



Provincial and Territorial  
Government Health  
Expenditure by Age Group,  
Sex and Major Category:  
Recent and Future Growth Rates

May 2005

N a t i o n a l   H e a l t h   E x p e n d i t u r e   D a t a b a s e



Canadian Institute  
for Health Information

Institut canadien  
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# Provincial/Territorial Government Health Expenditure by Age Group, Sex and Major Category: Recent and Future Growth Rates, May 2005

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## Highlights

- The costs of coming into the world and the costs of leaving it are both on the rise. Between 1997 and 2002, real per capita provincial and territorial government hospital expenditures rose on average more for infants and older seniors than for any other age group.
- Hospital and physician services, which are covered under the *Canada Health Act*, averaged higher annual real per capita growth rates for the elderly than for the non-elderly; this tends to corroborate the hypothesis of an increased concentration of health spending among the elderly.
- Drug costs are the fastest-growing category of expenditures for both males and females. Over the period of analysis, drug expenditures per capita for males grew substantially more than for females, at 11.6% and 9.1% respectively for Canada.
- As a result of the pure aging effect, total provincial and territorial government health expenditures per capita can be expected to increase from \$2,321 in 2002 to \$2,940 in 2026 in constant dollars. This corresponds to an average annual increase of about 1.0%.
- Between 2002 and 2026, average annual growth rates due purely to aging are projected to be highest for *other institutions* (2.1%), followed by *prescribed drugs* (1.6%).
- For all age groups combined, per capita total provincial and territorial government health expenditures are higher for females than for males, particularly in the 15–44 age group, when women are bearing children and the 85-and-older group, when they may be entering residential care.
- In 2002, for the 85 and older age group, real expenditures per capita for the *other institutions* category were \$8,456 for females and \$5,141 for males (about 60% higher for females). Total provincial and territorial government expenditures on *other institutions* for this same age group were almost four times higher for females than for males (\$2,567 million vs. \$676 million).





## Executive Summary

After the cutbacks of the early to mid-1990s, money was re-injected into the Canadian health care system. In order to provide an overview of where each jurisdiction has chosen to allocate most of its money, this report tracks the levels and changes in provincial and territorial government health expenditures by age group and sex for the major categories of expenditures (*hospitals, other institutions, physicians, other professionals* and *prescribed drugs*), for each province and territory and for the period of 1997 to 2002 (2002 is the latest year for which data are available). Also, the report assesses the specific aging effect on future provincial and territorial government health spending and updates future health expenditure growth numbers that were originally produced in 2000 for the *National Health Expenditure Trends Report*.

For each major category, per capita health expenditures are consistently higher for females combined for all ages than for males, even though for the *hospitals* and *physicians* categories, per capita expenditures are higher for senior males than for senior females. Also, growth rates of age-specific real per capita expenditures were generally higher for the elderly than for the non-elderly. Moreover, real per capita average annual growth rates for Canada have been positive for all the major categories of expenditures, except for the *other professionals* category, where the average annual growth rate declined to -1.7%. Real per capita average annual growth rates varied from about 3.0% for *hospitals* and *physicians* to about 10.0% for *prescribed drugs*. Real per capita total expenditures have grown at an average annual rate of 4.3%.

Levels of expenditures standardized for age and sex are compared among provinces and territories, as are growth rates of expenditures standardized for inflation. While growth rate comparisons are made, the numbers should be interpreted with caution. A lower growth rate for a given jurisdiction may not be a concern, especially if this jurisdiction is already at a level of expenditure per capita above the national average, or if health status in the population for this jurisdiction is not adversely affected. On the other hand a higher growth rate could mean a given jurisdiction is only catching up or paying more for the same level of utilization, without superior improvement in health status.

Having said that, Nova Scotia, Quebec and Ontario were the only jurisdictions to experience growth rates below the national average for total provincial and territorial government health expenditures. For specific major categories, the picture varied from one category to another. For example, British Columbia has experienced expenditure growth above the national average for *hospitals, other institutions* and *physicians*, but its expenditure growth for *other professionals* and *prescribed drugs* was below the Canadian average. The Northwest Territories had the highest growth rates for *physicians* and *prescribed drugs*, but they ranked below the national average for *hospitals* and *other professionals*. Since this report does not address the issue of health status, it is hard to draw any final conclusion from these findings. Cost-benefit or cost-effectiveness analysis should be undertaken in order to have a holistic picture for each province and territory and to make sound comparisons.

Finally, the results of our projection model suggest that the aging-specific effect will not contribute more than 1.0% annually to provincial and territorial government total health expenditures between 2002 and 2026. The impact will be more serious on *other institutions*, where aging is expected to add 2.6% annually to provincial and territorial government health expenditures for the projection period.

# 1. Introduction

Starting in 1997, after the cutbacks of the early and mid-1990s, money was re-injected into the Canadian health care system. Studying recent changes by age and sex in provincial and territorial government health spending for the major categories of expenditures helps to better understand who are the major beneficiaries of increased health spending and in what category of expenditures each jurisdiction has chosen to allocate its money.

While tracking historical changes is important, policy-makers and stakeholders are also interested in future health expenditure growth. One of the determinants of health expenditures generally taken into account in projection models is the demographic effect—that is, population growth and aging. It is generally accepted that growth and aging of the Canadian population will increase future demands for health care. Some even argue that this factor will strain governments' ability to fund services. Understanding the relationship between health spending and population aging is critical to assessing the burden of an aging population on Canada's health system and government budgets.

The goals of this report are:

- To examine recent changes in provincial and territorial government health spending by age group, sex and major categories of expenditures (*hospitals, other institutions, physicians, other professionals and prescribed drugs*) for each province and territory; and
- To assess the demographic effects on future provincial and territorial government health spending (total and major categories of expenditures).

The report covers the period from 1997 to 2002, the last year for which actual data are available. Since it deals with growth rates, the level of expenditures is also necessarily addressed. Therefore, this study can also be considered an update of the analytical focus on health expenditures by age and sex, first published in the Canadian Institute for Health Information (CIHI) report, *National Health Expenditure Trends, 1975–2000*.<sup>1</sup> The analysis focuses on per capita provincial and territorial health expenditures, although total provincial and territorial government health expenditures are also provided in Appendices A and B.

The conventional method for projecting health spending due to demographic effect was used; that is, the population projection growth by age group and sex was applied to spending per capita by age group and sex in the base year. This approach implicitly assumes that health care utilization per capita within a given age group will remain constant over the projection period. While this assumption enables one to examine the exclusive impact of demographic shifts, it does not take into account changes in utilization across age groups.

The rest of the report is structured as follows:

- In Section 2, the data and the methodology used to track changes and project health spending are discussed;
- In Section 3, levels and growth rates in provincial and territorial government health expenditures by age group and sex for five main categories are presented;

- Section 4 reports levels and growth in provincial and territorial government health spending, adjusted for differences in the distribution of age and sex in each jurisdiction;
- In Section 5, the effects of population growth and aging on future provincial and territorial government health expenditures are estimated;
- A general discussion of the findings follows in Section 6; and
- Section 7 concludes the report.

## 2. Data and Methodology

In this report, the latest expenditure information that was available in CIHI's *National Health Expenditure Trends, 1975–2004* report was used. Detailed information on the methodology used to collect and process age and sex expenditure data is provided in Appendix C of this report.

### 2.1 Calculation of Calendar Year

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

### 2.2 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:

$$= e^{[\ln(\text{value at end of period}) - \ln(\text{value at beginning of period})]/T}$$

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

### 2.3 Calculation of Constant Dollars

Real per capita health expenditures are presented in constant 1997 dollars. The choice of indexes to deflate health expenditures in Canada is controversial. In general, well accepted index numbers do not exist for the health sector in Canada. Given this gap, some researchers or organizations use exclusively the implicit price index (IPI) for the general economy to adjust for inflation in health expenditures, whether total expenditures or expenditures on specific health categories. Their rationale for this approach is that this index is the gross domestic product (GDP) deflator and reflects the opportunity cost\* of all the goods and services in the economy and as such, is an overall index that could be applied to any goods or services used or produced in the economy. This index obviously does not take into account any specific characteristics of the health sector.

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\* The opportunity cost is the value of the best alternative to a given choice, or the value of resources in their next best use.

In an attempt to obtain price deflators that reflect the characteristics of the health sector, or more precisely, of each health category, others prefer to use category-specific indexes. Thus, a specific wage deflator is sometimes used to adjust for inflation in labour-intensive categories such as *physicians, other professionals, hospitals and other institutions*. In the same vein, drug expenditures can also be deflated using the Product Price Index (PPI) for drugs,<sup>\*</sup> which is an index of manufacturers' prices for all pharmaceutical products manufactured in Canada. The price is not at the consumer's level. Manufacturer price indexes would reflect retail price movements only if there were a consistent mark-up between manufacturers' prices and retail prices. Also, some drugs are imported and thus are not considered in this deflator. As for wage deflator indexes, they are input indexes.<sup>†</sup> Using mainly input indexes to deflate expenditures does not capture productivity growth in the health sector. So even though category-specific indexes are indeed appropriate to the health categories, they do have their limitations.

In the absence of more appropriate indexes, CIHI uses the implicit price index (IPI) for government current expenditures, which is used to deflate public sector health care spending and the health component of the consumer price index (CPI), which is used to deflate private sector health care spending. Statistics Canada developed both sets of indexes. A more complete explanation of the methodology for calculating implicit price indexes is available in Statistics Canada publications.<sup>2</sup>

In the health expenditures series, public and private expenditures are adjusted separately in each province and territory using either the government implicit price indexes or the CPI (health). Adjusted values are summed to obtain Canada totals at constant dollar values. As a consequence, the overall implicit price index used in the health expenditures series reflects the mix of public and private expenditures reported in the National Health Expenditure database.

In this report, constant dollar expenditures are calculated using the implicit price index (IPI) for government current expenditures. Expenditures are adjusted for inflation separately in each province and territory, using the specific IPI for that province and territory and adjusted values are summed to obtain Canada totals at constant dollar values.

## 2.4 Age-Sex Standardization of Provincial and Territorial Government Health Expenditure

Standardized expenditures by category were calculated by multiplying the male and female population of Canada in each of the 19 age groups by the expenditures per capita for each age group and sex in the province or territory. Male and female standardized expenditures were aggregated and then divided by the total Canada population to generate the standardized per capita spending for a particular category by province and territory.

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\* This is the pharmaceutical component of Statistics Canada's Industrial Product Price Index [IPPI (Pharma)].

† These indexes measure change in the price of labour and material inputs used to produce care

In the case of *physicians* only, expenditures are also standardized for fee level differences across provinces. This is done using the benefit indexes produced annually by CIHI from information in the National Physician Database. The age-sex standardized number for each province is divided by the benefit index of this province to obtain the age, sex and fee standardized number. The details and methodology used to compute this benefit index are available in the Physician Services Benefit Rates Report.<sup>3</sup>

## 2.5 Projection Methods

The effects of population growth and aging (demographic effects) for the Canadian population are projected at four-year intervals from 2002 to 2026. These projections are obtained by multiplying the 2002 per capita expenditures for males and females in each of the 19 age groups by the projected population in that age group each year.\* Population projections from Statistics Canada's medium growth and medium inter-provincial migration<sup>4</sup> are used. Projected expenditures are presented in 2002 dollars.

The pure aging effect is also estimated. It is obtained by multiplying the 2002 expenditures per capita for males and females in each of the 19 age groups by the projected weight of that age group in the population each year. It is important to note that the estimates do not take into account pure price increase, trends in utilization per capita or changes to the way in which services are presently delivered.

## 3. Provincial and Territorial Government Health Expenditure by Age Group, Sex and Category, Canada

This section deals with the levels and growth rates in real per capita provincial and territorial government health expenditures by age group and sex for the major categories of expenditures for Canada.<sup>†</sup> This could permit to identify the age group and/or sex that experienced the highest expenditure growth for a given category, so that a more focused analysis could be done. Levels of expenditure by age group and sex are reported for 2002 in 1997 dollars. Trends in the levels of health expenditure by sex are reported in Appendix D for 1997 to 2002. A set of figures in Appendix E also reports levels of health expenditure by age group and sex for each major category for 1997 and 2002.

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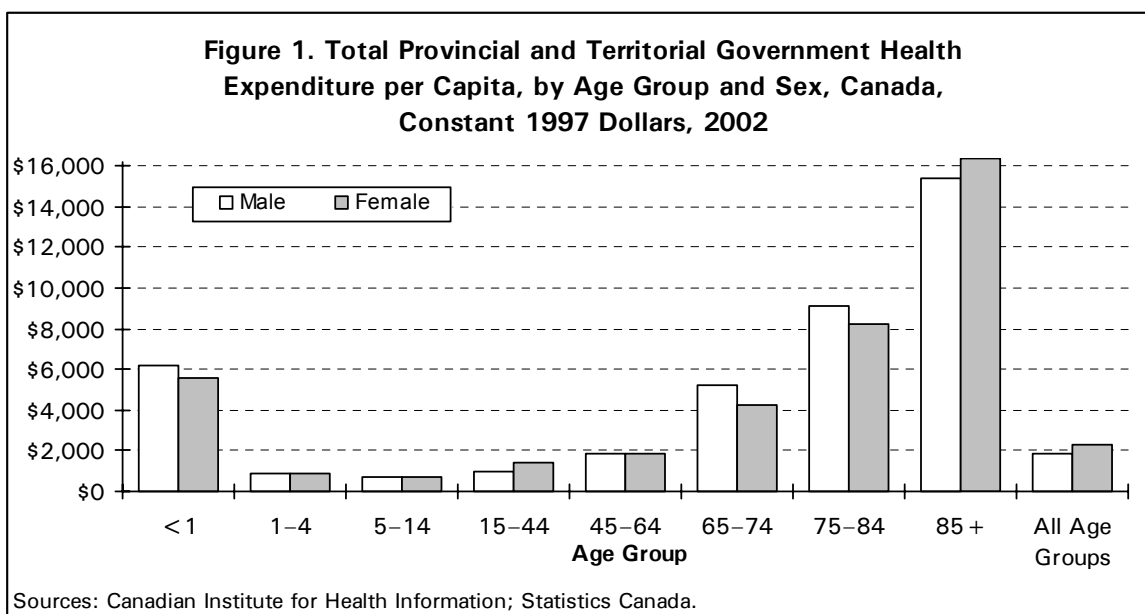
\* The estimates for the demographic effects are obtained by keeping the expenditures constant at the 2002 level and by changing only the population estimates.

† Growth rates for each province are examined in Section 4 of the report.

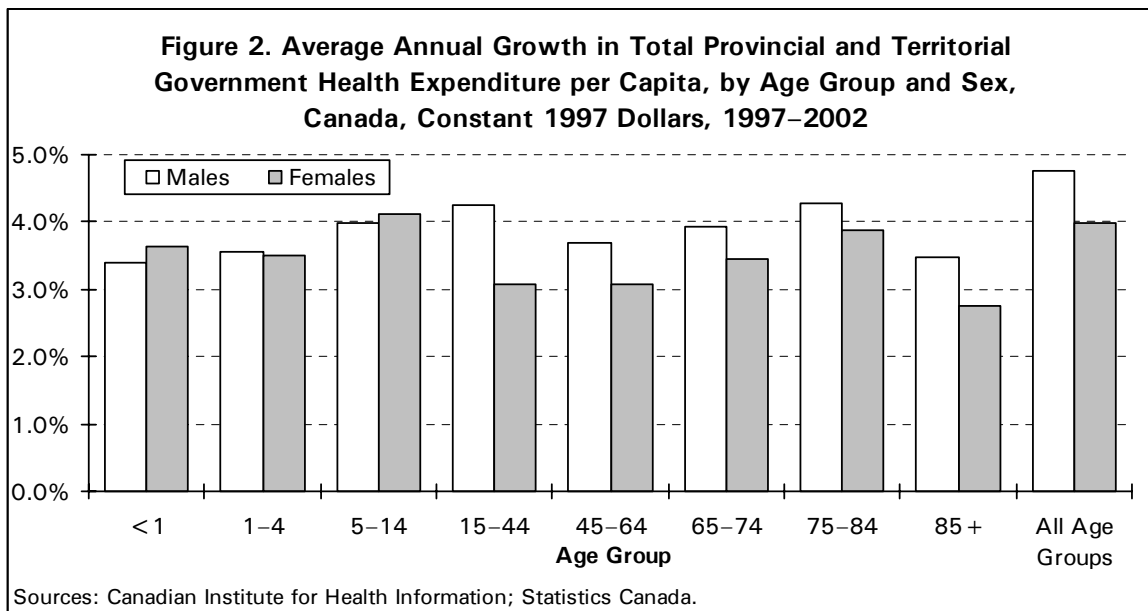
### 3.1 Total Health Expenditure

Total provincial and territorial government health expenditure are reported in Figure 1. There is high spending per capita for infant care, with costs estimated to be about \$6,000 per person for both sexes. From youths age 1 to adults age 64, spending per person slowly increases to reach \$2,000 per person in the 45–64 age group. Thereafter, a pronounced increase in per capita spending in the senior age groups follows, to reach a peak of \$15,423 and \$16,374 respectively for males and females aged 85 and over. Spending per capita for females exceeds that of males only for the ages of 15 to 44 (when women are of child bearing age) and 85 and over (where most residents in institutions are females). Because of these two effects, expenditures per capita for all age groups combined are higher for women than for men. These effects are explained in greater detail in the relevant category of expenditures outlined below.

Each age group exhibits substantial growth rates in total provincial and territorial government health expenditures. From age 15 and over, growth rates have been systematically higher for males than for females. The analysis by category undertaken below gives us a better understanding of the possible causes for this higher growth.







### 3.1.1 Hospitals

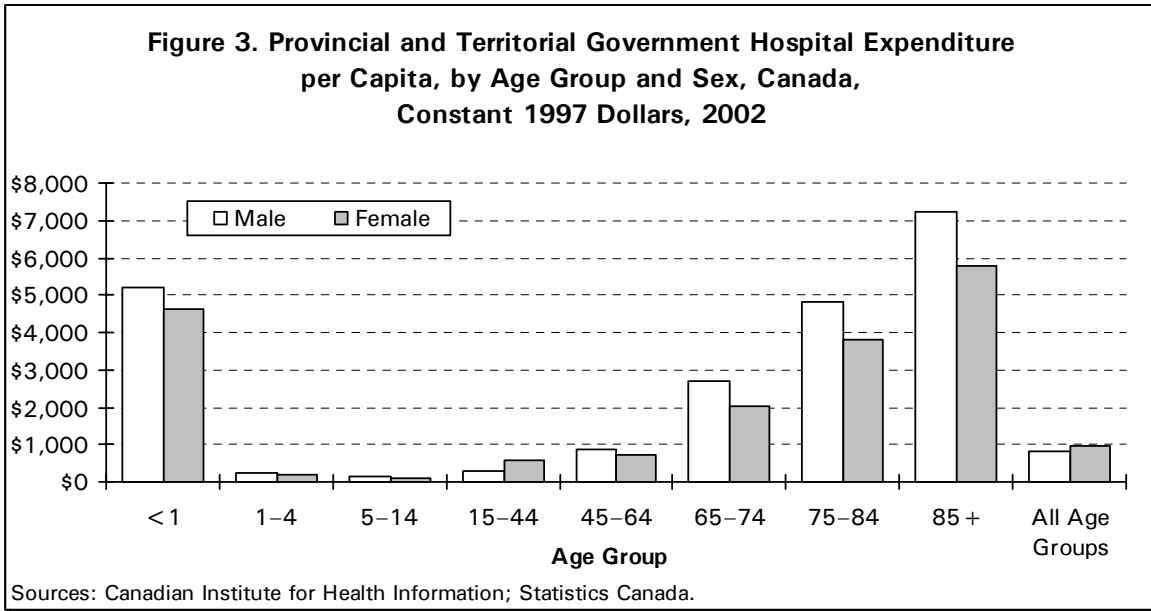
Real per capita hospital expenditure exhibits a striking age pattern. Expenditure per capita in 2002 was \$5,193 and \$4,619, respectively, for male and female infants under one year of age. The only other age group to reach and exceed that level is the 85 and older group (Figure 3). This may also reflect certain differences between the sexes. For example, expenditures per capita for male babies were about 10% higher than that for female babies. This is consistent with the fact that male babies generally have a poorer health status (measured as infant mortality rate) than their female counterparts (infant mortality rate in Canada was 5.8 and 4.7 per 1,000 live births, respectively, for males and females in 2001).<sup>5</sup> For the general population (all age groups), expenditures per capita are higher for females than for males.\* This is particularly evident in the 15–44 age group, where women are of childbearing age and hospital expenditures per capita are more than twice those for males (\$578 versus \$272).

Expenditures per capita for both sexes remain under \$1,000 until after the 45–64 age group, when they begin to increase rapidly. Hospital expenditures per capita are higher for males than for females throughout the senior age groups. This is not counter-intuitive, since for cardiovascular disease, which is the leading cause of deaths in Canada<sup>†</sup> and by far, the disease category with the highest hospital cost,<sup>‡,6</sup> morbidity is more prevalent for males than for females.<sup>7</sup> Moreover, an Alberta study shows that after cardiac catheterization, due to more severe clinical factors, men get revascularization procedures more often than women.<sup>8</sup>

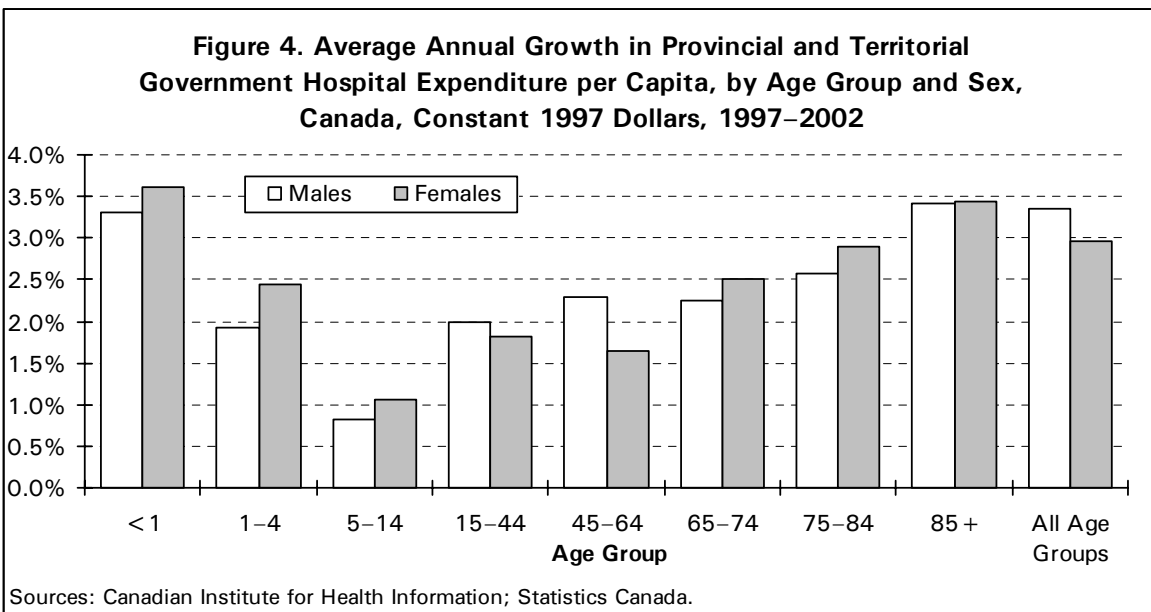
\* This is the case for all the major health categories.

† In 2001, mortality rate for all circulatory diseases for both sexes in Canada was 200.9 per 100,000 population. It was followed by cancer (all types) with a mortality rate of 179.1 per 100,000 population (Source: Statistics Canada, Health Indicators, 2005).

‡ In 1998, hospital costs for cardiovascular diseases was estimated to be approximately \$4.2 billions in Canada. The second category with the highest hospital cost was mental disorders, with approximately \$2.7 billions (Source: Health Canada, EBIC, 1998).



Average annual growth in inflation-adjusted per capita hospital expenditures for the general population was 3.4% and 3.0%, respectively, for males and females (Figure 4). This increase is mainly driven by newborns and older seniors, with average annual growth rates varying between 3.3% and 3.6% for both sexes in these age groups. This could be the effect of improvements in childbirth technology and in medical devices used to care for dying patients. The costs of coming into the world and the costs of leaving it are both on the rise.\* For a discussion on the role of technology in driving health care costs, see Section 6 of this report.

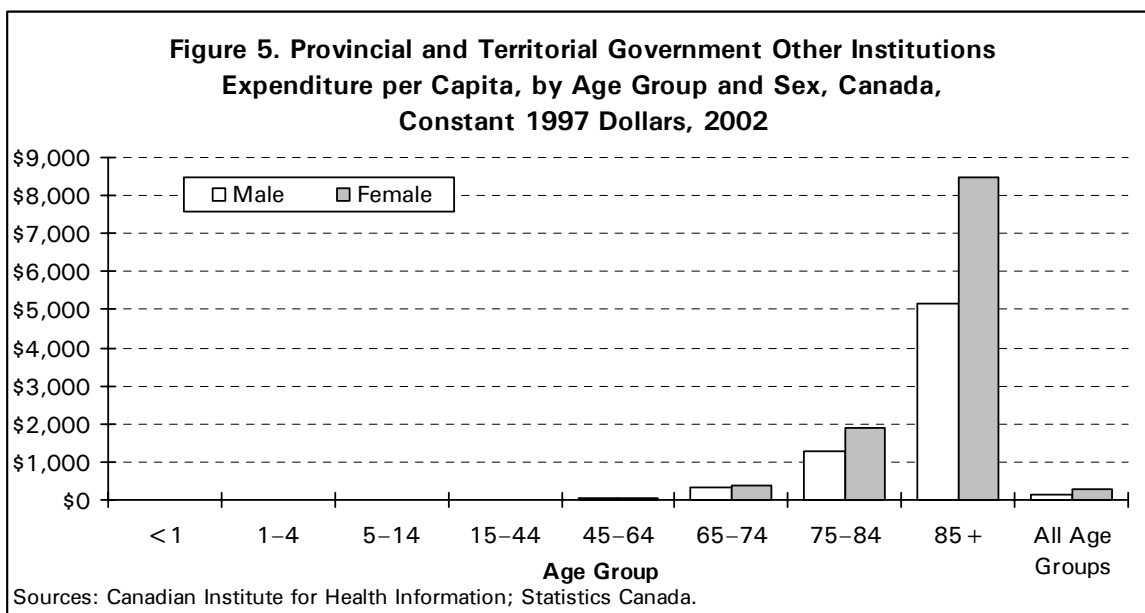


\* Note that this report does not address what is gotten for this additional money. It could be that gains in outcomes justify these extra costs.

### 3.1.2 Other Institutions

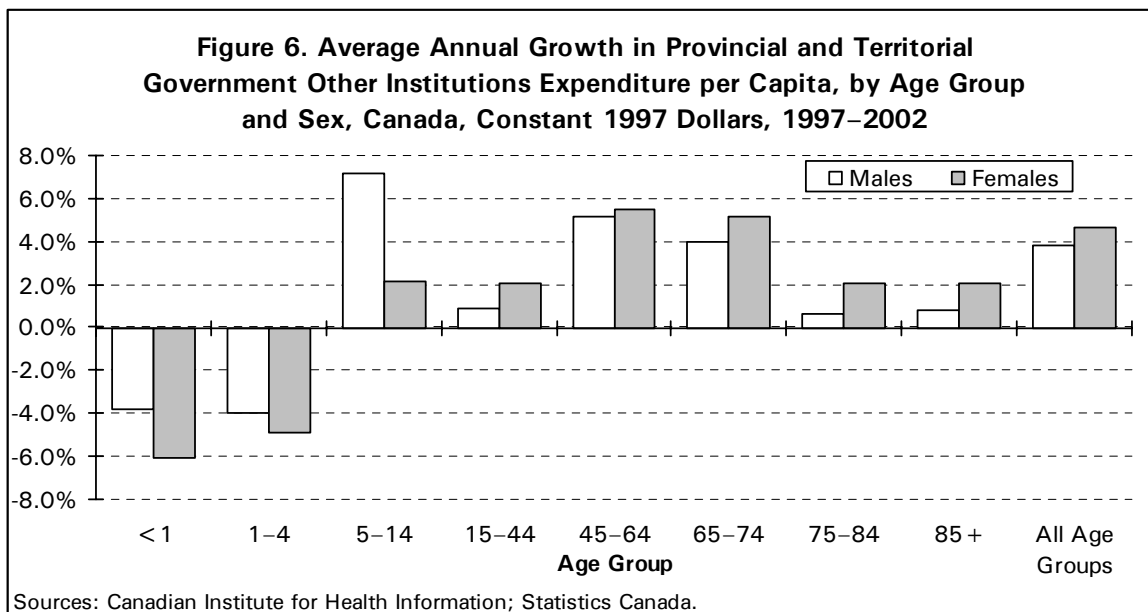
For *other institutions*, which are comprised primarily of residential care facilities for seniors, expenditure per capita is virtually negligible for the under 65 age groups. It starts to rise steeply from age 65. Expenditure per capita is consistently higher for senior females than for males. For example, from Figure 5 and Appendix A.3, for the 85 and older age group, which incurred the bulk of expenses in the *other institutions* category, expenditure per capita was \$8,456 for females and \$5,141 for males (about 60% higher for females) in 2002. This could reflect the fact that provincial governments subsidize seniors in residential care facilities based on their level of income. In a study by the Canadian Council on Social Development (CCSD)<sup>9</sup> it has been shown that, over the period 1993 and 1994, the difference in the total poverty rate is widening among men and women aged 55 and over, particularly among seniors.\* Thus, out-of-pocket expenditures could be smaller for a senior female and contributions by provincial government in per capita expenditures could be higher for senior females than for senior males.

This could have serious implications for total provincial and territorial government expenditures on *other institutions* since, on top of having higher government per capita expenditures, females are more likely to end up in a residential care facility. Using the 1994–95 National Population Health Survey, researchers found that 73% of residents of health care-related institutions were women.<sup>10</sup> This is likely due to the fact that because women tend to outlive their husbands, they are less likely than men to have a spouse to care for them in old age.<sup>11</sup> Numbers from Appendix A.3 show that total expenditures for the 85 and older age group are almost four times higher for females than for males (\$2,567 million vs. \$676 million).



\* Possible factors include historical gendered patterns of labour market participation and segmentation, women's traditional responsibility for childbirth, child rearing and unpaid domestic labour.

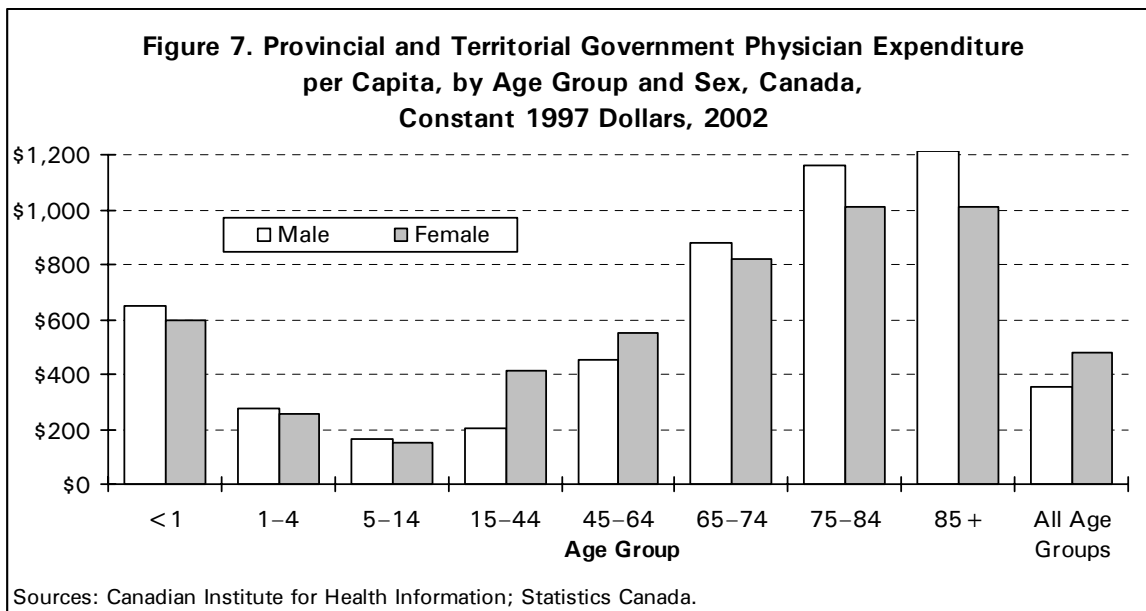
The average annual growth rate for those under 65 does not have much weight, since the level of expenditures is so low. This average annual growth rate matters mostly for seniors and it has been systematically higher for senior females. The highest growth for seniors occurs among the 65–74 age group, with an average annual growth rate of 5.2% and 4.0%, respectively, for females and males\* (Figure 6). Within the senior groups, the gap is highest among members of the 75-to-84 age group, where the average annual growth rate was more than three times higher for females than for males (2.0% vs. 0.6%).



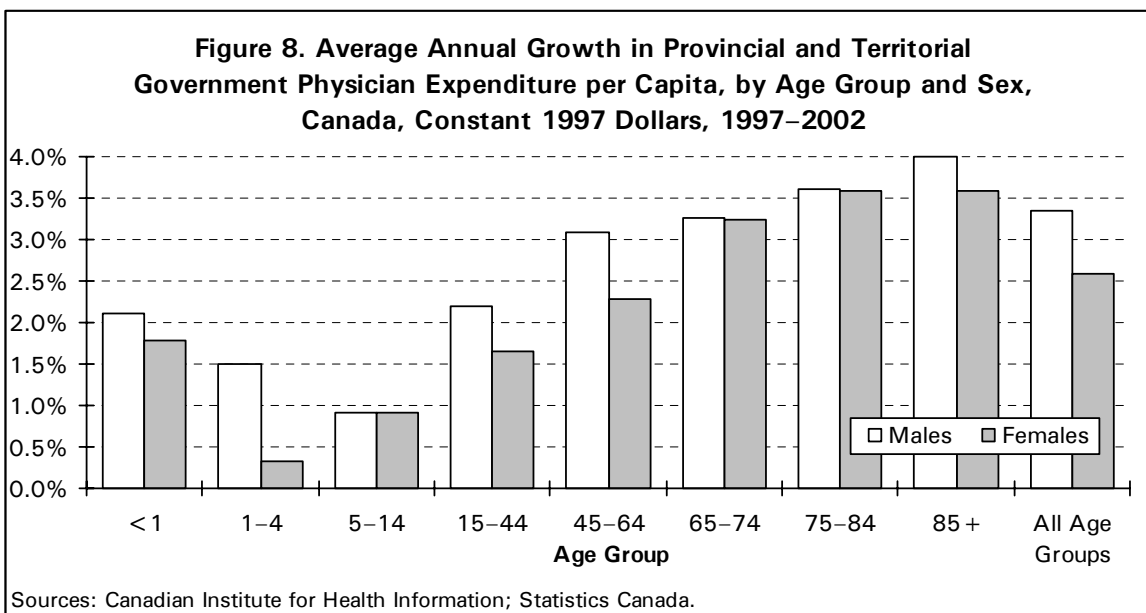
### 3.1.3 Physicians

Expenditures per capita for physician services were generally more concentrated among children under 1 and seniors (Figure 7). Expenditures per capita for males in the less-than-15 age groups were consistently higher than that of females in the same age groups. For example, physician expenditures per capita for male babies are about 9% higher than that for female babies (\$650 vs. \$595), probably reflecting differences in health status,<sup>12</sup> as in the case of *hospitals*. From age 15 to 64, per capita expenditures for males were consistently below that for females. The gap is twofold in the 15–44 age group (about \$210 and \$410, respectively, for males and females), due mainly to the childbearing effect, as in the case of *hospitals*. Thereafter, throughout the senior ages, expenditures per capita for males are consistently higher. Again, it could be due to more severe conditions among males.

\* Note that with about \$330 and \$370, respectively, for males and females, the level of expenditure per capita for the 65-to-74 age group is still low.

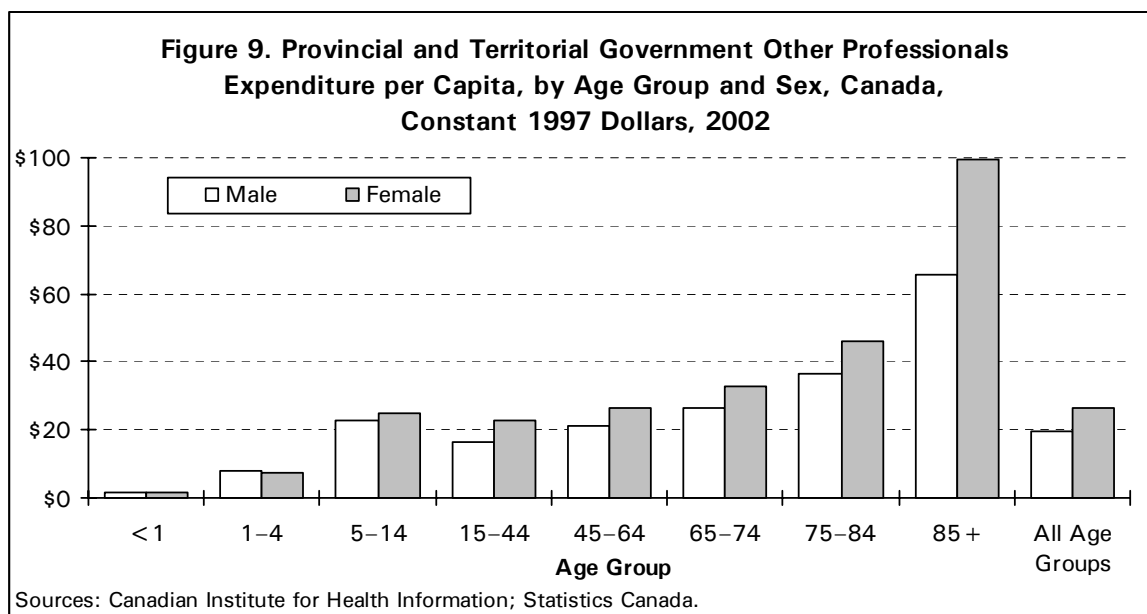


The average annual real per capita growth rate for the age groups altogether has been a little more substantial for males than for females (3.3% and 2.6% respectively). The age groups over 45 are mainly responsible for this cost growth (Figure 8). Even though it is a short time-series, it appears that in the case of hospital and physician expenditures (both services insured under the *Canada Health Act*), growth rates tend to be more substantial for the elderly than for the non-elderly; this tends to corroborate the hypothesis of an increased concentration of health spending among the elderly.



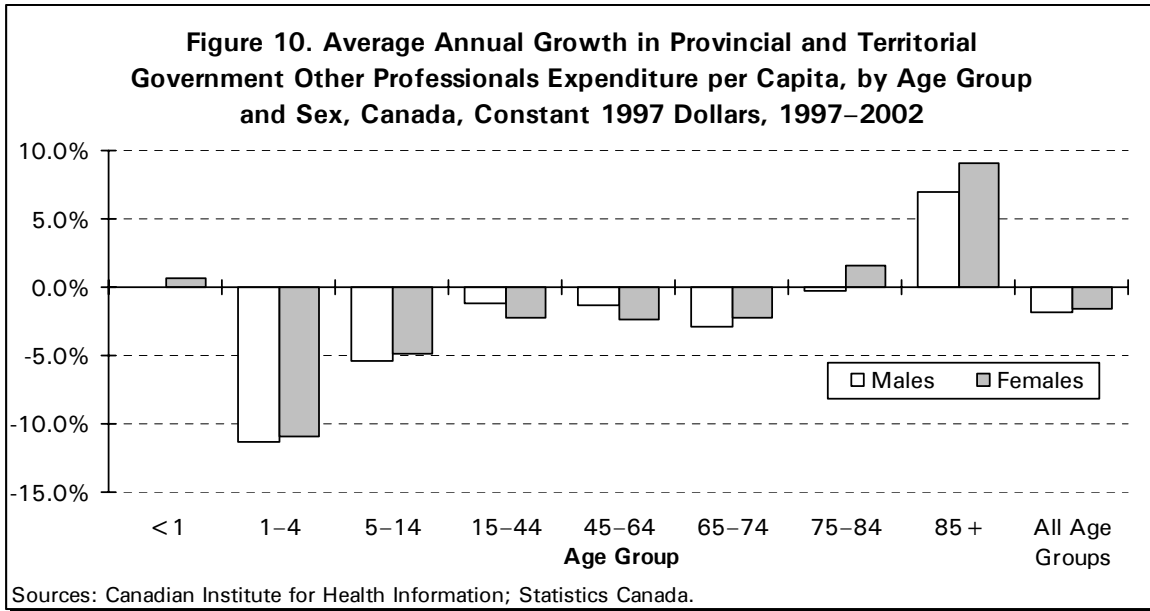
### 3.1.4 Other Professionals

For the non-elderly population, other professionals\* expenditure per capita was highest in the 5–14 age group, primarily attributable to dental insurance plans for children in many provinces. For the elderly, expenditures per capita grew exponentially, with a peak being reached for persons over 85 (Figure 9). This is due in large measure to optometric coverage, which tends to be most prevalent among the very elderly. Expenditures per capita for females exceeded expenditures per capita for males in all age groups except the first two (the under 1 and 1–4 age groups), where it was about the same for both sexes.



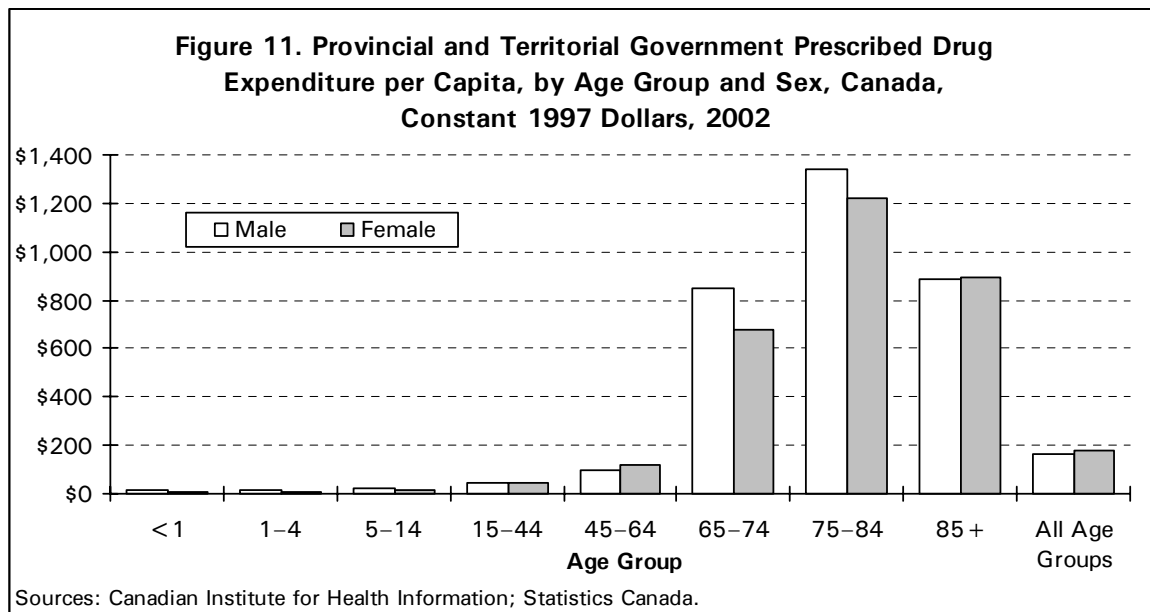
Expenditures per capita for all age groups decreased at an average annual rate of 1.9% and 1.6%, respectively, for males and females (Figure 10). The decline was very steep for both sexes in the 1–4 age group, but also in the 5–14 age group, about 11% and 5%, respectively. This is mainly driven by the restrictions in dental coverage in some jurisdictions (such as Quebec and Nova Scotia). The 85-and-over age group is the only one that has a substantial positive annual growth rate (about 7% and 9% for males and females, respectively), partly because cutbacks in supplementary benefits, such as physiotherapy and optometry services, did not generally target seniors.

\* Other professionals accounted for just over 1% of provincial and territorial health expenditures in 2002.

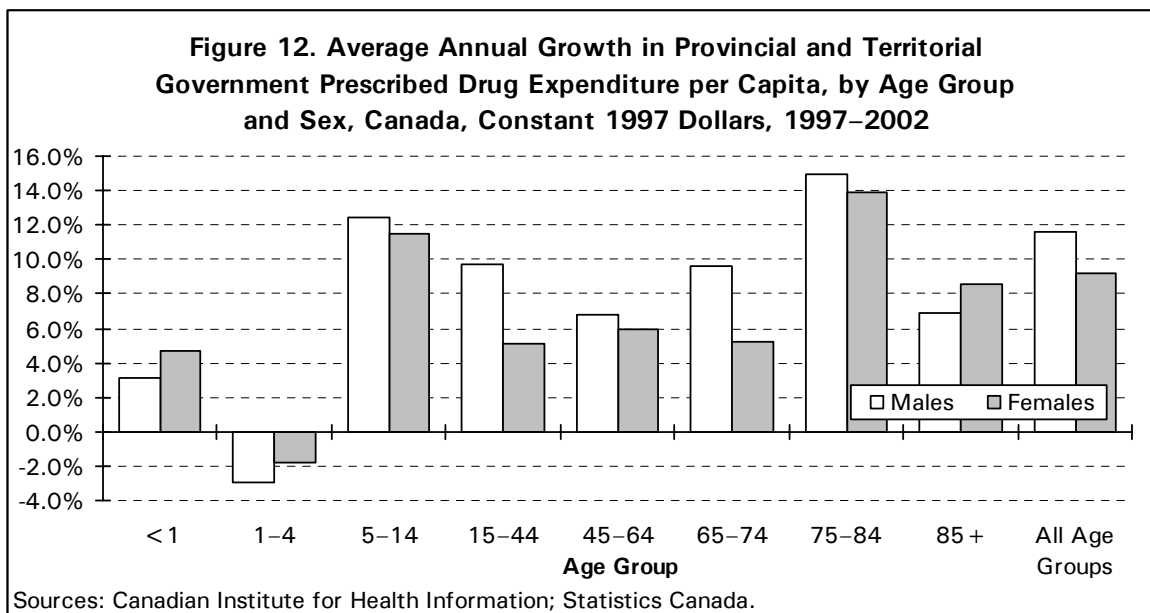


### 3.1.5 Prescribed Drugs

Provincial and territorial government *prescribed drug* expenditure primarily includes drugs that are dispensed through drug subsidy programs. In all jurisdictions, drugs for seniors are covered by public insurance. Because of higher coverage and higher need, prescribed drug expenditures are heavily concentrated among the elderly. Prescribed drug expenditures per capita peaked in the 75–84 age groups, at approximately \$1,225 for women and \$1,339 for men in 2002 (Figure 11). Although for the senior age groups, expenditure per capita was generally higher for males than for females, for all age groups it was a little higher for women than for men (\$182 vs. \$161), as is the case for all the major health categories.



With an average annual real per capita growth rate of 11.6% and 9.1% respectively for males and females in combined age groups, drug costs were the fastest growing among the five categories (Figure 12). Because the level of expenditures for *prescribed drugs* in the less than 65 age groups is so low, growth rates for these age groups do not have much weight. Thus, growth rates are only discussed for the senior age groups.



Average annual real per capita growth rate of prescribed drug expenditures has been systematically higher for males in the 65–84 age groups than for their female counterparts. For example, this rate was 9.6% for males aged 65–74 and 5.2% for females in the same age group. One of the possible reasons could be that, a substantial increase has occurred in the utilization of new and expensive cardiovascular medications in Canada between 1996 and 2001<sup>\*,13</sup> Also, as previously seen, cardiovascular conditions tend to be more severe for men than for women. Possibly, this higher severity, in combination with greater use of expensive drugs, resulted in a higher growth rate for men than for women in the 65–84 age groups. For the 85+ age group, this higher growth rate for males has not been observed. It could be due to the fact that new technologies are used less heavily on older patients, mainly during the first years, as suggested by some researchers.<sup>14,15</sup>

\* Cardiovascular drug expenditures in Canada have risen 94%, from about \$1.7 billion in 1996 to over \$3.3 billion in 2001 (Source: Jackevicius et al.).



## 4. Provincial and Territorial Government Health Expenditure by Province and Territory

### 4.1 Provincial and Territorial Government Health Expenditure Standardized for Age and Sex

Before comparing provincial and territorial health expenditures per capita, it is necessary to take into account the differing demographic structures of jurisdictional populations. The 13 jurisdictions have different population age and sex profiles, which could lead to systematic differences in total expenditures, even if per capita expenditures were virtually the same for each age and sex group. Standardizing expenditures to a common population distribution provides a means to measure differences that result from utilization and price only.

However, caution should be exercised when interpreting these numbers, even though they are age-sex adjusted. Expenditures are the product of price by volume (utilization or quantity). This report does not address the issue of whether price or volume is mainly responsible for a given level of expenditures (except in the case of *physicians*).<sup>\*</sup> Without this breakdown of expenditures, no final conclusion can be drawn on the comparison of expenditure levels among provinces and territories.

Table 1 and Figures 13–18 show provincial and territorial per capita expenditures for the five major categories of expenditures in 2002. The data show both actual and standardized expenditures for each category.

Positive percentage differences between actual and standardized expenditures for *hospitals* are more pronounced in Alberta and the territories. These jurisdictions have lower than average percentages of their populations over 65, which accounts for their increases in per capita expenditures when standardized to the national population. Newfoundland and Labrador, Quebec and Ontario show only slight differences between actual and standardized expenditures, due to the fact that their population structure is not much different from the national population. The other provinces show significantly lower expenditures per capita when data are standardized, with the declines ranging from approximately 3% to 7%.

Differences between actual and standardized data tend to be smaller in the case of physicians' services than in the case of hospital services, the two medically necessary services covered under the *Canada Health Act*. This is due to the fact that variations in physician expenditures per capita are not as great across age groups as variations in hospital expenditures per capita. Alberta and the territories show positive differences of greater than 5%, while other provinces show differences of 3% or less.

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\* An in-depth analysis of expenditure requires the decomposition of spending into its components of price and quantity. Unfortunately, the necessary data are not available for most of the categories.

Provincial and Territorial Government Health Expenditure by Age Group, Sex and Major Category:  
Recent and Future Growth Rates

**Table 1. Provincial/Territorial Government Health Expenditure per Capita Standardized for Age and Sex, by Major Category, by Province/Territory, 2002**

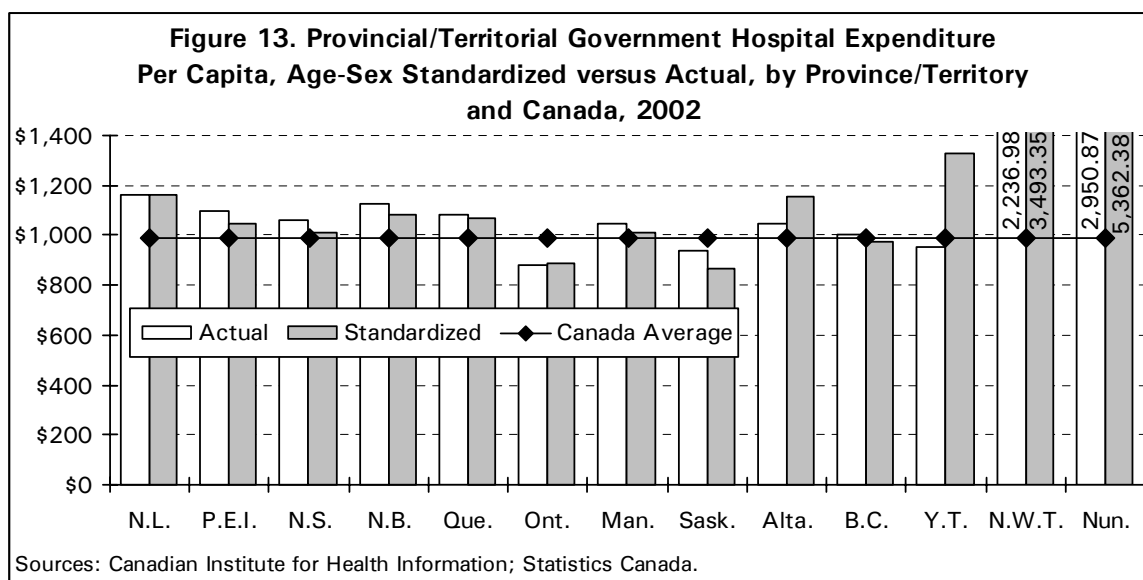
	Hospitals				Other Institutions				Prescribed Drugs		
	Actual (\$)	Standardized (\$)	Percent Change		Actual (\$)	Standardized (\$)	Percent Change		Actual (\$)	Standardized (\$)	Percent Change
N.L.	1,161.3	1,165.4	0.3%	N.L.	593.0	629.4	6.1%	N.L.	---	---	---
P.E.I.	1,094.6	1,045.2	-4.5%	P.E.I.	277.1	241.9	-12.7%	P.E.I.	---	---	---
N.S.	1,059.8	1,011.8	-4.5%	N.S.	276.4	236.2	-14.6%	N.S.	150.7	141.8	-5.9%
N.B.	1,124.1	1,082.4	-3.7%	N.B.	243.3	218.4	-10.2%	N.B.	135.0	128.8	-4.6%
Que.	1,081.0	1,064.5	-1.5%	Que.	174.1	174.5	0.2%	Que.	191.0	187.6	-1.8%
Ont.	881.1	890.7	1.1%	Ont.	211.2	219.8	4.1%	Ont.	214.8	217.8	1.4%
Man.	1,047.4	1,007.3	-3.8%	Man.	395.9	337.5	-14.7%	Man.	164.1	163.1	-0.6%
Sask.	936.2	868.7	-7.2%	Sask.	366.2	279.9	-23.6%	Sask.	134.4	129.4	-3.7%
Alta.	1,045.2	1,156.1	10.6%	Alta.	180.3	222.5	23.4%	Alta.	165.3	192.7	16.5%
B.C.	1,001.6	971.6	-3.0%	B.C.	400.3	373.2	-6.8%	B.C.	169.3	165.5	-2.2%
Y.T.	949.9	1,324.3	39.4%	Y.T.	402.8	1,015.9	152.2%	Y.T.	151.5	252.8	66.8%
N.W.T.	2,237.0	3,493.3	56.2%	N.W.T.	283.8	992.5	249.8%	N.W.T.	57.2	116.2	103.0%
Nun.	2,950.9	5,362.4	81.7%	Nun.	155.1	312.2	101.3%	Nun.	53.6	171.9	220.8%
Canada	989.0	989.0	---	Canada	245.4	245.4	---	Canada	53.6	188.4	---

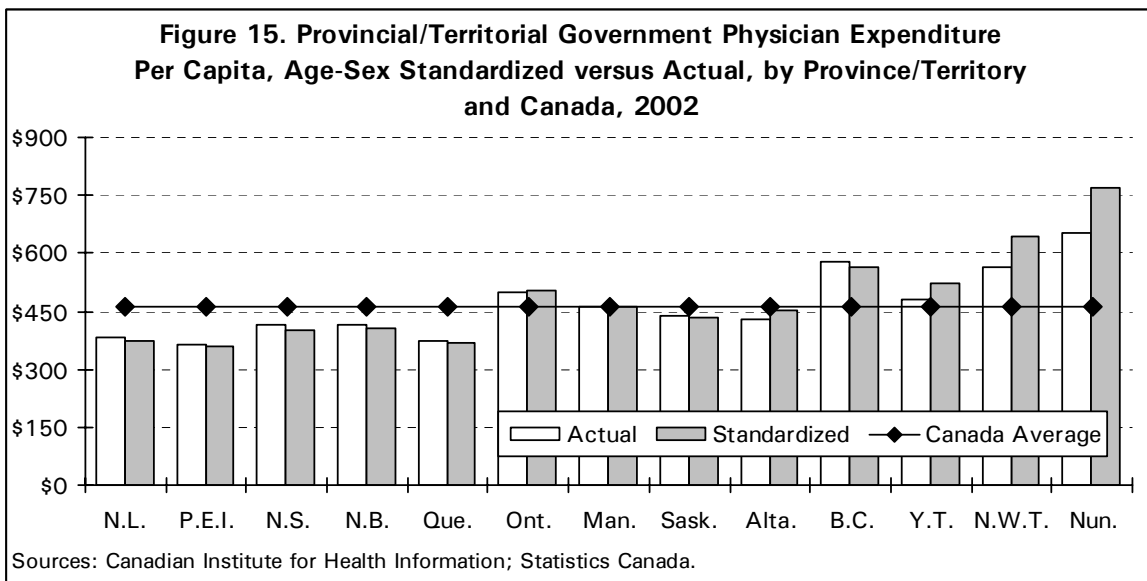
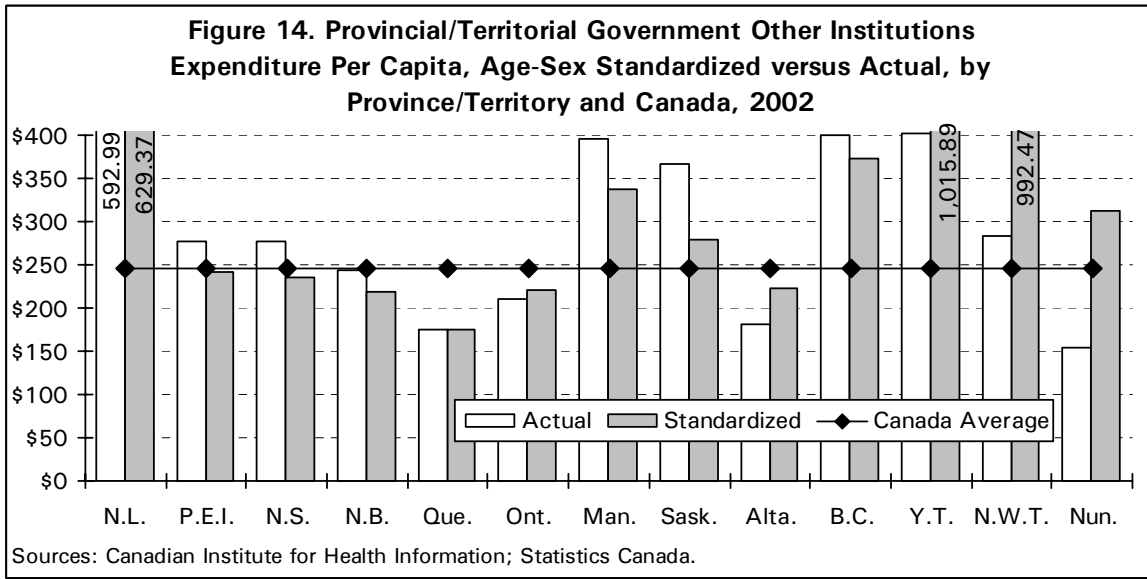
	Physicians				Other Professionals				Total		
	Actual (\$)	Standardized (\$)	Percent Change		Actual (\$)	Standardized (\$)	Percent Change		Actual (\$)	Standardized (\$)	Percent Change
N.L.	380.2	375.0	-1.4%	N.L.	10.0	10.8	8.0%	N.L.	2,787.4	2,822.7	1.3%
P.E.I.	362.7	357.5	-1.4%	P.E.I.	---	---	---	P.E.I.	2,518.1	2,422.0	-3.8%
N.S.	414.5	402.1	-3.0%	N.S.	10.2	10.6	4.2%	N.S.	2,204.8	2,095.7	-4.9%
N.B.	415.8	407.0	-2.1%	N.B.	---	---	---	N.B.	2,238.0	2,156.6	-3.6%
Que.	373.8	367.7	-1.6%	Que.	28.9	28.7	-0.5%	Que.	2,135.0	2,109.3	-1.2%
Ont.	500.0	503.3	0.7%	Ont.	24.4	24.7	1.2%	Ont.	2,238.9	2,263.8	1.1%
Man.	462.8	460.7	-0.5%	Man.	15.5	15.4	-0.4%	Man.	2,539.9	2,438.2	-4.0%
Sask.	437.7	432.7	-1.1%	Sask.	23.5	23.5	0.2%	Sask.	2,405.6	2,241.9	-6.8%
Alta.	426.8	450.7	5.6%	Alta.	32.9	33.8	2.8%	Alta.	2,482.1	2,687.3	8.3%
B.C.	576.4	566.3	-1.7%	B.C.	25.5	25.6	0.2%	B.C.	2,616.2	2,545.3	-2.7%
Y.T.	480.0	523.8	9.1%	Y.T.	47.2	59.2	25.6%	Y.T.	3,384.0	4,528.5	33.8%
N.W.T.	566.1	644.4	13.8%	N.W.T.	31.9	58.0	81.7%	N.W.T.	4,784.6	6,913.1	44.5%
Nun.	654.6	771.5	17.9%	Nun.	57.7	153.2	165.4%	Nun.	5,947.6	8,847.0	48.7%
Canada	462.5	462.5	---	Canada	25.0	25.0	---	Canada	2,321.4	2,321.4	---

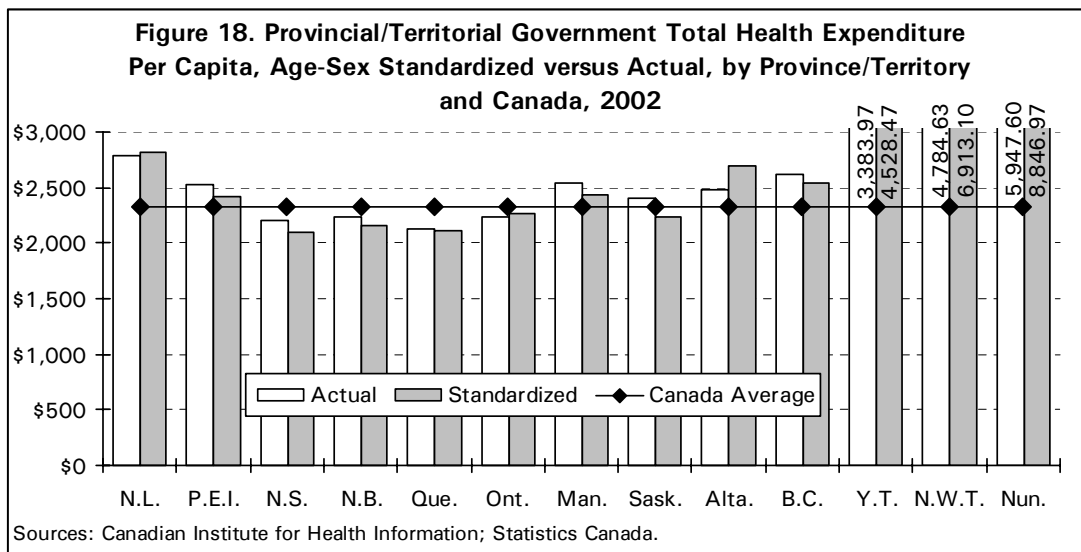
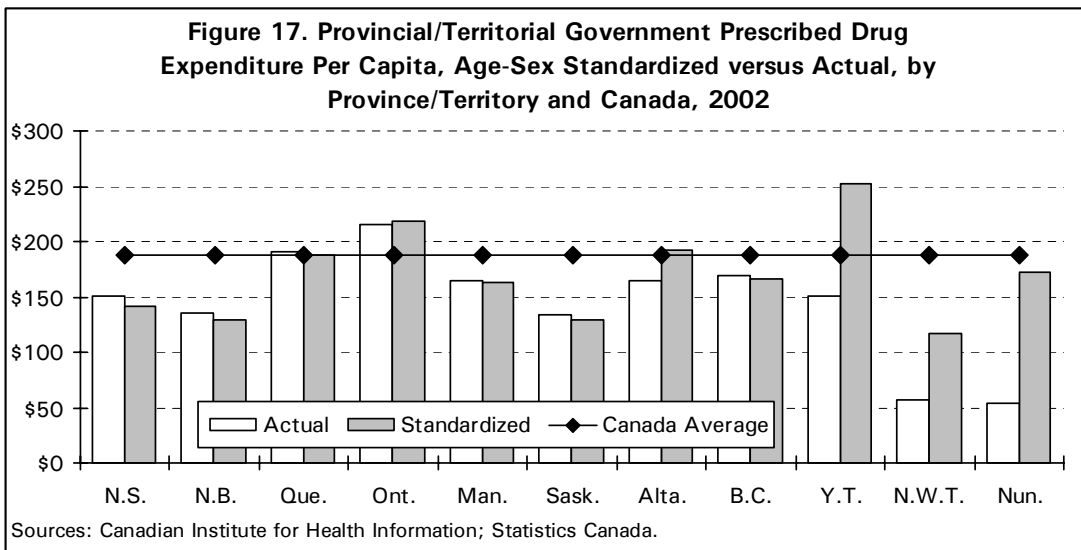
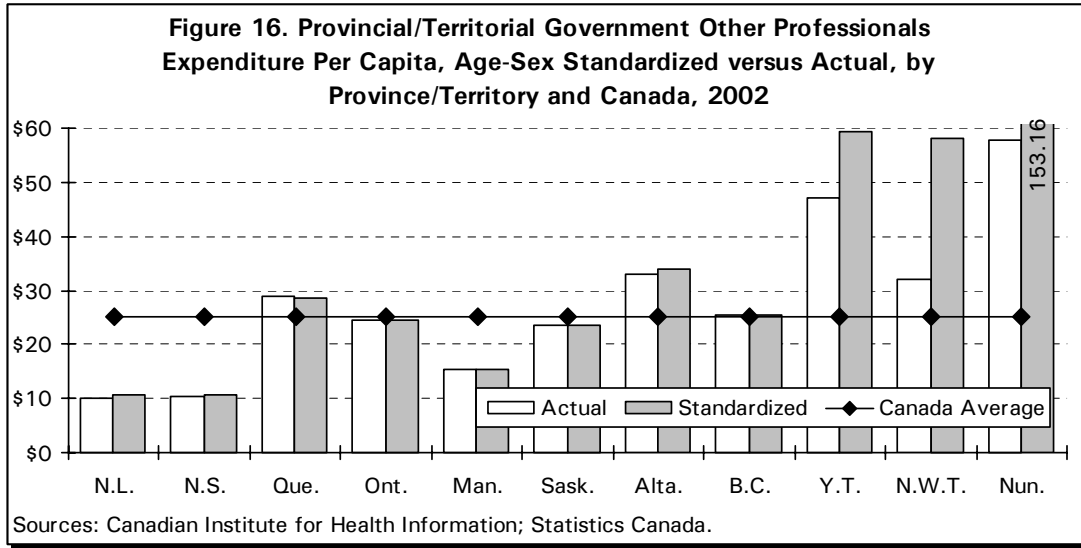
Source: Canadian Institute for Health Information.

**Note:** Standardized expenditures for the *prescribed drugs* category are not available for Newfoundland and Labrador and Prince Edward Island. Standardized expenditures for the *other professionals* category are not available for Prince Edward Island and New Brunswick.



For the other three categories (*other institutions, other professionals and prescribed drugs*), the picture is not much different from *hospitals* and *physicians* expenditures per capita. However, the impact of standardizing is more pronounced in the *other institutions* category than in any other, since there is huge variation in expenditures per capita across age groups for this category. While Alberta and the territories consistently show significant positive differences between actual and standardized expenditures per capita, Saskatchewan and Manitoba show significant negative differences for *other institutions*.





Generally, for all the categories, age-sex standardized expenditures per capita were well above the national average in the territories, with Nunavut more than five times the national average for *hospitals* (standardized expenditures per capita in Nunavut were \$5,362 in 2002, while the national average was \$989). The only exception was *prescribed drugs* where, for example, standardized expenditures per capita in the Northwest Territories were the lowest compared to the national average (\$116 compared to a national average of \$188). The higher hospital expenditures relative to the national average reflect the relatively high costs of providing health care to widely dispersed rural populations, specifically in the Northwest Territories and Nunavut.

Among the provinces, Saskatchewan and Ontario had the lowest expenditures per capita on *hospitals*. Newfoundland and Labrador and Alberta, experienced highest expenditures per capita on this category. Quebec had the lowest expenditures per capita for *other institutions*, while Newfoundland and Labrador was the province with the highest expenditures per capita on this category. Expenditures per capita on *physicians* were lowest in Prince Edward Island. On the other hand Ontario and British Columbia ranked highest for spending per capita on this category. Newfoundland and Labrador and Nova Scotia, experienced the lowest expenditures per capita for *other professionals*, while Alberta and Quebec had the highest spending per capita for this category. Finally, expenditures per capita on *prescribed drugs* were the lowest in New Brunswick and Saskatchewan, but the highest in Ontario. Differences between the provinces in expenditures per capita could reflect differences in drug plan coverage policies, in price or fee levels, as well as in utilization.

## 4.2 Provincial and Territorial Government Physician Expenditure Standardized for Age, Sex and Fee Differences

The *Physician Services Benefit Rates Report* (PSBR)<sup>16</sup> provides a means to standardize expenditure data from each province for differences in fee levels. Standardization for age, sex and fee level permits the measurement of differences due exclusively to the utilization of physician services. Thus, this section produces inter-provincial comparisons of the utilization of physicians' services. Unfortunately, the PSBR report does not yet provide benefit rates for the territories.

It should be noted that the fee index derived in the PSBR report can be used neither to track changes in fee levels, nor to track changes to physician income throughout time. This index has rather a geographical dimension and serves two main purposes: it provides a means to standardize expenditure data from each province for differences in fee levels\* and it has been used historically by provincial governments and medical associations in the negotiation of physician fees.

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\* This is a concept similar to the Purchasing Power Parity used by the Organization for Economic Co-operation and Development (OECD) to compare health expenditures among countries. Price differences are eliminated and comparisons are based exclusively on utilization.

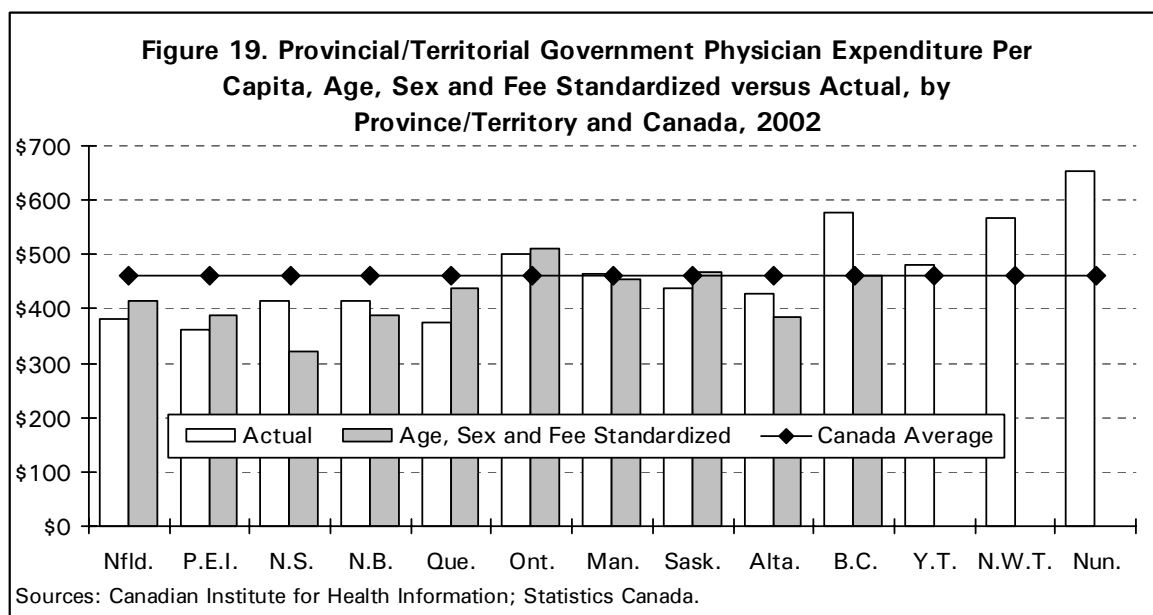
Once fee level differences are reconciled, Nova Scotia becomes the province with the lowest expenditures per capita for physician services, at a level of \$323 (see Table 2 and Figure 19). On the other end, at \$512, Ontario remained the province with the highest expenditures per capita (that is, with the highest utilization of physician services per capita). Numbers for Manitoba, Saskatchewan and British Columbia fluctuated around the national average of \$463, while those for the other provinces (Newfoundland and Labrador, Prince Edward Island, New Brunswick, Quebec and Alberta) were below this average. For provinces with benefit rates lower than the national level of 100, standardizing for fee levels brings their expenditures per capita closer to the Canadian average.

**Table 2. Provincial/Territorial Government Physician Expenditure per Capita Standardized for Age, Sex and Fee Differences, by Province/Territory, 2002**

	Actual (\$)	Age and Sex Standardized (\$)	Difference	Benefit Rates	Age, Sex and Fee Standardized (\$)	Difference
Nfld.	380.22	375.04	-1.4%	90.22	415.69	9.3%
P.E.I.	362.68	357.50	-1.4%	92.38	386.99	6.7%
N.S.	414.51	402.07	-3.0%	124.36	323.31	-22.0%
N.B.	415.82	407.03	-2.1%	105.06	387.43	-6.8%
Que.	373.83	367.74	-1.6%	83.84	438.62	17.3%
Ont.	499.97	503.25	0.7%	98.32	511.85	2.4%
Man.	462.83	460.68	-0.5%	101.68	453.06	-2.1%
Sask.	437.71	432.72	-1.1%	92.56	467.50	6.8%
Alta.	426.76	450.70	5.6%	116.96	385.34	-9.7%
B.C.	576.38	566.32	-1.7%	123.00	460.42	-20.1%
Y.T.	480.04	523.78	9.1%	---	---	---
N.W.T.	566.09	644.45	13.8%	---	---	---
Nun.	654.57	771.51	17.9%	---	---	---
Canada	462.51	462.51	0.0%	100.00	462.51	0.0%

Source: Canadian Institute for Health Information.

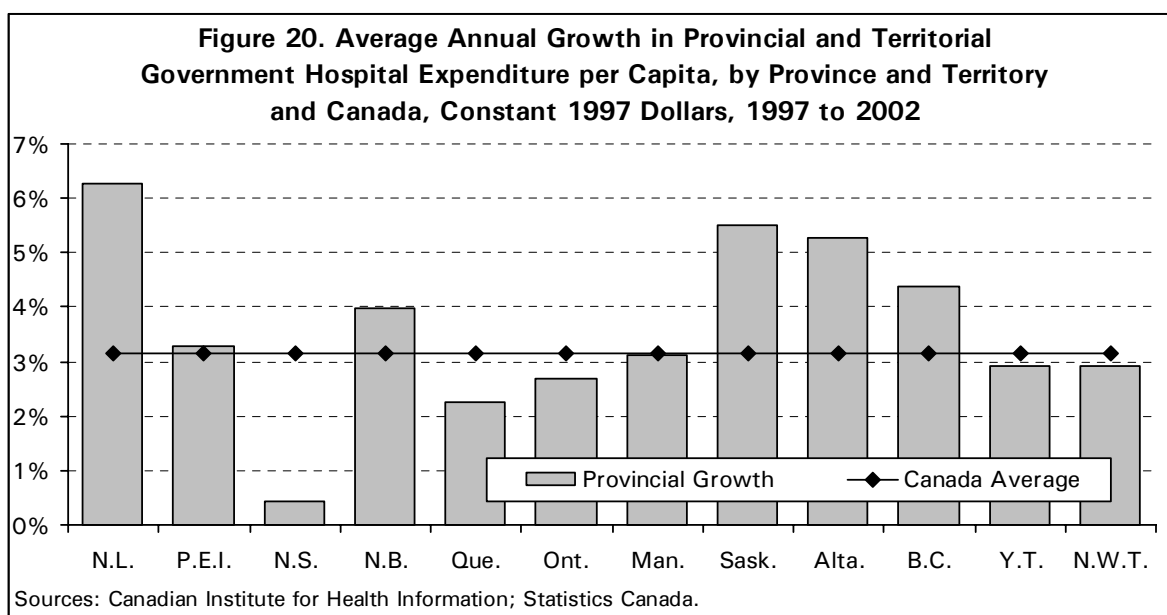
**Note:** The benefit rates are for 2001–2002. Rates for 2002–2003 were not available at the time of the publication of this report.



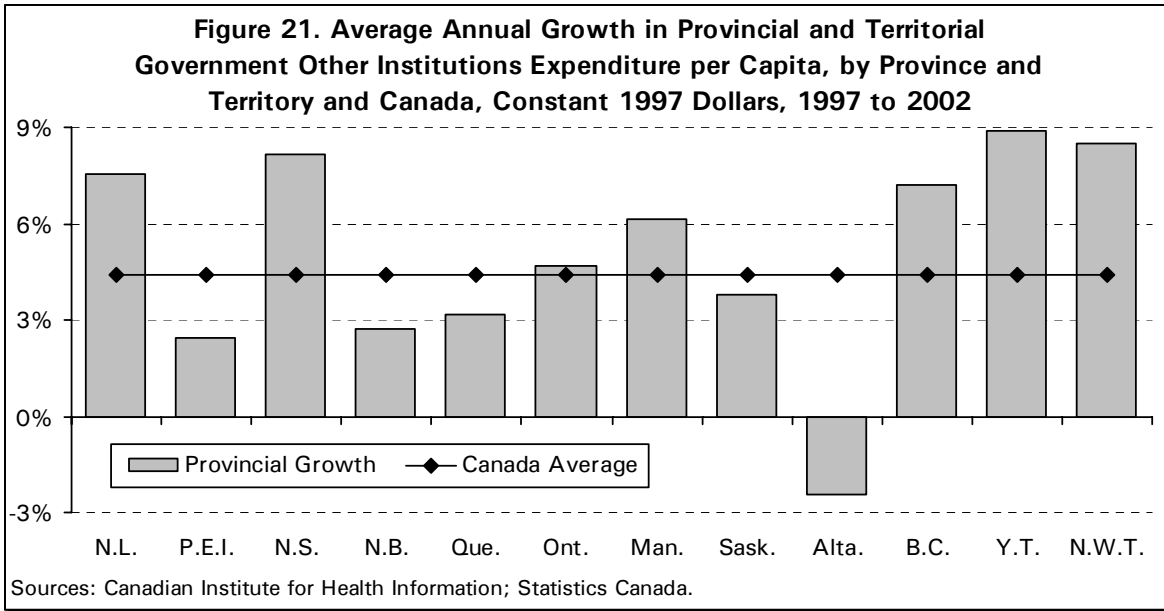
### 4.3 Growth Rates in Provincial and Territorial Government Health Expenditure, by Province and Territory

This section of the report compares average annual real per capita growth in provincial and territorial government health expenditures for the five major categories of expenditures. Growth rates are obtained from numbers adjusted for inflation only, not for age, sex or fee differences. Once again, caution should be exercised when interpreting these numbers. A lower growth rate for a given jurisdiction may not be a concern, especially if this jurisdiction is already at a level of expenditure per capita beyond the national average or if health status in the population for this jurisdiction is not adversely affected. On the other hand a higher growth rate could mean a given jurisdiction is only catching up or is paying more for the same level of utilization, without superior improvement in health status.

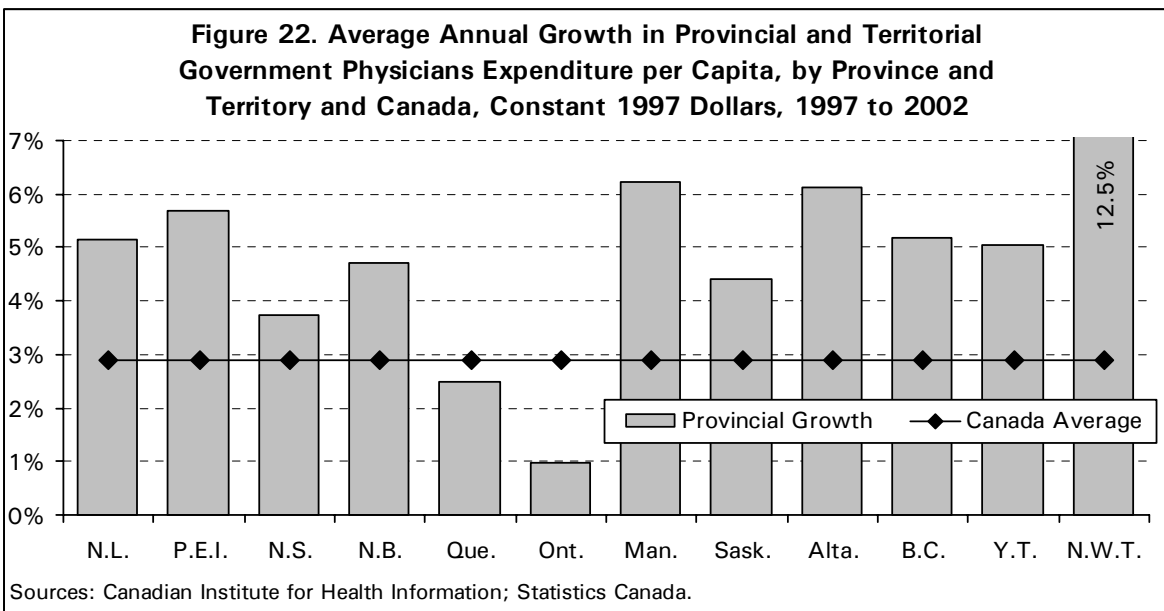
With an average annual real per capita growth of 6.3%, Newfoundland and Labrador is the province with the highest growth rate for *hospital* expenditures (Figure 20), followed by Saskatchewan (5.5%), Alberta (5.3%) and British Columbia (4.4%). Nova Scotia, Quebec and Ontario are below the national average of 3.1%, with virtually no growth for Nova Scotia. While Quebec was above the national average for per capita *hospitals* expenditures in 2002, this was not the case for Ontario.



Average annual real per capita growth varies greatly for *other institutions*, from a negative growth of -2.4% in Alberta to a positive growth of 8.9% in Yukon Territory (Figure 21). Moreover, Prince Edward Island New Brunswick, Quebec and Saskatchewan are below the national average of 4.4%. Alberta is the only province with a negative growth rate for this category; this could reflect the younger population in this province.

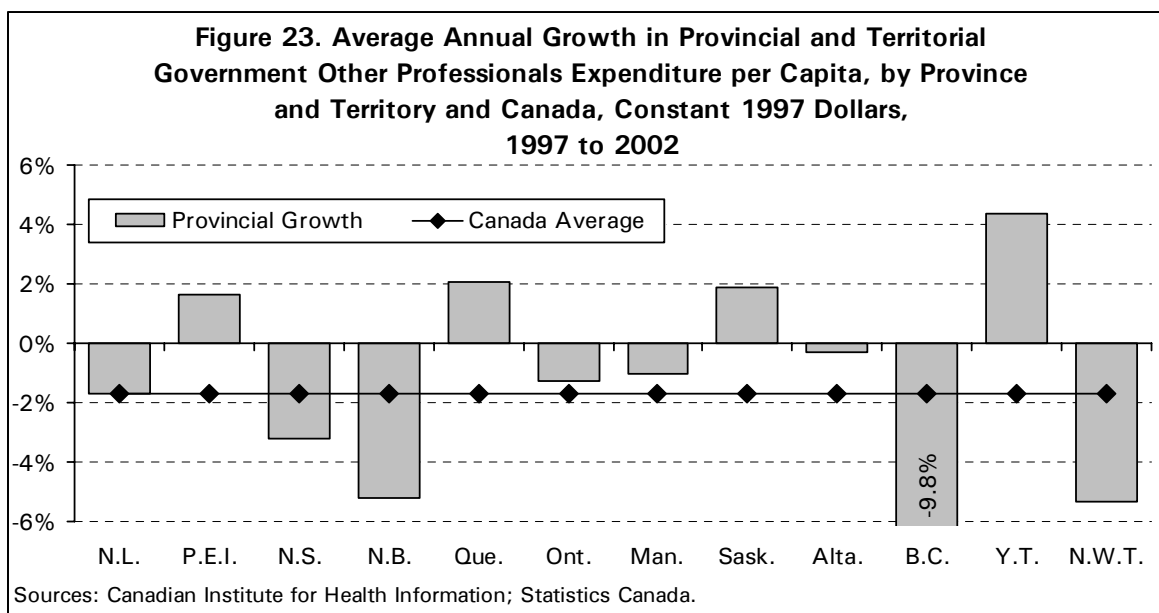


In the case of *physicians*, the Northwest Territories experienced by far the highest annual growth in per capita expenditures, with an average annual real per capita growth of 12.5% (Figure 22). It is followed by Manitoba, Alberta and Prince Edward Island (with growth at around 6.0%). Only Ontario and Quebec are below the national average of 3.0%. Contrary to hospital expenditures, Ontario was above the national average for per capita physician expenditures in 2002, but not Quebec.

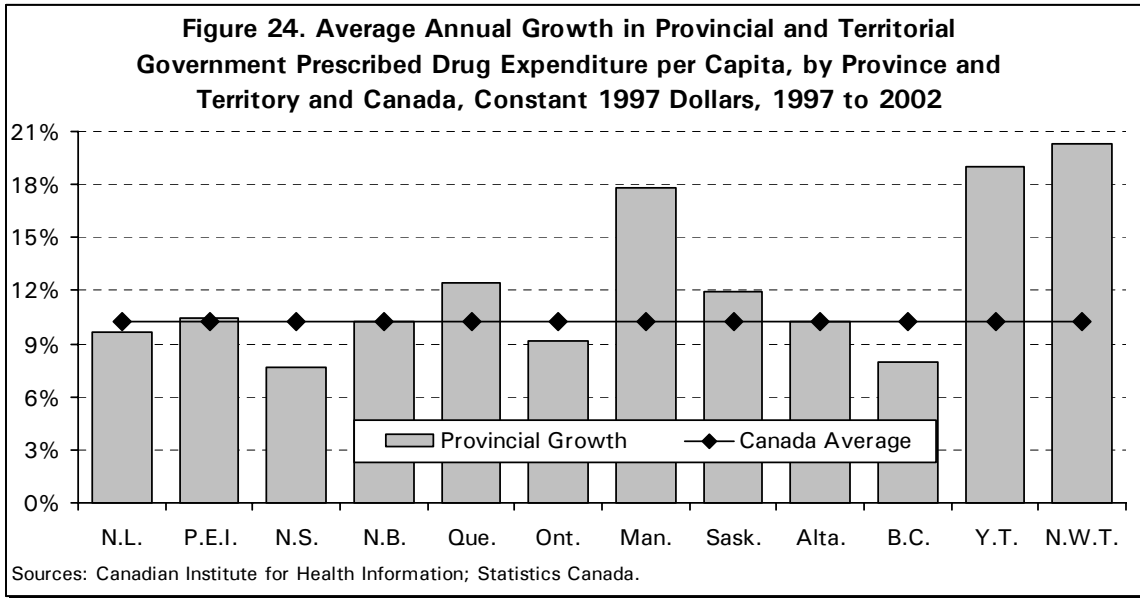




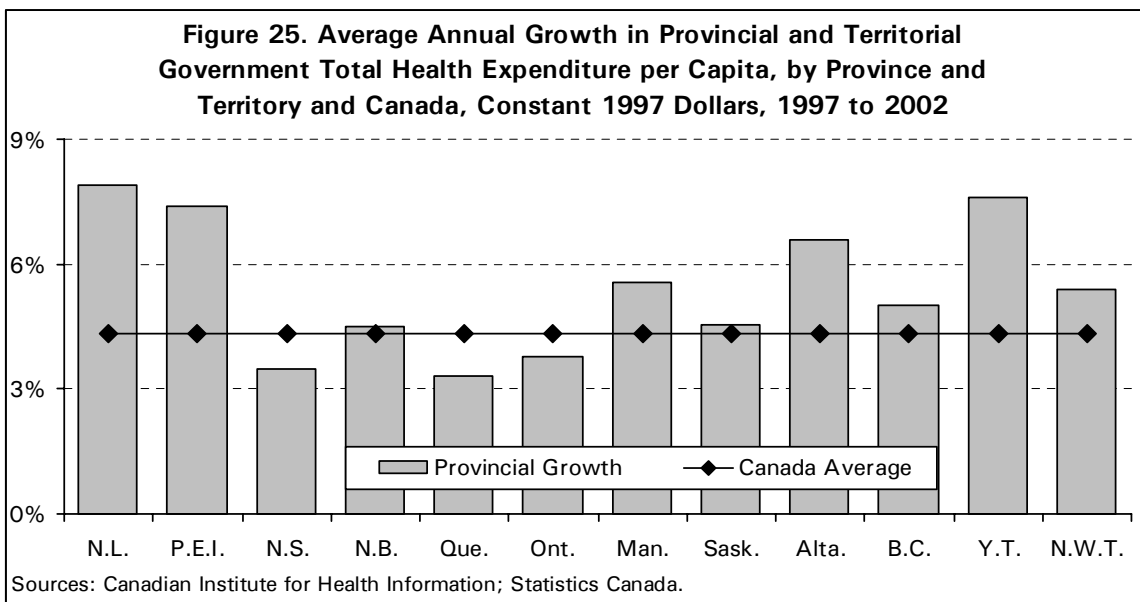
For *other professionals*, the average annual real per capita growth has been negative for all the jurisdictions, except for Quebec, Saskatchewan and the Yukon. With a negative annual growth of about 10.0%, British Columbia experienced the deepest decline (Figure 23). Growth in Newfoundland and Labrador and Ontario fluctuates around the national average of -1.7%. So, for the *other professional* category, the growth rate varies greatly from one jurisdiction to another. This is partly the result of changes in coverage. For example, in British Columbia, routine eye examinations were de-insured in November 2001 for individuals aged 19–64 and since January 2002, supplementary benefits such as chiropractic, massage therapy, physiotherapy and naturopathy services have been limited to recipients of premium assistance and the annual limit has been reduced to 10 visits for any combination of benefits.



For *prescribed drugs*, the variability of the real per capita growth rate is not as high as for *other institutions* and *other professionals*. At about 20.0%, the Yukon and the Northwest Territories are the leaders in average annual growth rate for prescribed drug expenditures (Figure 24). They are followed by Manitoba (17.8%), Quebec (12.5%) and Saskatchewan (12.0%). While growth for New Brunswick and Alberta varies around the Canadian average of 10.2%, growth in Nova Scotia (7.7%), Ontario (9.2%) and British Columbia (8.0%) is below this average.



The average annual real per capita growth for provincial and territorial government *total* health expenditures has been highest in Newfoundland and Labrador, the Yukon and Prince Edward Island, followed by Alberta and Manitoba, with growth rates ranging from 7.9% to 5.6%. Growth rates for New Brunswick, Saskatchewan, British Columbia and the Northwest Territories were also above the national average of 4.3%. For the other jurisdictions (Nova Scotia, Quebec and Ontario), average annual real per capita growth rates were below the Canadian average.



## 5. Demographic (Population Growth and Aging) Effects on Future Government Health Expenditure

### 5.1 Projected Expenditure Growth due to Demographic Effects

Demographic effects comprise the effects of population growth and aging. Total provincial and territorial government health expenditures can be expected to increase from \$72.8 billion in 2002 to \$106.4 billion in 2026 in constant 2002 dollars as a result of demographic effects (see Table 3). The average annual increase is less than 2%. Annual expenditure growth rates are projected to be 1.8% between 2002 and 2006. They are projected to decline gradually between 2006 and 2022 to 1.5% and then rise again to approximately 1.7% in 2026. This decline could be explained by the fact that population growth is expected to slow down gradually after 2006, while the aging effect of the baby boomers (those born from 1946 to 1965) is not yet fully in force.

**Table 3. Estimated Provincial/Territorial Government Expenditures on Hospitals, Other Institutions, Physicians, Other Professionals and Drugs, Demographic Effects, 2006 to 2026, Canada, in Constant 2002 Dollars**

	2002	2006	2010	2014	2018	2022	2026
	<b>Expenditure due to Demographic Effects (\$'000,000)</b>						
Hospitals	31,027	33,326	35,673	38,123	40,664	43,589	46,822
Other Institutions	7,699	9,050	10,142	11,071	12,023	13,081	14,493
Physicians	14,510	15,292	16,112	16,905	17,668	18,472	19,281
Other Professionals	776	812	846	878	909	940	972
Prescribed Drugs	5,806	6,240	6,711	7,316	7,989	8,836	9,766
All Categories	72,828	78,075	83,218	88,395	93,706	99,692	106,390
	<b>Average Annual Increase due to Demographic Effects, 4 Year Intervals</b>						
Hospitals	---	1.85%	1.76%	1.72%	1.67%	1.80%	1.85%
Other Institutions	---	4.39%	3.02%	2.29%	2.15%	2.20%	2.70%
Physicians	---	1.35%	1.34%	1.23%	1.13%	1.14%	1.10%
Other Professionals	---	1.17%	1.04%	0.93%	0.88%	0.85%	0.86%
Prescribed Drugs	---	1.87%	1.89%	2.25%	2.30%	2.65%	2.63%
All Categories	---	1.80%	1.65%	1.56%	1.50%	1.60%	1.68%

Sources: Canadian Institute for Health Information; Statistics Canada.

**Notes:**

1. Population projections from Statistics Canada's medium growth and medium inter-provincial projection are used.
2. The approach used to project health expenditure implicitly assumes that health care utilization per capita within a given age group will remain constant over the projection period.

## 5.2 Projected Expenditure Growth due to Pure Aging Effect

Total provincial and territorial government expenditures per capita can be expected to increase from \$2,321 in 2002 to \$2,940 in 2026 in 2002 dollars as a result of pure aging effect (see Table 4). This corresponds to an average annual increase of about 1.0%. This finding is roughly in line with:

- Health Canada's projection that aging alone would create pressure for an average annual growth in total health expenditures of about 0.9% between 1998 and 2030;<sup>17</sup> and
- The Conference Board of Canada's projection that, due to aging, real provincial and territorial government funding will increase at an average annual growth of 0.8% between 2001 and 2020.<sup>18</sup>

**Table 4 Estimated Provincial/Territorial Government Expenditures on Hospitals, Other Institutions, Physicians, Other Professionals and Drugs, Pure Aging Effect, 2006 to 2026, Canada, in Constant 2002 Dollars**

	2002	2006	2010	2014	2018	2022	2026
	<b>Expenditure Per Capita due to Aging Effect ('\$)</b>						
Hospitals	988.97	1034.04	1076.38	1121.07	1167.87	1225.85	1293.77
Other Institutions	245.40	280.80	306.02	325.57	345.30	367.87	400.47
Physicians	462.51	474.48	486.16	497.11	507.44	519.49	532.77
Other Professionals	25.48	25.96	26.28	26.54	26.81	27.13	27.55
Prescribed Drugs	189.20	197.93	206.88	219.66	234.11	253.43	275.03
All Categories	2321.40	2422.53	2511.03	2599.39	2691.25	2803.66	2939.71
	<b>Average Annual Increase due to Aging Effect, 4-Year Intervals</b>						
Hospitals	---	1.14%	1.02%	1.04%	1.04%	1.24%	1.38%
Other Institutions	---	3.61%	2.25%	1.60%	1.52%	1.63%	2.22%
Physicians	---	0.65%	0.62%	0.56%	0.52%	0.59%	0.64%
Other Professionals	---	0.46%	0.31%	0.25%	0.26%	0.30%	0.39%
Prescribed Drugs	---	1.15%	1.13%	1.54%	1.65%	2.06%	2.13%
All Categories	---	1.09%	0.91%	0.88%	0.88%	1.04%	1.21%

Sources: Canadian Institute for Health Information; Statistics Canada.

**Note:**

1. The approach used to project health expenditure implicitly assumes that health care utilization per capita within a given age group will remain constant over the projection period.

Annual expenditure growth rates due to aging only are projected to be 1.1% between 2002 and 2006, to decline gradually between 2006 and 2018 to 0.9% and then to rise again to 1.2% in 2026.

Between 2002 and 2026, average annual growth rates due to aging are projected to be highest for *other institutions* (2.1%), followed by *prescribed drugs* (1.6%), *hospitals* (1.1%), *physicians* (0.6%) and finally *other professional services* (0.3%). The different growth rates result from the differences in the degree to which expenditure curves change as the population ages and in particular the percentage differences between expenditures per capita for the elderly and average expenditures per capita. The bigger this percentage difference is, the higher the growth rate due to aging is, as in the case of *other institutions*.

The projected increase in expenditures as a result of population aging should be considered in context with overall growth rates in provincial and territorial expenditures per capita. Overall per capita growth rates, at constant prices, averaged 2.2% between 1975 and 2002. The projections here suggest that aging could explain about 45% of the overall growth rate.

## **6. General Discussion**

### **6.1 Effects of Technological Growth on the Age Distribution of Health Spending**

This report shows that health expenditures tend to rise more substantially for seniors than for those under 65. This should be put in the context of the debate on the effect of technology on aging. In fact, studies of specific health treatments—such as cataract surgery, heart attack, breast cancer and depression—find that, while technological growth tends to generate better efficiency of health spending, in terms of health outcomes per dollar spent, it tends to raise expenditures as new technologies allow more and more patients to be treated.<sup>19, 20</sup> A new drug could be a good substitute for surgery and may be cost-reducing for patients who would otherwise be treated with surgery (“treatment substitution”). However, this drug will likely be used on many patients who would have been treated with less costly practices, for example, a wait-and-see approach (“treatment expansion”).

This is closely related to the concept of latent demand where, with improvements in technologies, new demand is being created. It has been argued that, in general, the expansion effects of new technology have outweighed the substitution effects, causing overall health spending to rise. Since seniors tend to suffer more severe clinical conditions, they are generally the ones to benefit more from treatment expansion resulting from technology growth. This helps to explain an increased concentration in health spending among the elderly, as reported herein. Other authors have also found higher growth rates in per capita hospital utilization for seniors for British Columbia.<sup>21</sup>

### **6.2 Implications for Projected Health Expenditures**

This analysis indicates that expenditure increases resulting from population growth and aging, by themselves, will be stable and relatively modest in the context of historic expenditure growth rates. However, this is likely a conservative estimate, since the projection model implicitly assumes that health care utilization per capita within a given age group will remain constant over the projection period. This is not an unreasonable assumption if the projection period is short. However, estimates for hospital and physician expenditures for later years could be less reliable, given that for these two categories specifically, the results suggest growth rates of age-specific per capita expenditures were generally higher for the elderly than for the non-elderly. Simulation results indicate that projected health care costs associated with aging in Canada are more sensitive to the size of the differential in the growth rate in age-specific utilization rates than to the rise in the share of the aged population.<sup>22</sup>

With a longer time-series of age-specific national health expenditure data from CIHI, changes in utilization across age groups should be explicitly included in projection methods in order to assess in the same model the impact of combined factors—such as demographic effects, changes in morbidity, advances in technology—on health expenditures.

## 7. Conclusion

In this analysis, levels of provincial and territorial government health expenditures and real per capita historical annual growth have been reported for *total, hospitals, other institutions, physicians, other professionals* and *prescribed drugs*. For each category, the report presents numbers by age and sex for Canada. Actual and standardized numbers are also presented for each category by province and territory. Future levels of expenditures and growth rates are also produced, estimating the impact of demographic and pure aging effects.

Our results suggest that for each major category in combined age groups, per capita health expenditures are consistently higher for females than for males, even though for *hospitals* and *physicians*, per capita expenditures are higher for senior males than for senior females. This is probably due to the fact that cardiovascular diseases, specifically AMI, are more prevalent and more severe among males than among females. Moreover, growth rates of age-specific per capita expenditures were generally higher for the elderly than for the non-elderly—meaning difference in utilization growth could exist. Also, real per capita average annual growth rates for Canada have been positive for all the major categories of expenditures, except for *other professionals*. While comparisons between jurisdictions should be interpreted with caution, Nova Scotia, Quebec and Ontario were the only jurisdictions to experience average annual growth rates below the national average of 4.3% for total provincial and territorial government per capita health expenditures.

Finally, our projection model suggests that the aging-specific effect will not contribute more than 1.0% annually to total provincial and territorial government health expenditures between 2002 and 2026. More availability of age-specific nationwide CIHI data, combined with recent research into the effects of a number of the determinants of health expenditures, would allow more sophisticated projections in the future, using multi-variable models and different scenarios about changes to individual variables.



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## References

1. Canadian Institute for Health Information, *National Health Expenditure Trends, 1975–2000* (Ottawa: CIHI, 2000) pp. 31–49.
2. Statistics Canada, *Guide to the Income and Expenditure Accounts* (Ottawa: Statistics Canada, 1990), Catalogue Number 13-603E, No. 1.
3. Canadian Institute for Health Information, *Physician Services Benefit Rates Report, Canada, 2001-2002* (Ottawa: CIHI, 2004).
4. Statistics Canada, *Projected Population, by Age Group and Sex, Canada, Provinces and Territories, July 1, 2000–2026, Annual (Persons)* (Data source: Cansim Table 052-0001), [online], cited October 4, 2004 from <<http://cansim2.statcan.ca/cgi-win/CNSMCGI.EXE>> .
5. Statistics Canada, *Health Indicators* (with Canadian Institute for Health Information) [online], last modified February 1, 2005, cited February 11, 2005 from <[http://www.statcan.ca/english/freepub/82-221XIE/2004002/tables/pdf/1412\\_01.pdf](http://www.statcan.ca/english/freepub/82-221XIE/2004002/tables/pdf/1412_01.pdf)> , catalogue no. 82-221-XIE.
6. Health Canada, *Economic Burden of Illness in Canada* (Ottawa: Health Canada, Population and Public Health Branch, 2002), Table 2.
7. R. Ariste and M. Connolly, *Prevalence and Incidence of Cardiovascular Diseases in Canada, 1991–1992 and 1999–2000* (internal document) (Ottawa: Health Canada, Applied Research and Analysis Directorate, 2003).
8. W. A. Ghali, P. D. Faris, P. D. Galbraith, C. M. Norris, M. J. Curtis, L. D. Saunders, V. Dzavik, L. B. Mitchell and M. L. Knudtson (for the Alberta Provincial Project for Outcome Assessment in Coronary Heart Disease—APPROACH) “Sex Differences in Access to Coronary Revascularization after Cardiac Catheterization: Importance of Detailed Clinical Data”, *Annals of Internal Medicine* Volume 136, No. 10 (21 May 2002): pp. 723–732.
9. C. Lochhead and K. Scott, *The Dynamics of Women’s Poverty in Canada* (funded by Status of Women Canada’s Policy Research Fund) (Ottawa: Canadian Council on Social Development, March 2000).
10. N. Keating, J. Fast, J. Frederick, K. Cranswick and C. Perrier, *Eldercare in Canada: Context, Content and Consequences* (Ottawa: Statistics Canada, 1999), pp. 24.
11. M. Morris, J. Robinson and J. Simpson, *The Changing Nature of Home Care and Its Impact on Women’s Vulnerability to Poverty*, (with S. Galey, S. Kirby, L. Martin, M. Muzychka for the Canadian Research Institute for the Advancement of Women—CRIAW) (Ottawa: Status of Women Canada, November 1999).
12. Statistics Canada, *Health Indicators* (with Canadian Institute for Health Information) [online], last modified February 1, 2005, cited February 11, 2005 from <[http://www.statcan.ca/english/freepub/82-221XIE/2004002/tables/pdf/1412\\_01.pdf](http://www.statcan.ca/english/freepub/82-221XIE/2004002/tables/pdf/1412_01.pdf)> , catalogue no. 82-221-XIE.



13. C. A. Jackevicius, K. Tu, W. A. Filate, S. E. Brien, J. V. Tu, (for the Canadian Cardiovascular Outcomes Research Team) "Trends in Cardiovascular Drug Utilization and Drug Expenditures in Canada Between 1996 and 2001," *Canadian Journal of Cardiology* 19, 12 (2003): pp. 1359–1366.
14. J. V. Tu, P. C. Austin and C. D. Naylor, "Technological Change in Heart Attack Care in Ontario, Canada, 1981-1995," in *Technological Change in Health Care—A Global Analysis of Heart Attack*, eds M. B. McClellan and D. P. Kessler (University of Michigan Press, 2002), pp. 65–66.
15. P. Moise and S. Jacobzone. 2003. "Population Ageing, Health Expenditure and Treatment: An ARD Perspective," (Ageing-Related Diseases Study) in *A Disease-based Comparison of Health Systems: What is Best and at What Cost*, (Paris: Organization for Economic Co-Operation and Development, 2003), pp. 163–179.
16. Canadian Institute for Health Information, *Physician Services Benefit Rates Report, Canada, 2001–2002* (Ottawa: CIHI, 2004).
17. A. Pollock, *Aging as a Health Care Cost Driver* (Internal document—Series on Aging) (Ottawa: Health Canada, Applied Research and Analysis Directorate, 2002).
18. Conference Board of Canada, "Understanding the Impact of Population Ageing" in *Defining the Canadian Advantage—Performance and Potential 2003–2004*, (Ottawa: Conference Board of Canada, 2004).
19. R. Ariste, B. Belhadji and C. Mallory, *Are Health Care Prices Really Rising? Evidence from Heart Attack Treatments in Canada* [Internal document] (Ottawa: Health Canada, Applied Research and Analysis Directorate, 2004).
20. D. M. Cutler and M. McClellan, "Is Technological Change in Medicine Worth It?" *Health Affairs*, (September/October 2001): pp. 11–12.
21. C. Hertzman, I. R. Pulcins, M. L. Barer and R. G. Evans, "Flat on Your Back or Back on Your Flat?: Sources of Increased Hospital Services Utilization Among the Elderly in British Columbia", *Social Science and Medicine* 30, 7 (1990).
22. M. S. Marzouk, "Aging, Age-Specific Health Care Costs and the Future Health Care Burden in Canada," *Canadian Public Policy—Analyse de Politiques* 17, 4 (1991): pp. 490–506.

**Appendix A:  
Health Expenditure and Population by Age  
Group and Sex, Males and Females**

















**Appendix B:**  
**Health Expenditures and Population by**  
**Age Group, Both Sexes, Canada**



# Appendix B: Health Expenditures and Population by Age Group, Both Sexes, Canada

## Appendix B.1. Total Health Expenditure and Population by Age Group, Both Sexes, Canada, Constant Dollars, 1997–2002

Both Sexes									
Year	<1	1–4	5–14	15–44	45–64	65–74	75–84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	1,482.0	308.3	487.5	5,316.8	4,706.6	4,420.5	4,364.6	1,873.8	22,960.1
1998	1,487.7	315.5	500.4	5,463.8	5,007.6	4,580.5	4,668.4	2,024.5	24,048.4
1999	1,473.9	304.4	498.3	5,512.5	5,173.3	4,654.7	4,860.8	2,151.0	24,628.8
2000	1,499.4	300.7	500.4	5,566.2	5,492.0	4,839.0	5,188.2	2,347.9	25,733.8
2001	1,539.9	300.9	499.6	5,699.4	5,802.5	5,012.9	5,555.9	2,562.5	26,973.6
2002	1,608.9	308.2	514.8	5,872.0	6,128.4	5,139.9	5,829.2	2,707.5	28,109.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	0.4	2.3	2.6	2.8	6.4	3.6	7.0	8.0	4.7
1999	-0.9	-3.5	-0.4	0.9	3.3	1.6	4.1	6.2	2.4
2000	1.7	-1.2	0.4	1.0	6.2	4.0	6.7	9.2	4.5
2001	2.7	0.1	-0.2	2.4	5.7	3.6	7.1	9.1	4.8
2002	4.5	2.4	3.1	3.0	5.6	2.5	4.9	5.7	4.2
(in 1997 \$' per capita)									
1997	4,150.3	197.6	135.4	386.2	723.2	2,096.1	3,670.4	5,253.7	767.7
1998	4,306.1	206.6	139.5	397.0	746.3	2,153.6	3,807.6	5,451.8	797.4
1999	4,344.1	204.4	140.6	400.5	746.2	2,179.7	3,848.3	5,543.7	810.1
2000	4,422.6	207.1	143.4	403.8	766.1	2,254.6	3,989.6	5,778.3	838.5
2001	4,633.4	210.9	145.1	412.0	782.9	2,319.7	4,140.4	6,099.0	869.5
2002	4,912.8	219.7	151.8	423.1	798.5	2,363.3	4,214.5	6,222.5	896.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	3.8	4.6	3.1	2.8	3.2	2.7	3.7	3.8	3.9
1999	0.9	-1.1	0.7	0.9	0.0	1.2	1.1	1.7	1.6
2000	1.8	1.3	2.0	0.8	2.7	3.4	3.7	4.2	3.5
2001	4.8	1.8	1.2	2.0	2.2	2.9	3.8	5.6	3.7
2002	6.0	4.2	4.6	2.7	2.0	1.9	1.8	2.0	3.0
Population (in '000)									
1997	357.1	1,560.2	3,600.5	13,766.9	6,508.1	2,108.9	1,189.1	356.7	29,907.2
1998	345.5	1,527.3	3,586.4	13,764.3	6,710.2	2,127.0	1,226.1	371.3	30,157.5
1999	339.3	1,489.7	3,544.9	13,765.3	6,932.8	2,135.5	1,263.1	388.0	30,403.9
2000	339.0	1,452.2	3,489.0	13,784.1	7,168.4	2,146.2	1,300.4	406.3	30,689.0
2001	332.3	1,426.9	3,443.5	13,832.5	7,411.2	2,161.0	1,341.9	420.2	31,021.3
2002	327.5	1,403.0	3,392.7	13,878.7	7,675.3	2,174.9	1,383.1	435.1	31,372.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.3	-2.1	-0.4	0.0	3.1	0.9	3.1	4.1	0.8
1999	-1.8	-2.5	-1.2	0.0	3.3	0.4	3.0	4.5	0.8
2000	-0.1	-2.5	-1.6	0.1	3.4	0.5	3.0	4.7	0.9
2001	-2.0	-1.7	-1.3	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.5	-1.7	-1.5	0.3	3.6	0.6	3.1	3.6	1.1
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	6.5	1.3	2.1	23.2	20.5	19.3	19.0	8.2	100.0
1998	6.2	1.3	2.1	22.7	20.8	19.0	19.4	8.4	100.0
1999	6.0	1.2	2.0	22.4	21.0	18.9	19.7	8.7	100.0
2000	5.8	1.2	1.9	21.6	21.3	18.8	20.2	9.1	100.0
2001	5.7	1.1	1.9	21.1	21.5	18.6	20.6	9.5	100.0
2002	5.7	1.1	1.8	20.9	21.8	18.3	20.7	9.6	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	12.0	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	11.9	45.6	22.3	7.1	4.1	1.2	100.0
1999	1.1	4.9	11.7	45.3	22.8	7.0	4.2	1.3	100.0
2000	1.1	4.7	11.4	44.9	23.4	7.0	4.2	1.3	100.0
2001	1.1	4.6	11.1	44.6	23.9	7.0	4.3	1.4	100.0
2002	1.0	4.5	10.8	44.2	24.5	6.9	4.4	1.4	100.0

Source: Canadian Institute for Health Information; Statistics Canada.

CIHI/ICIS 2004.

**Appendix B.2. Hospital Health Expenditure and Population by Age Group, Both Sexes, Canada, Constant Dollars, 1997 to 2002**

Both Sexes									
Year	< 1	1-4	5-14	15-44	45-64	65-74	75-84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	1,482.0	308.3	487.5	5,316.8	4,706.6	4,420.5	4,364.6	1,873.8	22,960.1
1998	1,487.7	315.5	500.4	5,463.8	5,007.6	4,580.5	4,668.4	2,024.5	24,048.4
1999	1,473.9	304.4	498.3	5,512.5	5,173.3	4,654.7	4,860.8	2,151.0	24,628.8
2000	1,499.4	300.7	500.4	5,566.2	5,492.0	4,839.0	5,188.2	2,347.9	25,733.8
2001	1,539.9	300.9	499.6	5,699.4	5,802.5	5,012.9	5,555.9	2,562.5	26,973.6
2002	1,608.9	308.2	514.8	5,872.0	6,128.4	5,139.9	5,829.2	2,707.5	28,109.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	0.4	2.3	2.6	2.8	6.4	3.6	7.0	8.0	4.7
1999	-0.9	-3.5	-0.4	0.9	3.3	1.6	4.1	6.2	2.4
2000	1.7	-1.2	0.4	1.0	6.2	4.0	6.7	9.2	4.5
2001	2.7	0.1	-0.2	2.4	5.7	3.6	7.1	9.1	4.8
2002	4.5	2.4	3.1	3.0	5.6	2.5	4.9	5.7	4.2
(in 1997 \$' per capita)									
1997	4,150.3	197.6	135.4	386.2	723.2	2,096.1	3,670.4	5,253.7	767.7
1998	4,306.1	206.6	139.5	397.0	746.3	2,153.6	3,807.6	5,451.8	797.4
1999	4,344.1	204.4	140.6	400.5	746.2	2,179.7	3,848.3	5,543.7	810.1
2000	4,422.6	207.1	143.4	403.8	766.1	2,254.6	3,989.6	5,778.3	838.5
2001	4,633.4	210.9	145.1	412.0	782.9	2,319.7	4,140.4	6,099.0	869.5
2002	4,912.8	219.7	151.8	423.1	798.5	2,363.3	4,214.5	6,222.5	896.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	3.8	4.6	3.1	2.8	3.2	2.7	3.7	3.8	3.9
1999	0.9	-1.1	0.7	0.9	0.0	1.2	1.1	1.7	1.6
2000	1.8	1.3	2.0	0.8	2.7	3.4	3.7	4.2	3.5
2001	4.8	1.8	1.2	2.0	2.2	2.9	3.8	5.6	3.7
2002	6.0	4.2	4.6	2.7	2.0	1.9	1.8	2.0	3.0
Population (in '000)									
1997	357.1	1,560.2	3,600.5	13,766.9	6,508.1	2,108.9	1,189.1	356.7	29,907.2
1998	345.5	1,527.3	3,586.4	13,764.3	6,710.2	2,127.0	1,226.1	371.3	30,157.5
1999	339.3	1,489.7	3,544.9	13,765.3	6,932.8	2,135.5	1,263.1	388.0	30,403.9
2000	339.0	1,452.2	3,489.0	13,784.1	7,168.4	2,146.2	1,300.4	406.3	30,689.0
2001	332.3	1,426.9	3,443.5	13,832.5	7,411.2	2,161.0	1,341.9	420.2	31,021.3
2002	327.5	1,403.0	3,392.7	13,878.7	7,675.3	2,174.9	1,383.1	435.1	31,372.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.3	-2.1	-0.4	0.0	3.1	0.9	3.1	4.1	0.8
1999	-1.8	-2.5	-1.2	0.0	3.3	0.4	3.0	4.5	0.8
2000	-0.1	-2.5	-1.6	0.1	3.4	0.5	3.0	4.7	0.9
2001	-2.0	-1.7	-1.3	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.5	-1.7	-1.5	0.3	3.6	0.6	3.1	3.6	1.1
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	6.5	1.3	2.1	23.2	20.5	19.3	19.0	8.2	100.0
1998	6.2	1.3	2.1	22.7	20.8	19.0	19.4	8.4	100.0
1999	6.0	1.2	2.0	22.4	21.0	18.9	19.7	8.7	100.0
2000	5.8	1.2	1.9	21.6	21.3	18.8	20.2	9.1	100.0
2001	5.7	1.1	1.9	21.1	21.5	18.6	20.6	9.5	100.0
2002	5.7	1.1	1.8	20.9	21.8	18.3	20.7	9.6	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	12.0	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	11.9	45.6	22.3	7.1	4.1	1.2	100.0
1999	1.1	4.9	11.7	45.3	22.8	7.0	4.2	1.3	100.0
2000	1.1	4.7	11.4	44.9	23.4	7.0	4.2	1.3	100.0
2001	1.1	4.6	11.1	44.6	23.9	7.0	4.3	1.4	100.0
2002	1.0	4.5	10.8	44.2	24.5	6.9	4.4	1.4	100.0

Source: Canadian Institute for Health Information; Statistics Canada.

CIHI/ICIS 2004.

**Appendix B.3. Other Institutions Health Expenditure and Population by Age Group, Both Sexes, Canada, Constant Dollars, 1997 to 2002**

Year	< 1	1-4	5-14	15-44	45-64	65-74	75-84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	0.4	2.3	9.0	211.9	292.8	588.4	1,821.4	2,440.7	5,366.9
1998	0.2	1.4	6.4	195.4	318.7	626.0	1,876.9	2,548.7	5,573.8
1999	0.3	1.8	10.5	222.6	364.2	636.9	1,938.0	2,775.3	5,949.6
2000	0.3	1.6	10.6	232.6	402.9	660.7	2,029.1	2,925.5	6,263.3
2001	0.2	1.3	10.2	216.0	434.2	747.2	2,176.4	3,112.0	6,697.5
2002	0.3	1.7	11.6	228.3	447.2	760.1	2,282.6	3,243.2	6,974.9
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-39.1	-39.4	-28.9	-7.8	8.8	6.4	3.0	4.4	3.9
1999	25.8	30.5	64.4	13.9	14.3	1.7	3.3	8.9	6.7
2000	-10.2	-13.4	1.0	4.5	10.6	3.7	4.7	5.4	5.3
2001	-21.4	-20.3	-3.9	-7.1	7.8	13.1	7.3	6.4	6.9
2002	32.2	31.7	13.9	5.7	3.0	1.7	4.9	4.2	4.1
(in 1997 \$' per capita)									
1997	1.1	1.5	2.5	15.4	45.0	279.0	1,531.7	6,843.2	179.5
1998	0.7	0.9	1.8	14.2	47.5	294.3	1,530.8	6,863.6	184.8
1999	0.9	1.2	3.0	16.2	52.5	298.3	1,534.3	7,152.7	195.7
2000	0.8	1.1	3.0	16.9	56.2	307.9	1,560.4	7,199.9	204.1
2001	0.6	0.9	3.0	15.6	58.6	345.8	1,621.9	7,406.8	215.9
2002	0.9	1.2	3.4	16.5	58.3	349.5	1,650.3	7,453.5	222.3
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-37.1	-38.1	-28.6	-7.8	5.6	5.5	-0.1	0.3	3.0
1999	28.1	33.8	66.4	13.9	10.6	1.3	0.2	4.2	5.9
2000	-10.2	-11.2	2.6	4.3	7.0	3.2	1.7	0.7	4.3
2001	-19.9	-18.9	-2.6	-7.5	4.2	12.3	3.9	2.9	5.8
2002	34.2	33.9	15.6	5.3	-0.5	1.1	1.8	0.6	3.0
Population (in '000)									
1997	357.1	1,560.2	3,600.5	13,766.9	6,508.1	2,108.9	1,189.1	356.7	29,907.2
1998	345.5	1,527.3	3,586.4	13,764.3	6,710.2	2,127.0	1,226.1	371.3	30,157.5
1999	339.3	1,489.7	3,544.9	13,765.3	6,932.8	2,135.5	1,263.1	388.0	30,403.9
2000	339.0	1,452.2	3,489.0	13,784.1	7,168.4	2,146.2	1,300.4	406.3	30,689.0
2001	332.3	1,426.9	3,443.5	13,832.5	7,411.2	2,161.0	1,341.9	420.2	31,021.3
2002	327.5	1,403.0	3,392.7	13,878.7	7,675.3	2,174.9	1,383.1	435.1	31,372.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.3	-2.1	-0.4	0.0	3.1	0.9	3.1	4.1	0.8
1999	-1.8	-2.5	-1.2	0.0	3.3	0.4	3.0	4.5	0.8
2000	-0.1	-2.5	-1.6	0.1	3.4	0.5	3.0	4.7	0.9
2001	-2.0	-1.7	-1.3	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.5	-1.7	-1.5	0.3	3.6	0.6	3.1	3.6	1.1
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	0.0	0.0	0.2	3.9	5.5	11.0	33.9	45.5	100.0
1998	0.0	0.0	0.1	3.5	5.7	11.2	33.7	45.7	100.0
1999	0.0	0.0	0.2	3.7	6.1	10.7	32.6	46.6	100.0
2000	0.0	0.0	0.2	3.7	6.4	10.5	32.4	46.7	100.0
2001	0.0	0.0	0.2	3.2	6.5	11.2	32.5	46.5	100.0
2002	0.0	0.0	0.2	3.3	6.4	10.9	32.7	46.5	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	12.0	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	11.9	45.6	22.3	7.1	4.1	1.2	100.0
1999	1.1	4.9	11.7	45.3	22.8	7.0	4.2	1.3	100.0
2000	1.1	4.7	11.4	44.9	23.4	7.0	4.2	1.3	100.0
2001	1.1	4.6	11.1	44.6	23.9	7.0	4.3	1.4	100.0
2002	1.0	4.5	10.8	44.2	24.5	6.9	4.4	1.4	100.0

Source: Canadian Institute for Health Information; Statistics Canada.

CIHI/ICIS 2004.

**Appendix B.4. Physicians Health Expenditure and Population by Age Group, Both Sexes, Canada, Constant Dollars, 1997 to 2002**

Both Sexes									
Year	< 1	1-4	5-14	15-44	45-64	65-74	75-84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	201.9	398.2	608.9	3,882.1	2,867.2	1,518.8	1,068.1	318.2	10,863.3
1998	190.6	401.2	619.3	3,954.7	3,044.8	1,572.9	1,137.4	337.9	11,258.8
1999	179.6	380.4	606.7	4,011.2	3,196.8	1,605.2	1,193.5	360.4	11,533.8
2000	174.2	363.9	605.8	4,016.8	3,340.3	1,650.1	1,258.6	384.4	11,794.0
2001	179.3	359.1	620.9	4,203.4	3,652.6	1,770.9	1,381.4	428.3	12,595.8
2002	204.1	375.3	642.5	4,281.8	3,852.4	1,839.0	1,484.3	466.3	13,145.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-5.6	0.8	1.7	1.9	6.2	3.6	6.5	6.2	3.6
1999	-5.8	-5.2	-2.0	1.4	5.0	2.1	4.9	6.7	2.4
2000	-3.0	-4.3	-0.2	0.1	4.5	2.8	5.5	6.7	2.3
2001	2.9	-1.3	2.5	4.6	9.3	7.3	9.8	11.4	6.8
2002	13.8	4.5	3.5	1.9	5.5	3.8	7.4	8.9	4.4
(in 1997 \$' per capita)									
1997	565.5	255.2	169.1	282.0	440.6	720.2	898.2	892.1	363.2
1998	551.7	262.7	172.7	287.3	453.8	739.5	927.7	909.8	373.3
1999	529.3	255.3	171.2	291.4	461.1	751.7	944.9	928.8	379.4
2000	513.8	250.6	173.6	291.4	466.0	768.9	967.8	945.9	384.3
2001	539.4	251.7	180.3	303.9	492.8	819.5	1,029.4	1,019.3	406.0
2002	623.2	267.5	189.4	308.5	501.9	845.6	1,073.1	1,071.7	419.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-2.5	2.9	2.1	1.9	3.0	2.7	3.3	2.0	2.8
1999	-4.1	-2.8	-0.9	1.4	1.6	1.7	1.9	2.1	1.6
2000	-2.9	-1.9	1.4	0.0	1.1	2.3	2.4	1.8	1.3
2001	5.0	0.4	3.8	4.3	5.8	6.6	6.4	7.8	5.7
2002	15.5	6.3	5.0	1.5	1.8	3.2	4.2	5.1	3.2
Population (in '000)									
1997	357.1	1,560.2	3,600.5	13,766.9	6,508.1	2,108.9	1,189.1	356.7	29,907.2
1998	345.5	1,527.3	3,586.4	13,764.3	6,710.2	2,127.0	1,226.1	371.3	30,157.5
1999	339.3	1,489.7	3,544.9	13,765.3	6,932.8	2,135.5	1,263.1	388.0	30,403.9
2000	339.0	1,452.2	3,489.0	13,784.1	7,168.4	2,146.2	1,300.4	406.3	30,689.0
2001	332.3	1,426.9	3,443.5	13,832.5	7,411.2	2,161.0	1,341.9	420.2	31,021.3
2002	327.5	1,403.0	3,392.7	13,878.7	7,675.3	2,174.9	1,383.1	435.1	31,372.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.3	-2.1	-0.4	0.0	3.1	0.9	3.1	4.1	0.8
1999	-1.8	-2.5	-1.2	0.0	3.3	0.4	3.0	4.5	0.8
2000	-0.1	-2.5	-1.6	0.1	3.4	0.5	3.0	4.7	0.9
2001	-2.0	-1.7	-1.3	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.5	-1.7	-1.5	0.3	3.6	0.6	3.1	3.6	1.1
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	1.9	3.7	5.6	35.7	26.4	14.0	9.8	2.9	100.0
1998	1.7	3.6	5.5	35.1	27.0	14.0	10.1	3.0	100.0
1999	1.6	3.3	5.3	34.8	27.7	13.9	10.3	3.1	100.0
2000	1.5	3.1	5.1	34.1	28.3	14.0	10.7	3.3	100.0
2001	1.4	2.9	4.9	33.4	29.0	14.1	11.0	3.4	100.0
2002	1.6	2.9	4.9	32.6	29.3	14.0	11.3	3.5	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	12.0	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	11.9	45.6	22.3	7.1	4.1	1.2	100.0
1999	1.1	4.9	11.7	45.3	22.8	7.0	4.2	1.3	100.0
2000	1.1	4.7	11.4	44.9	23.4	7.0	4.2	1.3	100.0
2001	1.1	4.6	11.1	44.6	23.9	7.0	4.3	1.4	100.0
2002	1.0	4.5	10.8	44.2	24.5	6.9	4.4	1.4	100.0

Source: Canadian Institute for Health Information; Statistics Canada.

CIHI/ICIS 2004.

**Appendix B.5. Other Professionals Health Expenditure and Population by Age Group, Both Sexes, Canada, Constant Dollars, 1997 to 2002**

Both Sexes									
Year	< 1	1-4	5-14	15-44	45-64	65-74	75-84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	0.6	20.9	120.8	286.5	166.2	69.3	46.4	20.3	731.0
1998	0.6	20.6	124.4	264.6	158.6	69.7	48.1	21.2	707.8
1999	0.6	21.9	134.1	261.2	162.5	69.2	49.8	23.0	722.3
2000	0.6	22.3	135.8	255.3	165.4	69.4	52.4	26.1	727.2
2001	0.6	10.9	95.6	282.2	187.4	72.2	57.3	31.4	737.6
2002	0.5	10.4	93.7	263.6	178.1	62.8	56.5	37.5	703.2
% change									
1997	---	---	---	---	---	---	---	---	---
1998	5.3	-1.6	3.0	-7.6	-4.6	0.6	3.8	4.2	-3.2
1999	5.4	6.6	7.8	-1.3	2.5	-0.8	3.4	8.4	2.0
2000	-6.7	1.7	1.2	-2.3	1.8	0.3	5.2	13.8	0.7
2001	6.0	-50.9	-29.6	10.5	13.3	4.1	9.4	20.1	1.4
2002	-15.3	-4.8	-2.0	-6.6	-4.9	-13.0	-1.4	19.5	-4.7
(in 1997 \$' per capita)									
1997	1.6	13.8	30.6	21.4	26.3	33.9	40.3	59.1	25.2
1998	1.7	13.8	31.3	19.8	24.4	33.8	40.6	59.1	24.2
1999	1.9	15.1	33.8	19.6	24.2	33.4	40.7	61.3	24.5
2000	1.7	15.8	34.2	19.1	23.8	33.3	41.6	66.6	24.4
2001	1.9	7.9	24.0	21.0	26.1	34.4	44.1	77.3	24.5
2002	1.6	7.6	23.5	19.6	23.9	29.8	42.1	89.2	23.1
% change									
1997	---	---	---	---	---	---	---	---	---
1998	8.9	0.4	2.3	-7.7	-7.5	-0.3	0.7	0.1	-4.0
1999	7.5	9.5	7.8	-1.2	-0.8	-1.2	0.3	3.7	1.3
2000	-6.6	4.3	1.1	-2.4	-1.6	-0.3	2.1	8.6	-0.3
2001	7.9	-50.0	-29.7	10.1	9.6	3.4	6.0	16.1	0.3
2002	-14.1	-3.2	-2.0	-6.9	-8.2	-13.5	-4.4	15.3	-5.8
Population (in '000)									
1997	347.4	1,517.7	3,940.6	13,359.6	6,311.9	2,047.2	1,149.9	344.2	29,018.5
1998	336.1	1,486.4	3,968.0	13,363.0	6,508.0	2,065.1	1,186.2	358.3	29,271.1
1999	329.4	1,447.3	3,967.4	13,355.3	6,720.4	2,073.2	1,222.6	374.5	29,490.1
2000	329.1	1,410.9	3,971.5	13,378.5	6,948.9	2,084.0	1,259.3	392.3	29,774.5
2001	323.1	1,386.5	3,976.5	13,431.2	7,185.1	2,098.4	1,300.1	405.7	30,106.6
2002	318.5	1,363.7	3,977.9	13,481.5	7,442.0	2,111.9	1,340.9	420.3	30,456.6
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.3	-2.1	0.7	0.0	3.1	0.9	3.2	4.1	0.9
1999	-2.0	-2.6	0.0	-0.1	3.3	0.4	3.1	4.5	0.7
2000	-0.1	-2.5	0.1	0.2	3.4	0.5	3.0	4.8	1.0
2001	-1.8	-1.7	0.1	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.4	-1.6	0.0	0.4	3.6	0.6	3.1	3.6	1.2
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	0.1	2.9	16.5	39.2	22.7	9.5	6.3	2.8	100.0
1998	0.1	2.9	17.6	37.4	22.4	9.9	6.8	3.0	100.0
1999	0.1	3.0	18.6	36.2	22.5	9.6	6.9	3.2	100.0
2000	0.1	3.1	18.7	35.1	22.7	9.5	7.2	3.6	100.0
2001	0.1	1.5	13.0	38.3	25.4	9.8	7.8	4.3	100.0
2002	0.1	1.5	13.3	37.5	25.3	8.9	8.0	5.3	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	13.6	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	13.6	45.7	22.2	7.1	4.1	1.2	100.0
1999	1.1	4.9	13.5	45.3	22.8	7.0	4.1	1.3	100.0
2000	1.1	4.7	13.3	44.9	23.3	7.0	4.2	1.3	100.0
2001	1.1	4.6	13.2	44.6	23.9	7.0	4.3	1.3	100.0
2002	1.0	4.5	13.1	44.3	24.4	6.9	4.4	1.4	100.0

<sup>1</sup> Table excludes estimates for Prince Edward Island, New Brunswick and Nunavut for which data are unavailable.

Source: Canadian Institute for Health Information; Statistics Canada.

CIHI/ICIS 2004.



**Appendix B.6. Prescribed Drugs Health Expenditure and Population by Both Sexes, Canada, Constant Dollars, 1997 to 2002**

Both Sexes									
Year	< 1	1-4	5-14	15-44	45-64	65-74	75-84	85+	All Age Groups
(in 1997 \$'000,000)									
1997	3.4	20.2	45.0	449.9	498.3	1,095.7	754.6	210.6	3,077.6
1998	3.0	18.8	45.8	492.0	565.8	1,173.7	836.0	236.2	3,371.4
1999	2.8	17.5	46.7	547.7	659.3	1,278.0	940.3	271.7	3,764.3
2000	3.3	15.7	47.5	600.3	775.0	1,412.9	1,069.8	311.5	4,235.9
2001	4.2	18.7	81.8	680.9	826.7	1,571.1	1,245.4	372.8	4,801.5
2002	3.7	16.1	80.3	646.0	799.2	1,613.7	1,721.6	379.5	5,260.0
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-10.9	-6.8	1.8	9.4	13.5	7.1	10.8	12.2	9.5
1999	-5.4	-6.9	2.0	11.3	16.5	8.9	12.5	15.0	11.7
2000	15.8	-10.5	1.5	9.6	17.5	10.6	13.8	14.6	12.5
2001	27.5	19.1	72.3	13.4	6.7	11.2	16.4	19.7	13.4
2002	-11.1	-14.0	-1.8	-5.1	-3.3	2.7	38.2	1.8	9.5
(in 1997 \$' per capita)									
1997	9.6	13.2	11.4	33.5	78.4	530.6	649.3	603.4	105.3
1998	8.8	12.6	11.5	36.6	86.3	563.5	697.3	650.0	114.4
1999	8.5	12.0	11.7	40.7	97.4	611.3	760.9	715.8	126.7
2000	9.9	11.0	11.9	44.6	110.7	672.6	840.3	783.2	141.2
2001	12.8	13.4	20.4	50.3	114.2	742.7	947.8	906.4	158.3
2002	11.5	11.7	20.0	47.6	106.6	758.0	1,271.0	890.6	171.4
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-7.9	-4.8	1.0	9.3	10.1	6.2	7.4	7.7	8.6
1999	-3.6	-4.4	2.0	11.4	12.8	8.5	9.1	10.1	10.8
2000	15.9	-8.2	1.4	9.4	13.7	10.0	10.4	9.4	11.4
2001	29.8	21.1	72.1	13.0	3.2	10.4	12.8	15.7	12.1
2002	-9.8	-12.6	-1.9	-5.5	-6.7	2.1	34.1	-1.7	8.3
Population (in '000)									
1997	350.0	1,529.2	3,964.4	13,444.2	6,355.8	2,065.2	1,162.2	349.0	29,220.1
1998	338.8	1,497.7	3,993.7	13,452.7	6,553.6	2,082.9	1,198.9	363.4	29,481.7
1999	332.1	1,458.3	3,994.7	13,448.3	6,767.9	2,090.5	1,235.8	379.7	29,707.4
2000	331.7	1,421.8	3,999.8	13,473.7	6,998.7	2,100.7	1,273.1	397.7	29,997.0
2001	325.6	1,397.3	4,005.4	13,528.9	7,236.7	2,115.3	1,313.9	411.3	30,334.5
2002	320.8	1,374.4	4,007.2	13,579.6	7,496.1	2,128.7	1,354.5	426.1	30,687.5
% change									
1997	---	---	---	---	---	---	---	---	---
1998	-3.2	-2.1	0.7	0.1	3.1	0.9	3.2	4.1	0.9
1999	-2.0	-2.6	0.0	0.0	3.3	0.4	3.1	4.5	0.8
2000	-0.1	-2.5	0.1	0.2	3.4	0.5	3.0	4.7	1.0
2001	-1.8	-1.7	0.1	0.4	3.4	0.7	3.2	3.4	1.1
2002	-1.5	-1.6	0.0	0.4	3.6	0.6	3.1	3.6	1.2
Expenditure by Age Group as % of Total Provincial and Territorial Government Expenditure									
1997	0.1	0.7	1.5	14.6	16.2	35.6	24.5	6.8	100.0
1998	0.1	0.6	1.4	14.6	16.8	34.8	24.8	7.0	100.0
1999	0.1	0.5	1.2	14.6	17.5	34.0	25.0	7.2	100.0
2000	0.1	0.4	1.1	14.2	18.3	33.4	25.3	7.4	100.0
2001	0.1	0.4	1.7	14.2	17.2	32.7	25.9	7.8	100.0
2002	0.1	0.3	1.5	12.3	15.2	30.7	32.7	7.2	100.0
Population by Age Group as % of Total Population									
1997	1.2	5.2	13.6	46.0	21.8	7.1	4.0	1.2	100.0
1998	1.1	5.1	13.5	45.6	22.2	7.1	4.1	1.2	100.0
1999	1.1	4.9	13.4	45.3	22.8	7.0	4.2	1.3	100.0
2000	1.1	4.7	13.3	44.9	23.3	7.0	4.2	1.3	100.0
2001	1.1	4.6	13.2	44.6	23.9	7.0	4.3	1.4	100.0
2002	1.0	4.5	13.1	44.3	24.4	6.9	4.4	1.4	100.0

<sup>1</sup>Table excludes estimates for Newfoundland, Prince Edward Island and Nunavut for which data are unavailable.

Source: Canadian Institute for Health Information; Statistics Canada.

**Appendix C:  
Methodology to Distribute Provincial and  
Territorial Government Health Expenditures  
by Age and Sex**



# **Appendix C: Methodology to Distribute by Age and Sex Provincial and Territorial Government Health Expenditures**

The method of distributing health expenditures for the five categories and for the total is explained below.

## **Hospitals**

The distribution of provincial government hospital expenditures by age and sex is based on information from CIHI's Discharge Abstract Database (DAD)\* and Hospital Morbidity Database (HMDB). The CIHI 2001 Case Mix Group (or CMG™) methodology was used to group patient discharge information into homogenous groups, based on clinical and resource utilization characteristics.

In the CMG methodology, patients are assigned to a group according to diagnosis and surgical procedures. Within each group, patients are further classified into a complexity level† based on number and type of comorbid diagnoses and age. Once patients are grouped, a Resource Intensity Weight (or RIW™)‡ indicator is assigned. The RIW indicators were then aggregated to generate total weighted cases by age and sex.

The provincial government hospital expenditures estimate for each province is allocated to a given age group based on the weighted cases in that age group relative to total weighted cases. Weighted case information from the DAD and the Hospital Morbidity Database (HMDB) is for acute inpatient care only. Weighted cases for most hospital-based ambulatory care (that is, day surgery, emergency departments and clinics) are currently available only in one province. Nevertheless, acute inpatient weighted cases are used as a proxy to distribute the National Health Expenditures estimate of hospital expenditures financed by provincial governments, which includes inpatient and ambulatory care.

CIHI investigated the reasonableness of using only the acute inpatient data as a proxy to distribute comprehensive provincial government hospital expenditures by comparing 1998–1999 weighted cases calculated from Alberta's Ambulatory Care data set with the Alberta acute inpatient weighted cases from the DAD/HMDB. The analysis showed that the distribution of ambulatory care weighted cases differs from inpatient weighted cases primarily in the senior age groups. The impact of including the ambulatory care weighted cases with the inpatient weighted cases is to lower per capita spending in the senior age

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\* 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.

† Following extensive consultation with experts in the field, at the time of printing it is believed that these data have not been substantially effected by recent concerns regarding complexity.

‡ RIW indicators are resource allocation algorithms, developed by CIHI for estimating the relative hospital resources used for a typical case. See <[http://ottprd01:7778/cihiweb/dispPage.jsp?cw\\_page=casemix\\_riw\\_e](http://ottprd01:7778/cihiweb/dispPage.jsp?cw_page=casemix_riw_e)> for more information.

groups from what it would have been based on the inpatient weighted cases only. Since ambulatory care\* made up about 38% of provincial and territorial government hospital expenditures in 2002,<sup>†</sup> the bias in the distribution could be relatively substantial.

Data from the DAD/HMDB covers 11 jurisdictions across Canada; the territories are combined due to the small number of facilities. The 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 represent about 85% total acute hospitalizations within each province; however, from 1998–1999 onward, the DAD represents 100% coverage in these two provinces. Weighted cases for Quebec are based entirely on the HMDB. Data for the year 2002 were unavailable for this province and have 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. Manitoba hospital utilization data are reported to CIHI differently than those of other provinces and territories. In addition to acute inpatient care, Manitoba's weighted cases include chronic, rehabilitative and long-term hospital care; this results in higher weights applied to senior age groups and ultimately to higher spending in those age groups.

## **Physicians**

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

Fiscal year 1996–1997 data were unavailable from the NPDB for Nova Scotia and were 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 were also unavailable from NPDB for New Brunswick. As for Nova Scotia, they were estimated using growth rates in the population by age and sex applied to 1994–1995 fee-for-services data from the NPDB. Yukon fee-for-service data from 1995–1996 onward were used to estimate the Northwest Territories data by applying the Yukon fee-for-service per capita spending by age and sex to the Northwest Territories population for 1995–1996 onward. As for the Northwest Territories, data for Nunavut for 1999–2000 onward were estimated using the Yukon data. Data were collected in fiscal year and converted to calendar year (see Calculation of Calendar Year in Section 2 on Methodology).

Data provided by the NPDB for the year 2002 are preliminary estimates.

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\* Including emergency departments, clinics, day surgery, clinical laboratory, diagnostic imaging and administrative costs associated with these functions.

<sup>†</sup> Canadian Institute for Health Information, *Canadian MIS Database (CMDB), 2002*.

## Other Institutions

Statistics Canada's Residential Care Facilities (RCF) Survey was used to estimate provincial and territorial age and sex distribution from 1995–1996 to 2001–2002 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 one and one half hours a day of medical and/or professional nursing supervision. Patient counts by age, sex and by predominant level of care within each facility were used to create the distributions.

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

At the time of publication, data were unavailable for Quebec for all years. The weighted patient counts for Canada (minus Quebec) from the RCF for 1996–1997 to 2001–2002 were used as a proxy for Quebec's distribution of *other institutions* expenditures. An estimate for 1995–1996 was also generated using growth rates across age groups and gender in the population, applied to the 1996–1997 *other institutions* spending estimates by province and territory. Data were then converted into calendar year (see Calculation of Calendar Year in section 2 on Methodology).

Full data for 2002 were unavailable for all jurisdictions. Consequently, expenditures by age and sex for this year were estimated based on an analysis of the historical series.

## Prescribed Drugs

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

CIHI requested drug claims that were paid in a given year, by age and sex, from each provincial drug subsidy program. Drug claim information by age and sex is currently unavailable from Newfoundland and Labrador, Prince Edward Island and Nunavut.

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

Data collected from the New Brunswick Prescription Drug Program came from 10 different drug plans. Age-sex data were provided for the following plans: Seniors Plan (A), Cystic Fibrosis Plan (B), Family and Community Social Services (E), Human Resources Development (F), Organ Transplant (R), Human Growth Hormone (T) and Nursing Home Program (V). This left only three plans with no age and sex data: Children in Care (G), HIV (U) and Special Authorization (SA) (for drugs not normally covered under the provincial formulary). Beginning in October 1996, claims under SA are included in six other plans (A, B, G, R, T and V) if the claimant is a beneficiary of one of these plans. In September of 1997, this was expanded to include plans E and F. Minor plans for which age-sex data were not available were distributed using the overall distribution of plans for which data were available.

The Quebec Ministry of Health and Social Services supplied data on its drug subsidy program in calendar year. The plans included coverage for seniors, income security recipients and others. Data for 1997 onward also included a general client group representing recipients whose drug claims are paid through the self-financed drug insurance fund by the premiums of subscribers to the plan and not the provincial government. Consequently, the age-sex distribution of this group was not included with the rest of the provincial government program.

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

Manitoba was unable to provide data for fiscal year 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 fiscal year 1997–1998 onward. Data for the Ministry of Family Services, Employment and Income Assistance Division's drug plan was supplied for 1997–1998 onward. The figures reported for Manitoba in 1997 are based on fiscal year data for 1997–1998. Data supplied by the Saskatchewan Drug Plan and Extended Benefits Branch were in calendar year.

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

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

The Yukon Department of Health and Social Services supplied drug expenditure claims for three administered drug plans: Seniors, Child Drug Plan and Chronic Care Drug Plan. Data from 1995–1996 to 2002–2003 were provided for each plan, with the exception of the Child Drug Plan, which was implemented in 1997–1998. Northwest Territories Department of Health and Social Services supplied data by age and sex for prescription drug claims paid for Extended Health Benefits (EHB).

The provincial government drug estimate at the program level is allocated to a given age group, based on the value of claims paid in that age group, relative to total claims paid. In provinces with more than one program, the age-sex-distributed programs were combined to represent a total estimate for the province. Most data were collected in fiscal year and converted to calendar year (see Calculation of Calendar Year in section 2 on Methodology).

## **Other Professionals**

Expenditures for the category of *other professionals* accounted for approximately 1% of total provincial and territorial health expenditures in recent years. Provincial and territorial governments provide a variety of health services delivered by health professionals other than physicians, including primarily dentists, optometrists, chiropractors and physiotherapists.

All provinces provide various programs for seniors and children, as well as programs for income assistance recipients. However, the services provided vary considerably across Canada. For instance, Ontario, British Columbia and Quebec provide physiotherapy services to residents, while other provinces do not. Chiropractic services are provided through provincial insurance plans from Ontario west to British Columbia, but nowhere else in Canada. Target populations, co-payments and deductibles also vary from provinces to province. CIHI requested from each province data for claims that were paid for by provincial or 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 were unavailable from Prince Edward Island, Manitoba, New Brunswick and Nunavut. The remaining provinces and territories were able to supply data by age and sex for approximately 75% or more of other professional services. When a province or territory was unable to supply 100% of services, CIHI estimated the age and sex distribution for these services by using data from programs from other provinces with similar coverage and eligibility levels.

The provincial government expenditure estimates for *other professionals* at the program level are allocated to a given age group, based on the value of claims paid in that age group relative to total claims paid. In provinces with more than one program, the age-sex distributed programs were combined to represent a total estimate for the expenditures of provinces' *other professionals*. Most data were collected in fiscal year and converted to calendar year (see Calculation of Calendar Year in section 2 on Methodology).

## **Total Provincial Government Health Expenditures by Age and Sex**

To age-sex standardize total provincial government health expenditures, it is necessary for all categories of expenditures be distributed by age and sex for each province. Unfortunately, age-sex distributions for all provincial and territorial government expenditures are currently not available in all provinces and territories. Consequently, CIHI estimated the missing data using the following methods. The age-sex distributions of drug subsidy programs for Newfoundland and Labrador, Prince Edward Island and Nunavut were estimated for 1998 onward using the distributions of drug subsidy programs in other provinces with similar target populations and co-payment plans. Newfoundland and Labrador age-sex distribution was based on New Brunswick's seniors and Community and Social Services drug plans (plans A, E and F). Prince Edward Island's age-sex distribution for drug expenditures was based on the Nova Scotia Seniors and Community Services drug plans. Nunavut's age-sex distribution is based on the Northwest Territories data.

The age-sex distributions of the category of *other professionals* in Prince Edward Island, New Brunswick and Nunavut (1999 onward) were estimated for 1998 onward. The age-sex distributions of these provinces were based on the distributions in other provinces of other health care provider programs that had similar beneficiaries and co-payment plans. Dental expenditures by age and sex in Prince Edward Island were based on the Newfoundland and Labrador Dental Health Plan clients from 3 to 16 years of age. Similarly, New Brunswick's dental expenditures for the youth income assistance plan were based on clients up to 17 years of age 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 expenditures, Nunavut's *other professionals* category expenditures were based on the age-sex distribution for the Northwest Territories. Quebec's physiotherapy expenditures are distributed across a combined age-sex distribution of Ontario and British Columbia's fee-for-service physiotherapy plans.

Capital expenditures were estimated for all provinces and territories by using the general provincial and territorial populations by age and sex. This method was used based on two criteria:

- 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
- Given the uncertainty of illness, the availability of facilities has a value for all who potentially would use them if the need arises.

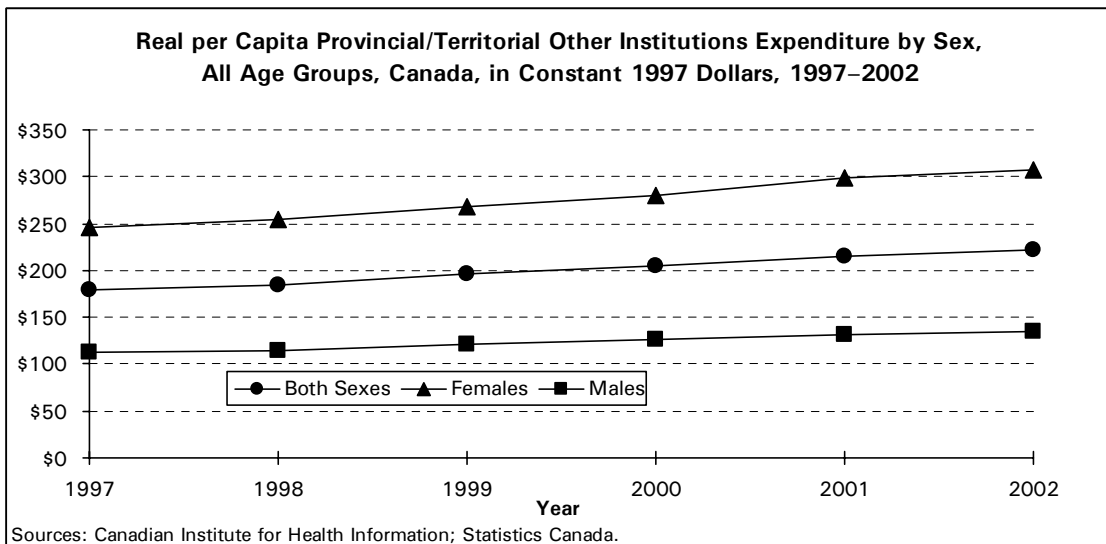
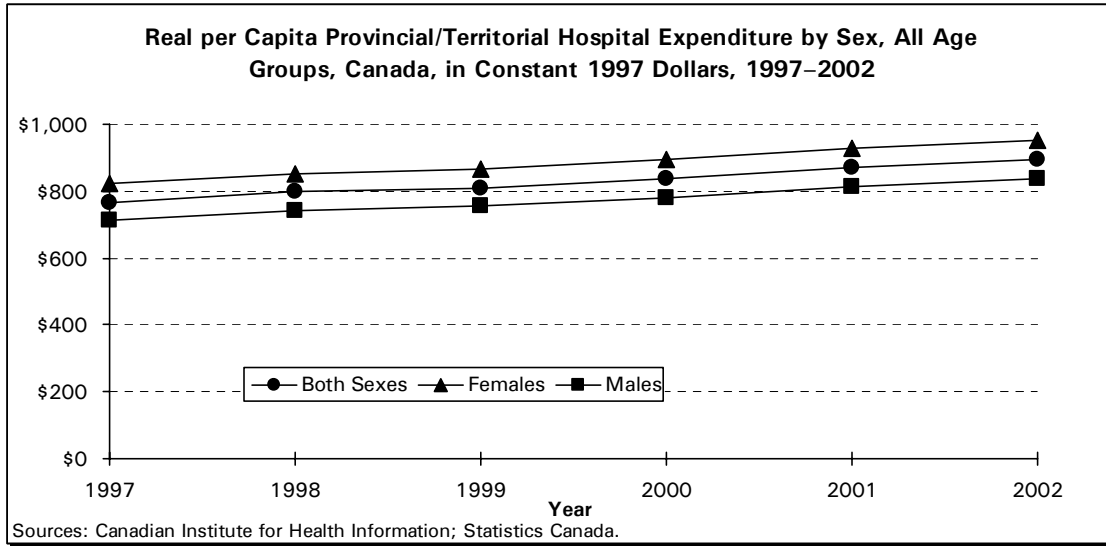
The remaining categories (*public health, administration* and *other health spending*) were also estimated using the general provincial and territorial populations by age and sex based on the following rationale: public health and health research benefit the entire population and it would be difficult 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, along with claim processing costs. The convention of allocating ambulance expenditures by population distribution is not believed to result in significant error of the total provincial expenditure distribution, due to its small share of the other health care spending category.

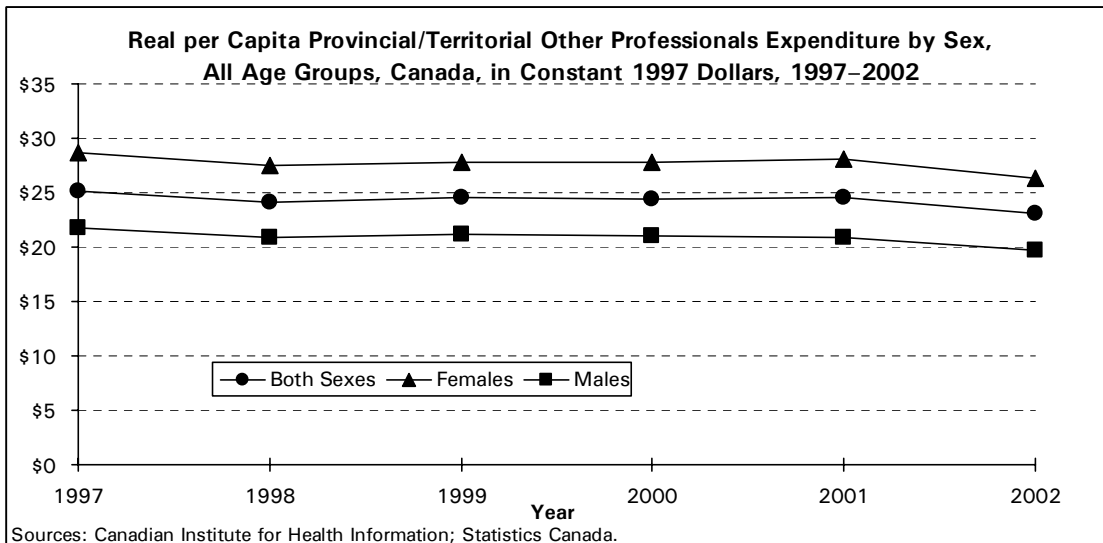
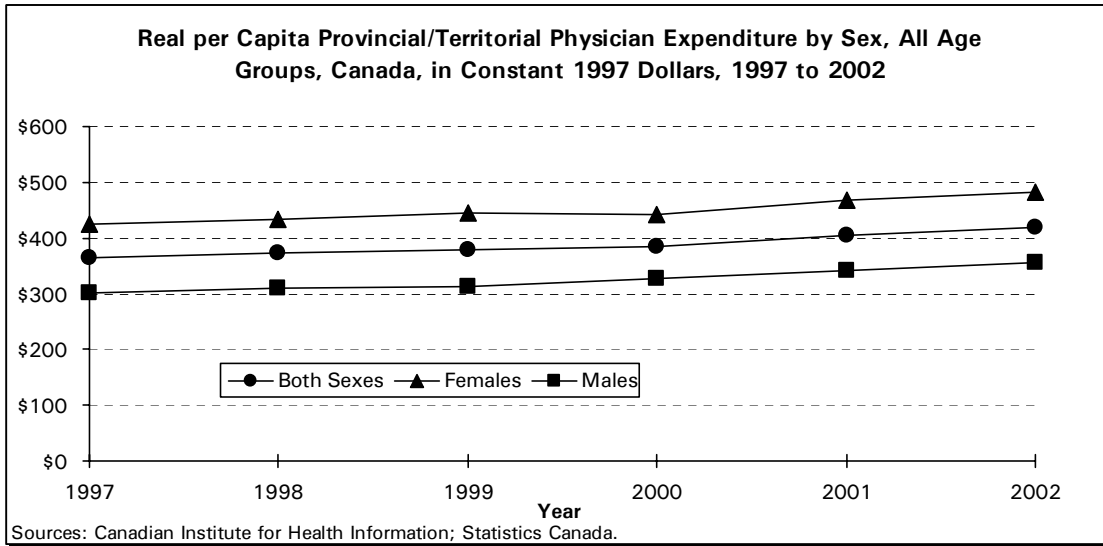


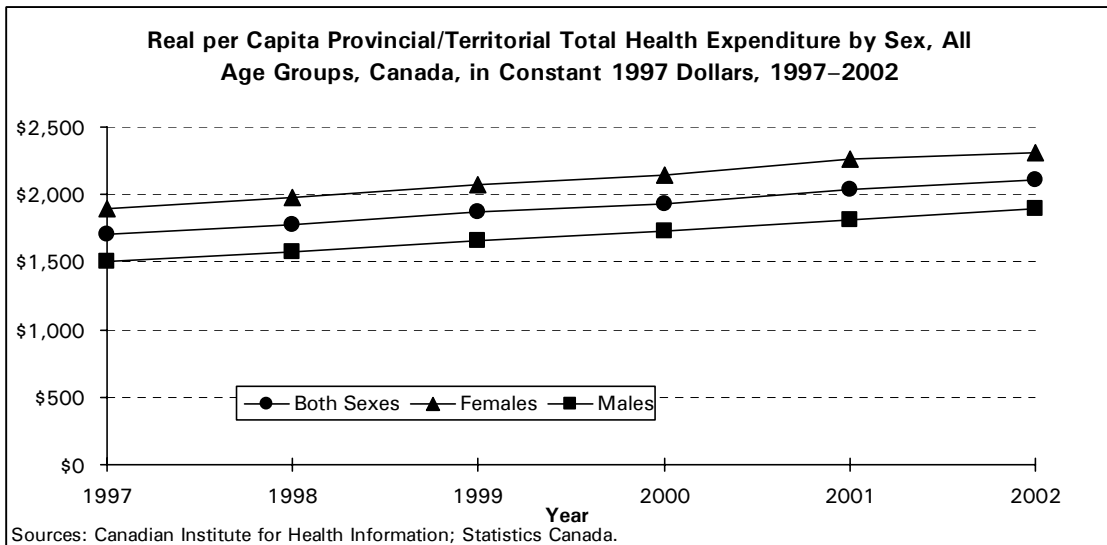
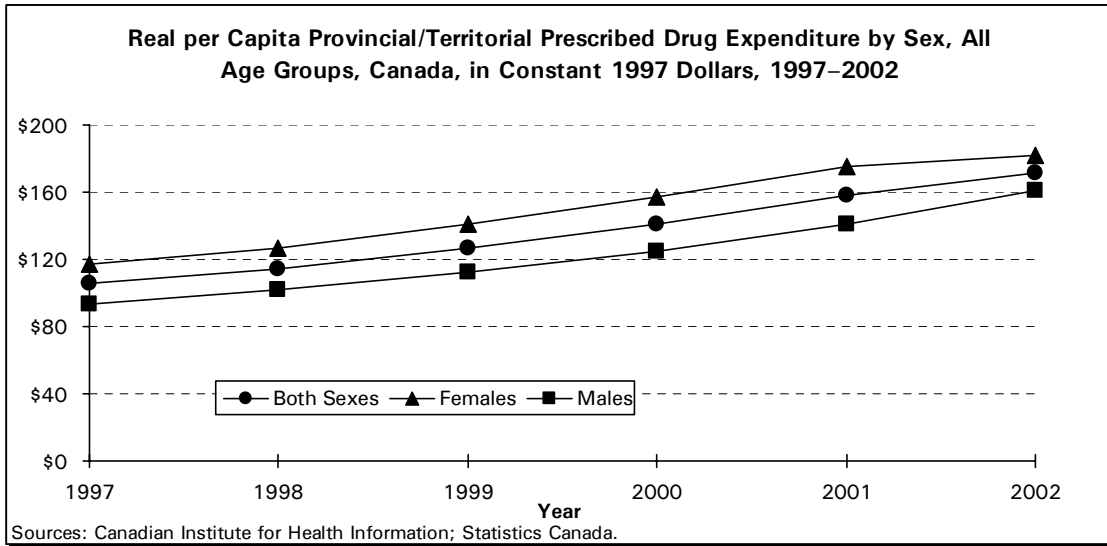
**Appendix D:**  
**Real Per Capita Provincial/Territorial Health**  
**Expenditure by Sex, by Major Category,**  
**All Age Groups, Canada, in**  
**Constant 1997 Dollars, 1997 to 2002**



## Appendix D: Real Per Capita Provincial and Territorial Health Expenditure by Sex, by Major Category, All Age Groups, Canada, in Constant 1997 Dollars, 1997 to 2002







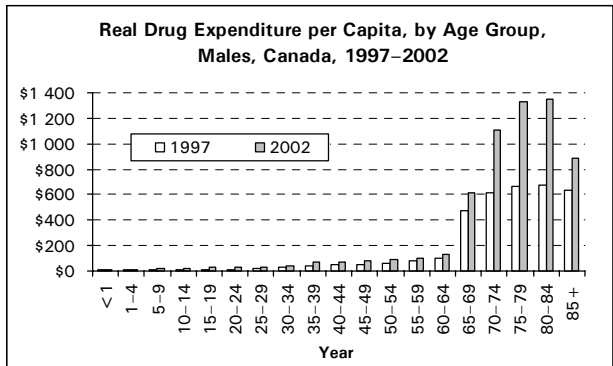
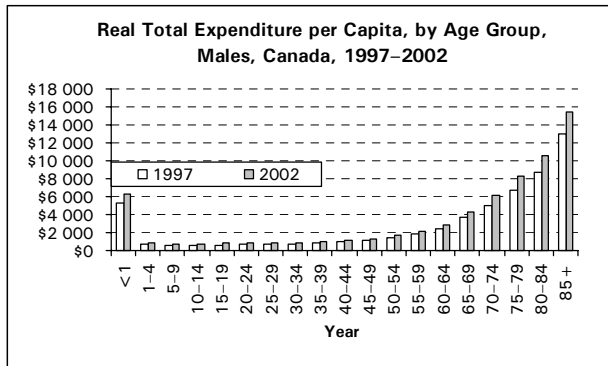
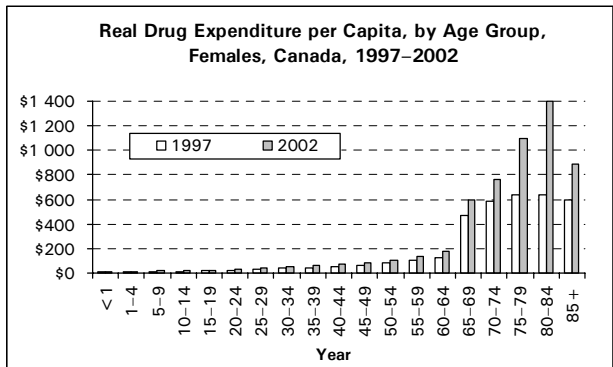
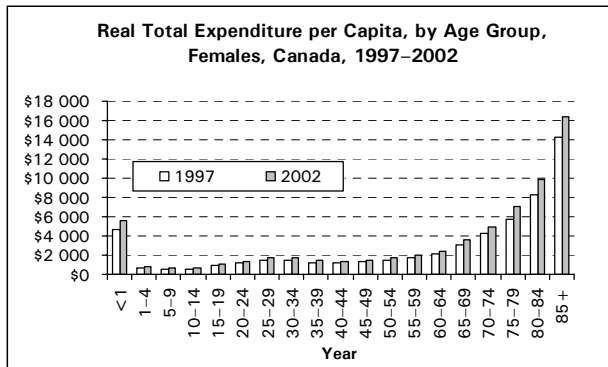
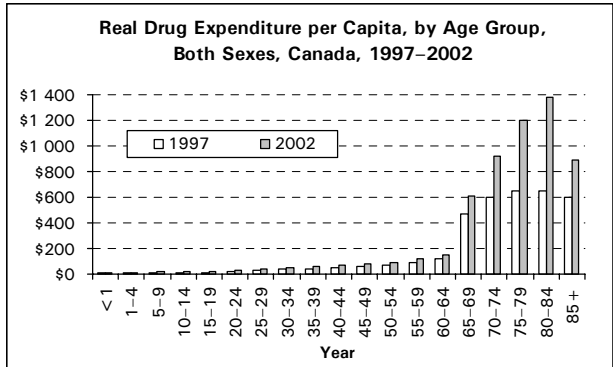
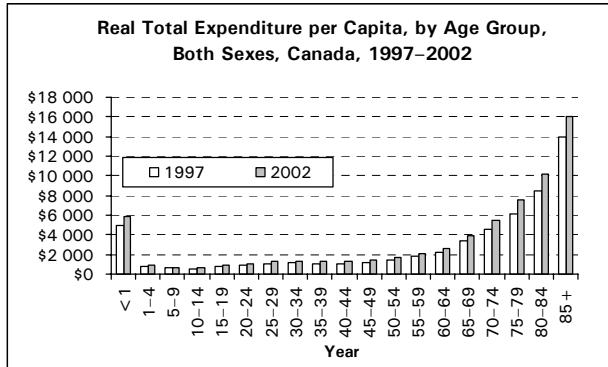




**Appendix E:**  
**Real Per Capita Provincial and Territorial**  
**Health Expenditure by Age Group and Sex,**  
**by Major Category, Canada,**  
**Constant 1997 Dollars, 1997 and 2002**

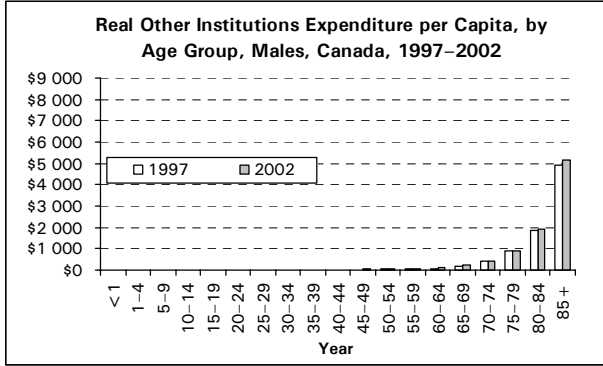
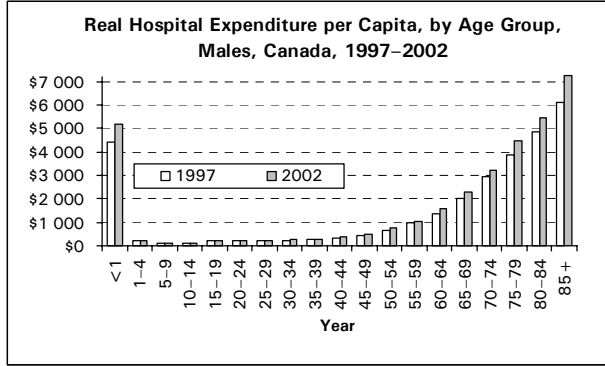
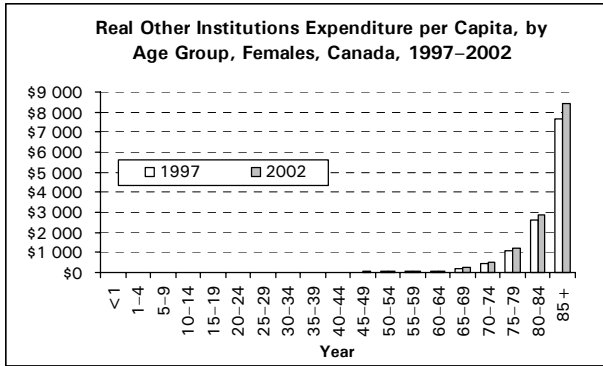
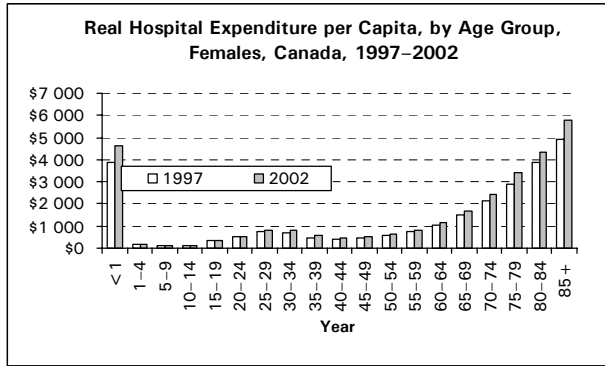
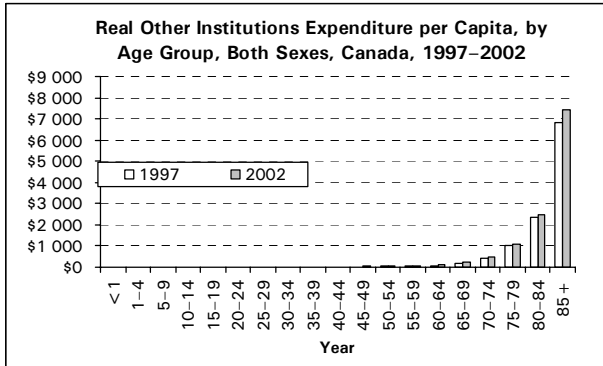
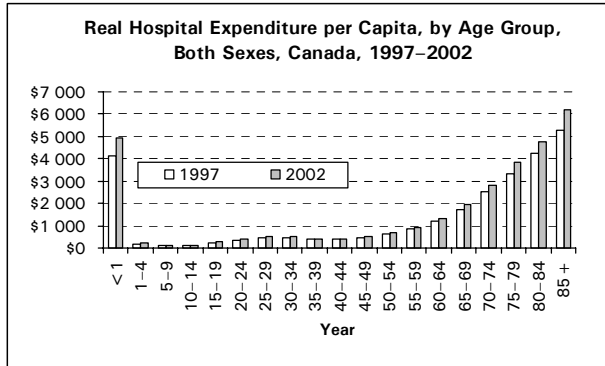


# Appendix E: Real Per Capita Provincial and Territorial Health Expenditure by Age and Sex, by Major Category, Canada, in Constant 1997 Dollars, 1997 and 2002



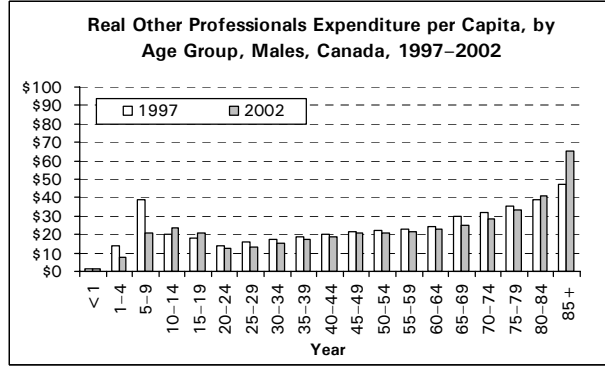
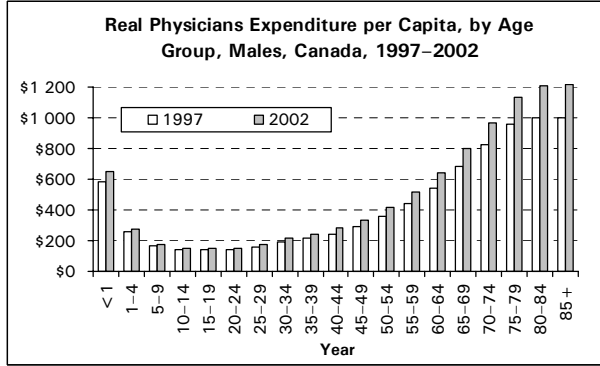
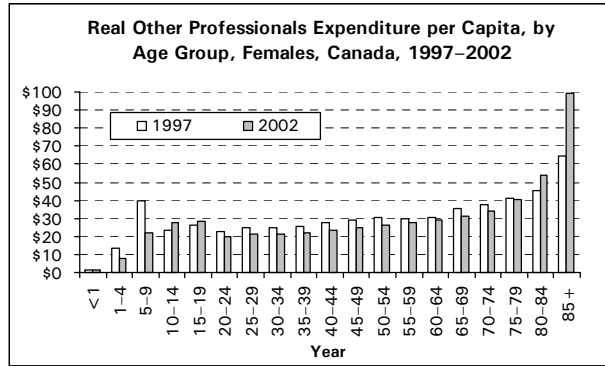
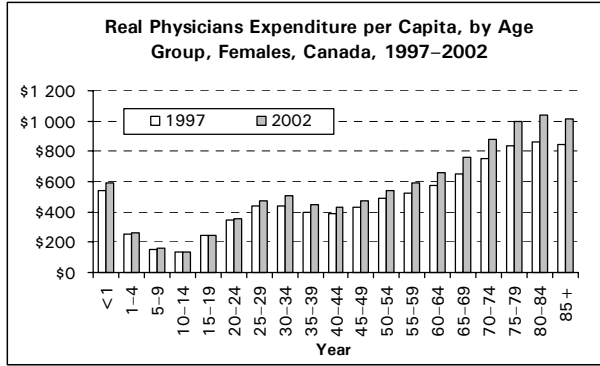
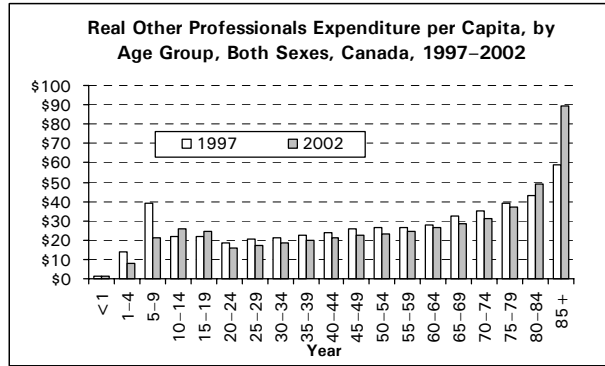
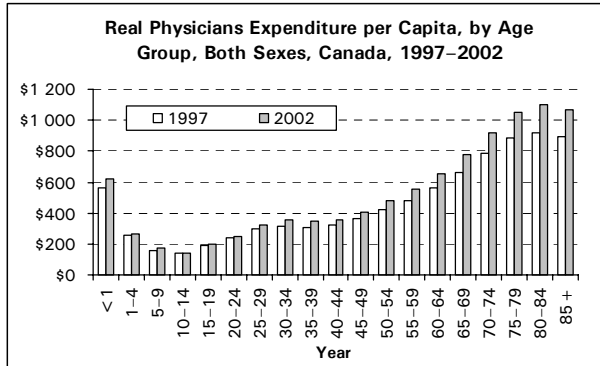
Sources: Canadian Institute for Health Information; Statistics Canada.

Appendix E: Real Per Capita Provincial and Territorial Health Expenditure by Age Group and Sex, by Major Category, Canada, Constant 1997 Dollars, 1997 and 2002



Sources: Canadian Institute for Health Information; Statistics Canada.

*Appendix E: Real Per Capita Provincial and Territorial Health Expenditure by Age Group and Sex, by Major Category, Canada, Constant 1997 Dollars, 1997 and 2002*



Sources: Canadian Institute for Health Information; Statistics Canada.

