80 and older increases, decision-makers will be faced with the challenge of determining the best ways to provide care for older adults. The challenge will be to find the appropriate use of hospital care, long-term institutional care and community care for older Canadians that balances access, quality and appropriateness of care on the one hand and cost on the other.

In general, there have been much more important cost drivers than aging. Price inflation has been a significant cost driver. It is clear that health-specific price inflation has been above the rate of general inflation for core medicare goods and services, including doctors, nurses, other health professionals and advanced diagnostics. This is due to a number of factors but has no doubt been exacerbated by high levels of spending on services insured by federal, provincial and territorial governments since 1998.

The increasing cost of physician services will be a significant issue for policy-makers, and a rapid rise in remuneration will place considerable pressure on all governments. Provincial and territorial governments are already examining changes in the scope of practice of non-physician health professionals, particularly in primary care, to determine whether other professionals can complement physician services more effectively or provide the same services currently being provided by general practitioners but at less expense.

Another area worth monitoring is the cost of providing hospital care. In the past decade, the growth in hospital operating spending has been driven by higher remuneration and more staff.

Although there is limited data in the Canadian case, the experience in the United States is that technological change can be a significant cost driver. Health system leaders and managers will need to scrutinize and carefully manage the introduction of new drugs and other technologies, based on the trade-off between clinical benefits and their value relative to other health system investments. As a case in point, an increasing number of CT and MRI scanners has been installed and gone into operation in Canadian hospitals, and the number of CT and MRI scans nearly

doubled between 2003–2004 and 2009–2010. The increase in medical imaging technology, with its ability to detect more anomalies, could fuel further increases in overall service growth and spending in the future, especially when combined with the increasing number of specialist physicians and an aging population.

Trends in utilization and the impact of patent expirations will be a future issue for drugs. The generic share of the Canadian prescription drug market is expected to increase in the coming years as patents of many blockbuster medicines expire. In 2009, drugs with patents set to expire between 2010 and 2014 accounted for nearly $8.7 billion in wholesale spending. This was equal to more than one-third (38.2%) of all wholesale spending on prescription drugs in Canada during that year. In the same year, drugs with patents expiring in 2015 or later accounted for $1.8 billion in wholesale spending, or 8.2% of total wholesales.

This suggests that there is potential for significant savings due to new generic competition, particularly in the coming three to five years. It should be noted, however, that although many people switch to lower-cost generic products following a patent expiry, other factors can offset potential savings. These factors include patients continuing to take the brand name product following patent expiry; increased use of other patented products within the same drug class; and patients starting on a generic who were not previously taking the brand name product. It should also be noted that for biologics, there may be more limited potential for generic price competition because of uncertainty as to how bio-generic or bio-similar drugs will be licensed and priced.

Treating health care cost drivers as watertight compartments when developing policies to deal with future health care costs would be short-sighted. Health care cost drivers are intertwined—a combination of rising input prices, population growth, population aging, growing utilization, changes in the mix and composition of services and technological improvements. Some cost drivers are more important relative to others depending on the spending category. Furthermore, changes in one sector of health care can affect others.

In conclusion, the reference period of this study (1998 to 2008) may be very different than what is likely to be faced in the next decade. Finding innovative ways to reform how health care is provided will continue to challenge policy-makers in the future. Examples of such transformation could include the introduction of interprofessional collaboration to provide team-based care, expansion in the scope of practice for some non-physician providers (such as prescribing privileges for nurse practitioners and pharmacists), increased focus on patient-centred care, emphasis on integration and continuity of care, shifting to ambulatory care, attention to ensuring affordability of drugs and providing incentives to health care providers to meet the needs of their patient population. These are just a few examples that show how the health system could evolve to better serve the needs of Canadians.

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