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E-BRIEF

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HEALTH POLICY

Managing Healthcare for an Aging Population: New Brunswick's $78 Billion Question

by
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"New Brunswickers have been clear about their priorities: they want quality, affordable health care and services for our seniors." (*2012/13 New Brunswick Budget*, p. 14).

The reference to quality, affordable healthcare for seniors in the province's 2012/13 Budget highlights a tension that will afflict New Brunswick – and all Canadian provinces – well into the future. The fiscal impact of demographic change – in particular, whether providing publicly funded healthcare to an aging population will financially stress Canadian governments – has prompted years of debate.

One camp, developing a theme that the pressures are a glacier rather than an avalanche, has emphasized that aging itself adds no more than 1 percentage point to annual increases in health costs, and argued that it creates no urgency around reforms to treatment or financing (Barer et al. 1995; Evans et al. 2001). If taxes can rise and curbing provider compensation can restrain costs, the system is, in a familiar phrase, as sustainable as Canadians want it to be.

The other camp has emphasized that 1 percentage point annually is large when it compounds over many years – and, moreover, that aging will slow the growth of the tax base, potentially compromising other major government programs, manageable tax rates, and debt control (Robson 2001, 2007, 2010; Drummond and Burleton 2010; Dodge and Dion 2011; and Emery et al.

This E-Brief is part of a series profiling the fiscal challenge of aging and publicly funded healthcare in each province. We gratefully acknowledge the support of Alexandre Laurin in calculating program costs, and thank Don Drummond, Herb Emery, Livio Di Matteo, Seamus Hogan, Al O'Brien, Paul Kershaw, Stuart Langdon, Mel McMillan, Kevin Milligan, John Richards, an anonymous reviewer, our colleagues at the C.D. Howe Institute, and the members of the C.D. Howe Institute's Fiscal and Tax Competitiveness Council and Health Policy Council for comments on earlier drafts. We are responsible for any errors and the conclusions.

2012). Glaciers may move slowly, but they transform a landscape: this view tends to see the current system as unsustainable, in the sense that avoiding a painful collision between key fiscal priorities requires fundamental changes to healthcare financing and delivery.

While the debate has raged, publicly funded healthcare in New Brunswick has risen from 8.1 percent of provincial GDP in 1991 to about 9.8 percent in 2012. At the same time, it has risen from 30 percent of the provincial government's program spending in 1991 to about 41 percent in 2012, and its share of provincial own-source revenue – that is, revenues New Brunswick raises itself rather than funds transferred from Ottawa – has risen from 47 percent to about 61 percent.

Whatever the precise impact of aging and its interactions with changes in treatment, publicly funded healthcare's claim on provincial resources has increased. The New Brunswick 2012/13 budget also highlighted the ongoing effort to reduce the rate of growth of health spending. How might an aging population complicate that task in the future?

Mapping Today's Spending onto Tomorrow's Population

Our projections of future healthcare spending in New Brunswick use a well-known, straightforward approach. We project New Brunswick's population using the following middle-of-the-road assumptions: a fertility rate stable at its 2010 level; longevity rising in line with Statistics Canada's "medium" improvement scenario; net inter-provincial out-migration falling to zero over 10 years, and international in-migration continuing at its 1997-to-2011 average.

We then multiply the potential workforce, which we define as New Brunswickers aged 18 to 64, by an index of output per potential worker – which grows at the rate recorded by the equivalent national measure from 1997 to 2011: 1.2 percent annually. This provides our model with projections of New Brunswick's real GDP. Nominal provincial GDP is real GDP times the same 2 percent inflation rate we assume will prevail nationally.

Turning to the cost of demographically sensitive government programs, we project provincial spending on healthcare for 20 age-groups of each sex across six types of spending. Per-person expenditures for each of these groups grow according to a measure of volume of services delivered and a cost index. The volume measure – an index of service intensity – represents spending on all services provided to a person by the publicly funded healthcare system, adjusted to remove the effects of inflation. Our base figures for these per-person numbers are the Canadian Institute of Health Information (CIHI) figures for 2010, pro-rated to match recent actual totals.[1] Looking forward, we assume that service intensity per person rises at the same rate as real output per potential worker – 1.2 percent annually (see Box 1). We also assume that costs rise at the pace recorded by the government consumption price index nationwide from 1997 to 2011 – 2.4 percent annually.[2]

1 For our projections, we use the actual CIHI age and sex spending by health category for 2010, and prorate these amounts to correspond with the actual and projected health spending results using the most recent public accounts and budget documents, for 2011 and 2012. This estimation method yields a lower growth of spending for 2011 than the CIHI estimates, and larger growth in 2012. We estimate total health spending in New Brunswick in 2012, to be $5 million less than the CIHI figure.

2 During this period, the Bank of Canada targeted 2 percent inflation, and achieved an annual average increase in the consumer price index of exactly 2 percent. The overall price index for government consumption rose 2.4 percent annually over the same period. We assume the same margin will prevail in the future.

Box 1: Projecting Other Demographically Sensitive Program Costs

We use similar projection methods – multiplying relevant populations by program-specific indexes of service or transfer intensity – for all the programs we examine.*

We assume that service intensity – the volume of services delivered per person in healthcare and education – rises at the same rate that output per working age person in the economy as a whole does. This assumption is not entirely arbitrary: absent good quantitative measures of quality of output, measures of activity in unpriced services such as health and education tend to be driven by inputs, and these are labour-intensive activitiesservices in which wages – which tend to rise with economy-wide productivity – are a key input. Historically, service intensity has grown at annual rates above the 1.2 percent we assume, and faster than productivity growth. We prefer to link them in our main projection in order to ensure that trends upward or downward in the shares of health and education spending in GDP are not a function of different assumptions about service intensity on the one hand, and productivity growth on the other, but rather products of demographic change and the tendency for cost inflation in government consumption to outpace cost inflation elsewhere – an assumption that is explicit in our projections.

Our index of transfer intensity for seniors' benefits is derived from the Office of the Chief Actuary's projections of spending on Old Age Security, the Guaranteed Income Supplement, and Allowances per person age 65 and up. Because many of those programs are geared to income, and the Chief Actuary's model assumes that incomes rise over time, this index tends to fall somewhat in real terms. To the extent that New Brunswick's benefits for seniors differ from federal ones, this projection will not provide an accurate picture of the provincial outlook – but seniors' benefits are small enough in New Brunswick that this is not a serious problem. Our index of transfer intensity for child and family benefits does not change over time: we assume that the real value of transfers per person in the relevant age group is constant.

Further notes on the projections for programs other than health:

Education: Base-year provincial/local spending on elementary and secondary education is calculated using data from Statistics Canada's Summary of Public School Indicators for the Provinces and Territories, 2005/06 to 2009/10.). Base-year spending on postsecondary education comes from Statistics Canada (CANSIM, table 385-0001). Provincial populations aged 4 to 17 and 18 to 24 drive provincial spending on elementary and secondary students respectively. We multiply these populations by our indexes of service intensity. The population under 17 drives the federal Canada Education Saving Grant, while the population aged 18 to 24 and service intensity drive federal grants to postsecondary students. We multiply these by an unchanging index of transfer intensity.

Elderly benefits: Base-year federal spending is from the public accounts; base-year provincial spending is from Statistics Canada's Social Policy Simulation Database and Model (SPSD/M), Release 20.0 (responsibility for use and interpretation rests with the authors). As just noted, provincial payments assume the same time-path of transfer intensity for their elderly populations.

Child/family benefits: Spending on the federal Universal Child Care Benefit varies with the national population of children to age 5; spending on other child-related benefits varies with relevant populations up to age 17. We assume unchanging indexes of transfer intensity. Federal family benefits delivered through the tax system, while indexed to inflation, are income-tested, so real income growth erodes their real value. SPSD/M simulations suggest that in the scenarios modeled here, these offsetting characteristics leave average nominal spending per child unchanged – an assumption that has also been made for (generally much smaller) provincial programs.

* For more background information on the methodology used and the terminology see Robson (2002) and Drummond and Burleton (2010).

Because demography affects other programs, we use similar methods – indexes of service intensity in the case of education, and indexes of transfers for elderly and child/family benefits – multiplied by relevant populations and price indexes to project spending on them also (Box 1 spells out our approaches for health and these other programs in more detail). We can thus see whether these programs offset, or exacerbate, any fiscal challenge healthcare presents to New Brunswick.

New Brunswick's Outlook: Trends and Implicit Liability

Our projections show the claim of New Brunswick's public healthcare spending on provincial GDP rising from 9.8 percent this year to 17.2 percent in 2035 and to 22.7 percent in 2062. Taking account of other demographically sensitive programs does not change the message of fiscal stress. New Brunswick spends very little on family programs, so the relative decline in its young population will not reduce spending by much. Seniors' benefits will grow slightly, although they too are small. In education, rising service intensity more than offsets the declining number of students. As a result, the share of all these programs in GDP rises from 16.3 to 30.4 percent over the period (see Figure 1). For New Brunswick to meet these demands from its own revenue sources would require it to more than double the provincial tax bite from New Brunswickers' incomes.

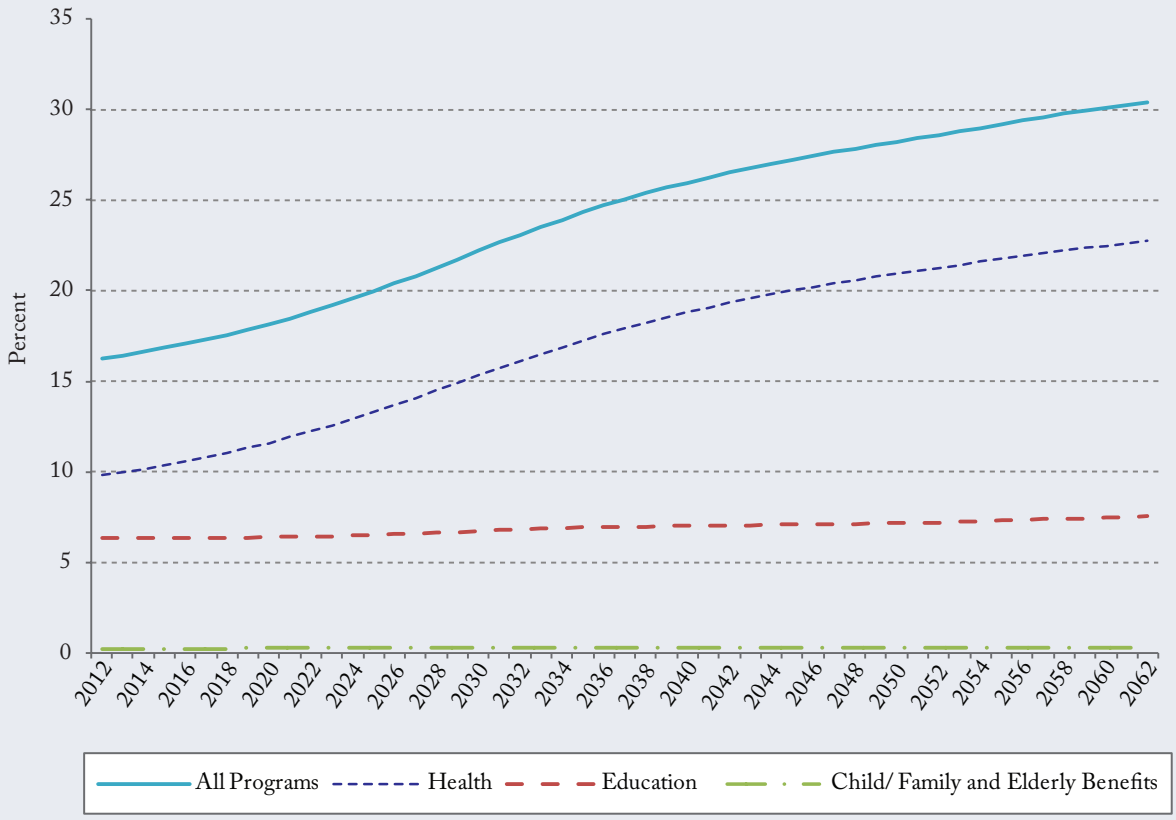
Another perspective on the fiscal pressure of rising healthcare costs is intergenerational: the transfer implicit in a "pay-as-you-go" approach when a program's costs are not stable. The 2012 provincial budget emphasized maintaining services, but did not promise higher tax rates – and in that, it was consistent with other messages from the New Brunswick government. These political understandings create an implicit liability on the government's balance sheet, because meeting the healthcare commitment will require the government to tax a higher share of provincial income in the future.[3]

One way to quantify this liability is to calculate the present value of changes in these programs' claims on GDP over the next half-century, which is roughly the average life expectancy of the average New Brunswicker. Discounting the cumulative increase in the province's average tax take from its current level at the yield on government long-term bonds, the province's implicit liability amounts to $84 billion, nearly all of which ($78 billion) relates to healthcare (see Table 1).[4] In other words, to cover the additional cost of these programs,

3 The parallel with explicit liabilities is straightforward: if New Brunswick decided to cover the higher program costs by borrowing rather than raising its aggregate tax rate, the implicit liability would, over time, become an explicit liability in the form of higher public debt.

4 As we explain in Box 1, the labour-intensiveness of healthcare (and education) services provides some justification for linking service intensity to economy-wide productivity. The assumption that both grow together is clearly critical to our results. Should New Brunswick manage to constrain growth in service intensity to 0.5 percentage points less than growth in productivity – 0.7 percent annually, rather than the 1.2 percent we assume in our projections – demographically sensitive spending would be 23.4 percent of GDP in 2062 and the unfunded liability today would be $50 billion. Historically, service intensity has tended to outpace productivity: if New Brunswick let it grow 0.5 percentage points faster – 1.7 percent annually – demographically sensitive spending would be 38.3 percent of GDP in 2062 and the unfunded liability would be $119 billion.

Figure 1: New Brunswick's Demographically Sensitive Programs as a Share of GDP, 2012-2062



Source: Authors' calculations as described in text.

the province would need about $80 billion in assets yielding a return like that on the bonds of Canadian provincial governments. This figure is about double provincial GDP: some $112,000 per New Brunswicker.[5]

Policy Pressures and Responses

The debate over aging's impact on healthcare rages intensely partly because, implicitly and often explicitly, the two camps differ over the necessary size and scope of changes to healthcare funding and delivery. Scanning our results for New Brunswick and other provinces in Table 1 suggests that pressure for change will exist across

5 This exceeds the $61 billion calculated in Robson (2010) mainly because of the lower discount rate used in this study. We use the long-term Ontario bond for these calculations because a deep, liquid market makes yields readily available, and for the sake of using the same discount rate for all Canada's governments. Using federal government bond yields, which are lower than Ontario's, would produce larger liability figures; using New Brunswick-specific yields would produce smaller ones.

Table 1: New Brunswick's Demographically Sensitive Programs, Implicit Liabilities in a National Context

	Health	Education	Elderly Benefits	Child/ Family Benefits	All Programs	All Programs Relative to GDP (2012)	All Programs Per Person
	$ Billions					*Percent*	*$*
BC	415.2	6.4	0.4	(0.1)	421.9	192	91,474
AB	615.4	65.0	13.6	(0.8)	693.2	227	180,332
SK	82.0	15.3	0.3	-	97.6	131	91,897
MB	100.8	15.4	0.1	(0.1)	116.3	197	92,493
ON	1,398.3	89.8	2.4	(6.3)	1,484.2	223	109,920
QC	767.7	79.0	-	(17.3)	829.4	242	103,344
NB	**78.2**	**5.5**	**0.4**	**(0.1)**	**84.0**	**266**	**111,745**
NS	99.1	2.4	0.2	-	101.7	263	107,713
PE	14.0	0.6	-	-	14.5	269	99,244
NL	75.3	4.5	0.9	(0.1)	80.6	240	158,905
YK	9.0	0.6	-	-	9.5	369	263,744
NT	12.5	1.4	-	-	13.9	278	321,187
NU	13.8	1.6	-	-	15.4	801	457,690
All Provinces and Territories	3,681.3	287.3	18.3	(24.6)	3,962.3	222	113,935
Federal		(13.5)	424.7	(25.0)	386.2	22	11,105
CANADA	3,681.3	273.8	443.0	(49.6)	4,348.5	244	125,040

Source: Authors' calculations as described in text.

Canada. While they are likely to be particularly intense in New Brunswick, where the ratio of implicit liability to GDP is relatively high, the stresses elsewhere make one response – higher transfers through the federal government – unlikely.

We therefore believe that these fiscal pressures will have repercussions in New Brunswick, and think that proactively addressing them will improve the chances of achieving other fiscal goals while preserving and enhancing the quality of New Brunswick's healthcare.

The Case for Prefunding

One way to mitigate the impact of rising costs in some healthcare services would be to follow the lead of the late-1990s reforms to the Canada and Quebec Pension Plans that converted them from pay-as-you-go to plans in which a portion of premiums collected today prefunds the benefits of those same participants in the future. Some drug programs, and potentially long-term care as well, are like social security programs that many people will need, and can prepare for by building a provident fund during their younger years.

New Brunswick could selectively convert pay-as-you-go programs so that the babyboomers, rather than their inadequately numerous children and grandchildren, pay some of the higher costs that loom (Robson 2002; Stabile and Greenblatt 2010). Prefunding does not make sense for all the programs that threaten cost increases, but can spread more fairly over time the tax increases necessary for some health services that, like pensions, are geared to age.[6]

Reducing Healthcare Spending's Sensitivity to Aging

Unlike pensions, which are promises to pay dollars, healthcare promises services, the cost and quality of which are not fixed. The camp that says aging by itself is not a major problem has tended to emphasize that some factors that gear healthcare spending so strongly to age, such as high rates of hospitalization or use of certain drugs, may change over time (Evans et al. 2001), which could mitigate the demographic effects in our model.

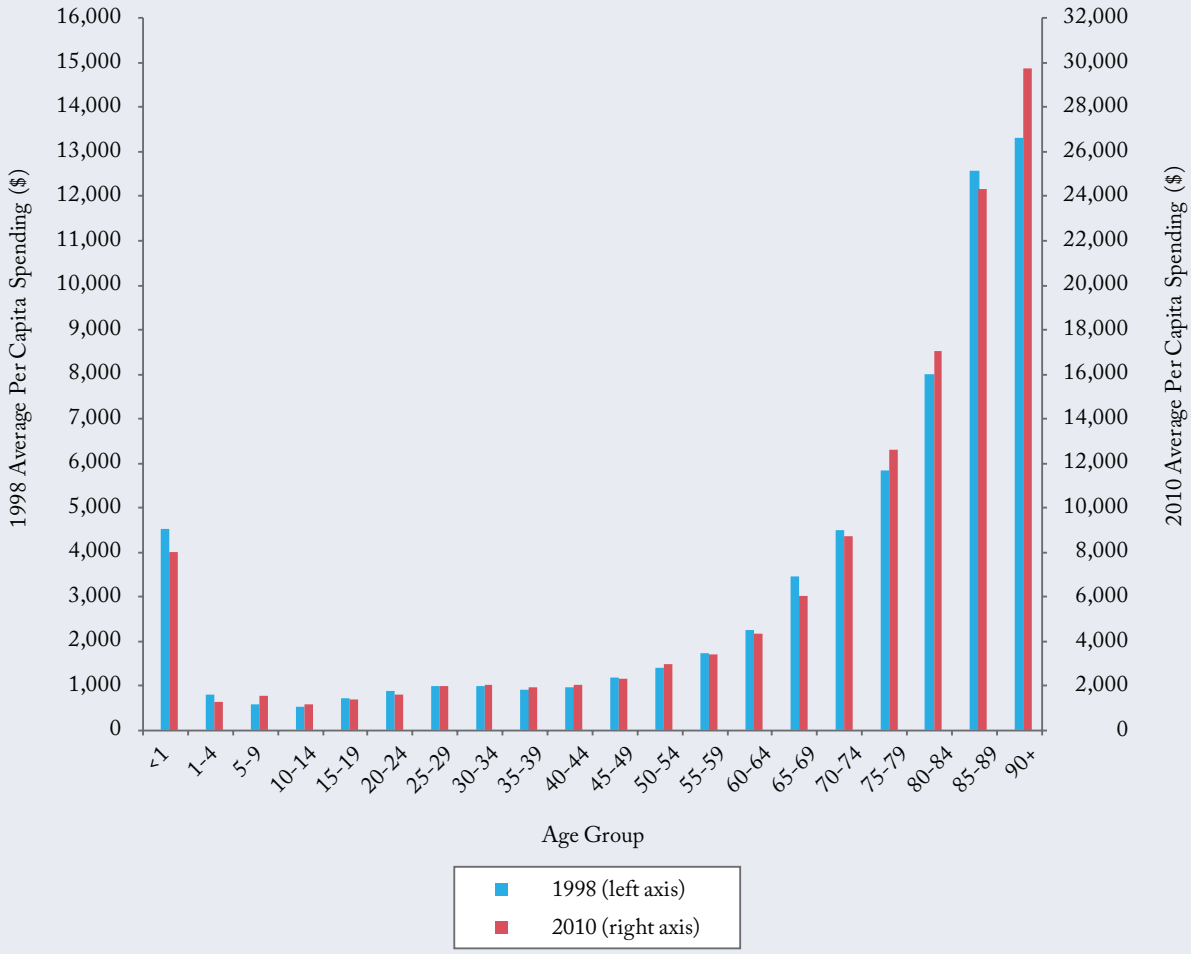
While such changes are possible in the future, they do not appear to have had much impact on the age-profile of provincial healthcare spending in New Brunswick since CIHI's first data in 1998. Comparing the 1998 numbers to their 2010 counterparts (see Figure 2) shows only small and largely offsetting variations by age-group. So the overall sensitivity of New Brunswick's healthcare spending to aging was about the same in 2010 as it was 13 years earlier: a 1998 projection of the impact of demography on New Brunswick's healthcare spending by 2010 would have been almost spot on. Changes to give an aging population more bang for the healthcare buck in New Brunswick are possible, but will require conscious effort.

Benchmarking Best Practices

To go into detail on areas where New Brunswickers might look for more efficiency in its healthcare budget would take several additional studies. We note, however, that opportunities, including opportunities to get more bang per healthcare buck for seniors particularly, exist in New Brunswick as they do elsewhere. For instance:

6 Busby and Robson (2010) explore some prefunding possibilities, and their mechanics, in more detail.

Figure 2: Average Per Capita Health Spending By Age Group, New Brunswick, 1998 and 2010



Note: The vertical axes show nominal dollars for transparency's sake: these are the actual dollar figures from CIHI. We could have used constant dollars from either – or, indeed, any – year, or index numbers, because the focus of this figure is the *relative* distribution of health spending by age in the two years. To facilitate comparison of the age-profiles of spending: we have set the vertical scales so roughly half the bars in each year are taller (or shorter) than their counterparts in the other.

Source: CIHI (2012) and authors' calculations.

- more coordinated team-based primary care models where patients can get comprehensive non-acute services from a group of practitioners such as doctors, nurses, dieticians, and physiotherapists operating as a unit;
- better use of information technology, particularly in coordinating patient continuing care;
- scope-of-practice changes that would allow less expensive specialties such as pharmacists and nurse practitioners to provide services currently, and unnecessarily, performed by more expensive physicians; and,
- better follow-up care for patients discharged from hospital to cut down on complications and readmissions.

Turning to various delivery vehicles, Canada's provinces exhibit large differences in spending in major categories that may yield useful insights for New Brunswick (see Table 2). New Brunswick spends less than most provinces on physicians and other health professionals. By contrast, New Brunswick spends much more on hospitals.

These differences are large: if New Brunswick brought its hospital costs in line with the national average, for example, it would spend some $330 million less annually. Perhaps New Brunswickers get appropriately greater value from their hospitals than other provinces do, but we do not know. More rigour in addressing that and related questions is clearly vital in the effort to limit the impact of less rewarding healthcare spending on other fiscal priorities.

Closing Comments

The challenge of quality, affordable healthcare for New Brunswick's seniors is not a small one. New Brunswick's implicit liability related to demographically sensitive spending is much larger than the provincial debt, and threatens a massive increase in the provincial government's draw on New Brunswickers' incomes. Selective prefunding and benchmarking against other provinces that get better bang for their bucks in some areas can help New Brunswick deliver high-quality healthcare in a sustainable fiscal framework for years to come.

Table 2: Real Per Person Health Spending, By Use of Funds, New Brunswick vs. Provinces, 2010

	Hospitals	Other Institutions	Physicians	Other Professionals	Drugs	Capital	Public Health	Admin	Other Health Spending	Total
	Per Capita (in 2012 $)									
BC	1,466	245	796	34	213	245	310	33	310	3,652
AB	2,109	403	905	57	323	311	285	60	202	4,655
SK	1,657	638	793	24	301	146	379	27	274	4,239
MB	1,799	595	783	24	250	167	271	45	329	4,264
ON	1,380	389	901	28	344	236	292	34	161	3,765
QC	1,392	531	653	24	316	220	122	59	150	3,468
NB	**1,987**	**515**	**763**	**9**	**266**	**118**	**154**	**53**	**266**	**4,130**
NS	1,789	624	767	13	344	157	143	98	170	4,105
PE	1,787	514	733	20	260	271	230	141	193	4,148
NL	2,352	763	810	16	276	296	171	63	202	4,948
CAN	1,545	436	815	30	310	233	248	47	198	3,861
	Real Per Capita Growth Rate 1991 to 2010 (percent)									
BC	1.1	-1.5	1.2	-3.2	2.5	4.4	6.2	-2.4	4.8	1.5
AB	1.2	2.7	2.1	-3.6	4.4	6.3	5.1	3.2	2.2	2.2
SK	1.4	2.0	3.0	-4.2	3.7	-1.4	5.9	-1.1	5.1	2.1
MB	1.5	2.3	3.6	-1.0	6.3	1.6	5.3	0.9	4.7	2.5
ON	0.7	2.6	1.4	-1.3	4.7	6.9	6.9	0.8	1.0	1.9
QC	0.2	5.5	2.0	-3.5	5.2	5.3	3.0	-0.5	4.5	1.9
NB	**2.0**	**3.3**	**3.1**	**-3.3**	**3.4**	**-0.7**	**4.6**	**1.8**	**6.5**	**2.6**
NS	1.5	6.8	4.1	-4.6	4.6	3.0	3.5	7.1	7.3	3.0
PE	1.5	2.1	3.5	-1.5	5.6	7.2	3.7	7.6	5.0	2.7
NL	3.0	5.2	4.4	-2.4	5.4	10.2	5.8	4.1	3.7	4.0
CAN	0.8	2.9	1.9	-2.5	4.5	5.2	5.8	0.4	3.2	2.0
Blue (with underline): among lowest third; Red (with double underline): among highest third										
NB Ranking Among Provinces (10 being the lowest; 1 being the highest)										
Per Capita Spending	3	6	8	10	7	10	8	6	4	6
Growth Rate	2	4	5	6	9	9	7	5	2	4

Notes: 2010 data are converted into 2012 dollars using the government current expenditure implicit price index. And because growth calculations are sensitive to the base year chosen, we took an average of the three years around 1991 and the two years prior to, and including, 2010 to smooth out the swings in the economy. "Other professionals" includes care primarily provided by dental and vision care professionals; "Other institutions" includes nursing homes and residential care facilities; "Public Health" includes expenditures for items such as food and drug safety, health inspections, health promotion activities, community mental health programs, public health nursing, the prevention of spreading disease and health promotion.
Source: CIHI (2012).

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