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HEALTH POLICY

Healthcare and an Aging Population: Managing Slow-Growing Revenues and Rising Health Spending in British Columbia

by

Colin Busby, William B.P. Robson and Aaron Jacobs

“Even with this emphasis on prevention, health care costs continue to increase. Budget 2014 invests an additional \$2.5 billion over three years. And to help keep health care services sustainable, we’re asking those who can afford it to pay a little more.” – British Columbia Budget Speech, 2014, p. 13.

For years, a debate has raged over the fiscal impact of demographic change – in particular, whether providing publicly funded healthcare to an aging population will financially stress Canadian governments. One camp, developing a theme that the pressures are a glacier rather than an avalanche, has emphasized that aging itself adds no more than one percentage point to annual increases in health costs. Therefore, it argues there is no urgency for reforms to healthcare treatment or financing (Barer et al. 1995, Evans et al. 2001). If taxes are allowed to rise and provider compensation can be curbed, so goes the argument, the system is as sustainable as Canadians want it to be.

The other camp has emphasized that a one-percentage-point annual increase is substantial, especially when it compounds over many years. Moreover, it is maintained that aging will slow the growth of the tax base, potentially compromising healthcare as well as other major government programs, tax rates and debt control (Robson 2001, 2007, 2010; Drummond and Burleton 2010; Dodge and Dion 2011; and Emery et al. 2012). While this camp might concede that glaciers move slowly, it would emphasize their formidable impact when they arrive. This group, therefore, tends

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to see the current system as unsustainable, maintaining that fundamental changes to the financing and delivery of healthcare are needed to avoid a painful collision among key fiscal priorities.

While the debate has raged, the cost of publicly funded healthcare in British Columbia has risen from 6.7 percent of provincial GDP in 1991 to about 7.6 percent in 2014. At the same time, it has risen over the same period from 35 percent of provincial program spending to about 42 percent.

As we discuss in this E-Brief, British Columbia has been almost uniquely successful among Canadian provinces in mitigating the impact of aging on its healthcare budget. Yet publicly funded healthcare's claim on provincial resources continues to rise. The above quotation from the 2014 Budget Speech highlights the importance of the sustainability challenge. How strong might these pressures be in the future?

Mapping Today's Spending onto Tomorrow's Population

We address that question for the next 50 years based on a wellknown, straightforward approach. We project British Columbia's population growth using the following middle-of-the-road assumptions: a fertility rate stable at the 2011 level; longevity rising in line with Statistics Canada's "medium" improvement scenario; net immigration from other provinces falling to zero over 10 years and net international immigration continuing at a rate equivalent to the 1991-to-2013 average.

We then multiply the potential workforce, which we define as BC residents age 18 to 64, by an index of output per potential worker. This index increases by 1.2 percent annually, the rate recorded by the equivalent national measure from 1991 to 2013. These calculations provide our model with real provincial gross domestic product (GDP) projections, which we convert to nominal dollars. (Nominal provincial GDP is real GDP times the same 2 percent-inflation rate we assume will prevail nationally.)

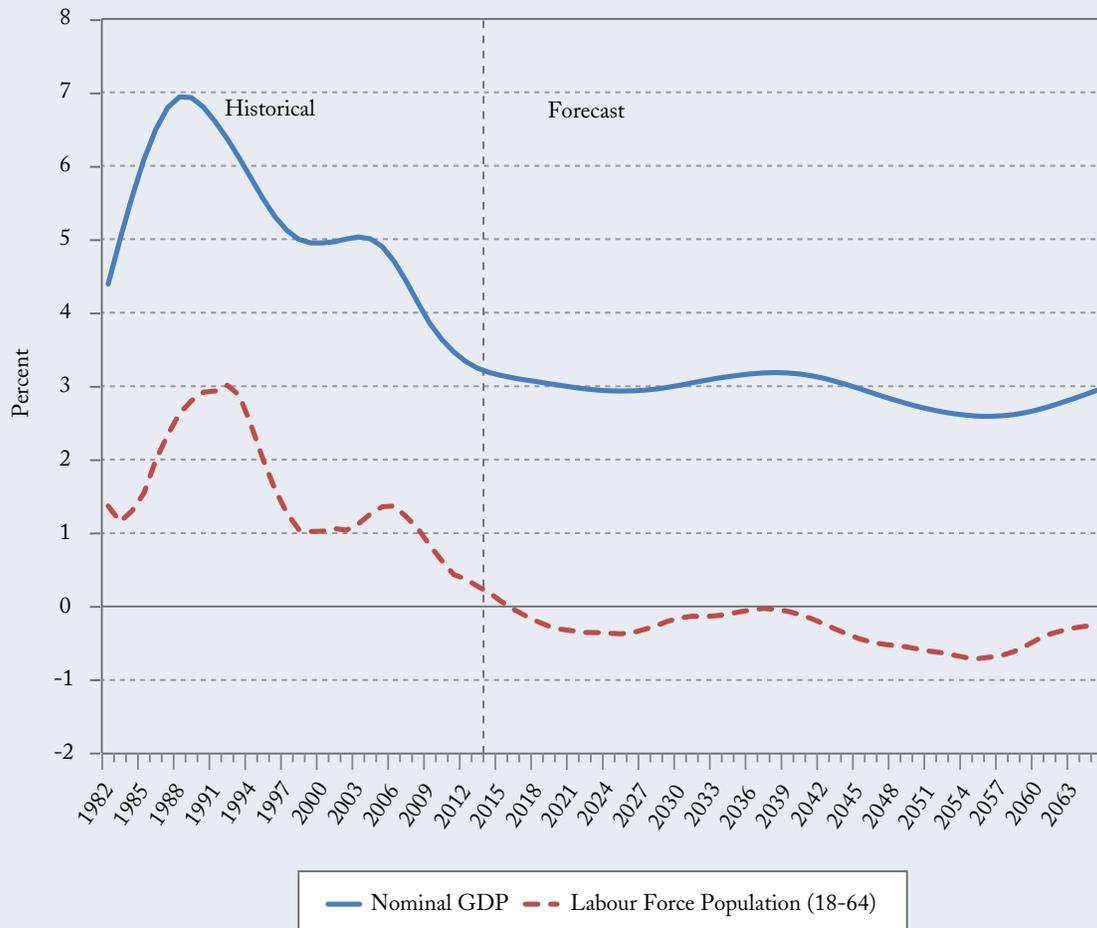
The impact of aging on future workforce growth and GDP often gets little attention in the healthcare spending debate. But they are set to grow much more slowly than they have over the past few decades (Figure 1). Hence, BC's tax base will grow more slowly than in prior years and further reduce the ability of British Columbia to accommodate growth in future healthcare costs.

Turning to the cost pressures on healthcare, we project provincial spending for men and women in 20 age groups defined by the Canadian Institute of Health Information (CIHI). Per-person expenditure for each of these groups grows 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 CIHI's 2012 figures, prorated to match recent actual totals.¹

Looking forward, we assume that service intensity per person will rise at the same rate as real output per potential worker – 1.2 percent annually. In terms of cost increases, the government consumption price index nationwide from 1991 to 2012 recorded annual growth at 2.5 percent annually – 0.5 of a percentage point above overall inflation.

1 For our projections, we use CIHI data for spending by age group from 2010-2012 to compute the three-year average share of the total spending for each group. We then use CIHI's 2013 and 2014 provincial spending forecasts and Statistics Canada's population data to compute per capita costs by age group, assuming that relative spending on each group will be similar.

Figure 1: Annual Growth in British Columbia's Labour Force and GDP, 1982-2064



Note: GDP and Labour Force Population data have been smoothed to reduce the effects of short-term fluctuations in the historical data.

Source: Authors' calculations as described in text.

The last few years have seen a decline in health-cost inflation, along with lower increases in overall health spending. We hesitate to project more recent moderate rates indefinitely, recalling the 1990s when a period of restraint was followed by resumed rapid growth. So we project healthcare cost inflation at 1.3 percent through 2020, followed by a slow return to the historical margin over economy-wide inflation.

Because demography also 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 future spending in these areas (Box 1 spells out our approaches for health and these other programs in more detail). In this way, we can see whether these programs offset, or exacerbate, any fiscal challenge presented by healthcare.

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 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 activities: 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 cost inflation in government consumption compared to inflation elsewhere.

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. 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 follow:

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 21.0 (responsibility for use and interpretation rests with the authors). As just noted, provincial payments assume the same time-path of service or transfer intensity for provincial 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 provide estimates for other provincial programs.

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

British Columbia's Outlook: Trends and Implicit Liability

Our projections show British Columbia's healthcare spending rising from 7.6 percent of provincial GDP this year to 11 percent in 2035 and to 15.7 percent in 2064. Taking account of other demographically sensitive programs does not change the prospect of fiscal stress. In British Columbia, spending on seniors' programs represents an implicit liability and spending on child/family benefits an implicit asset because of a projected decline in the proportion of the population that is young. However, spending on these programs is very small.

In education, service intensity creates upward financial pressure even as student numbers plateau. As a result, the GDP share of all these demographically sensitive programs rises from 13.1 percent to 22.2 percent over the 50-year period (see Figure 2). For British Columbia to meet these demands from its own revenue sources would require an increase of more than 70 percent in its income tax bite.

Most public discussion of healthcare and other programs emphasizes maintaining them – perhaps enhancing, but certainly not cutting – and does not contemplate higher taxes to pay for them. These political understandings create an implicit liability on the government's balance sheet, because meeting the commitment will require the government to tax a higher share of provincial income.²

One way to quantify this looming liability is to calculate the present value of changes in these programs' claims on GDP over the next half century. Discounting the cumulative increase in the province's average tax take from its current level by the yield on provincial long-term bonds, the province's implicit liability amounts to \$401 billion,³ nearly all of which (\$384 billion or 96 percent), relates to healthcare (see Table 1).⁴ In other words, to cover the additional 50-year cost of these programs, the province would need about \$400 billion in assets yielding income at the same rate as its long-term bonds. This figure is almost double provincial GDP, or about \$87,000 per British Columbian.

Policy Pressures and Responses

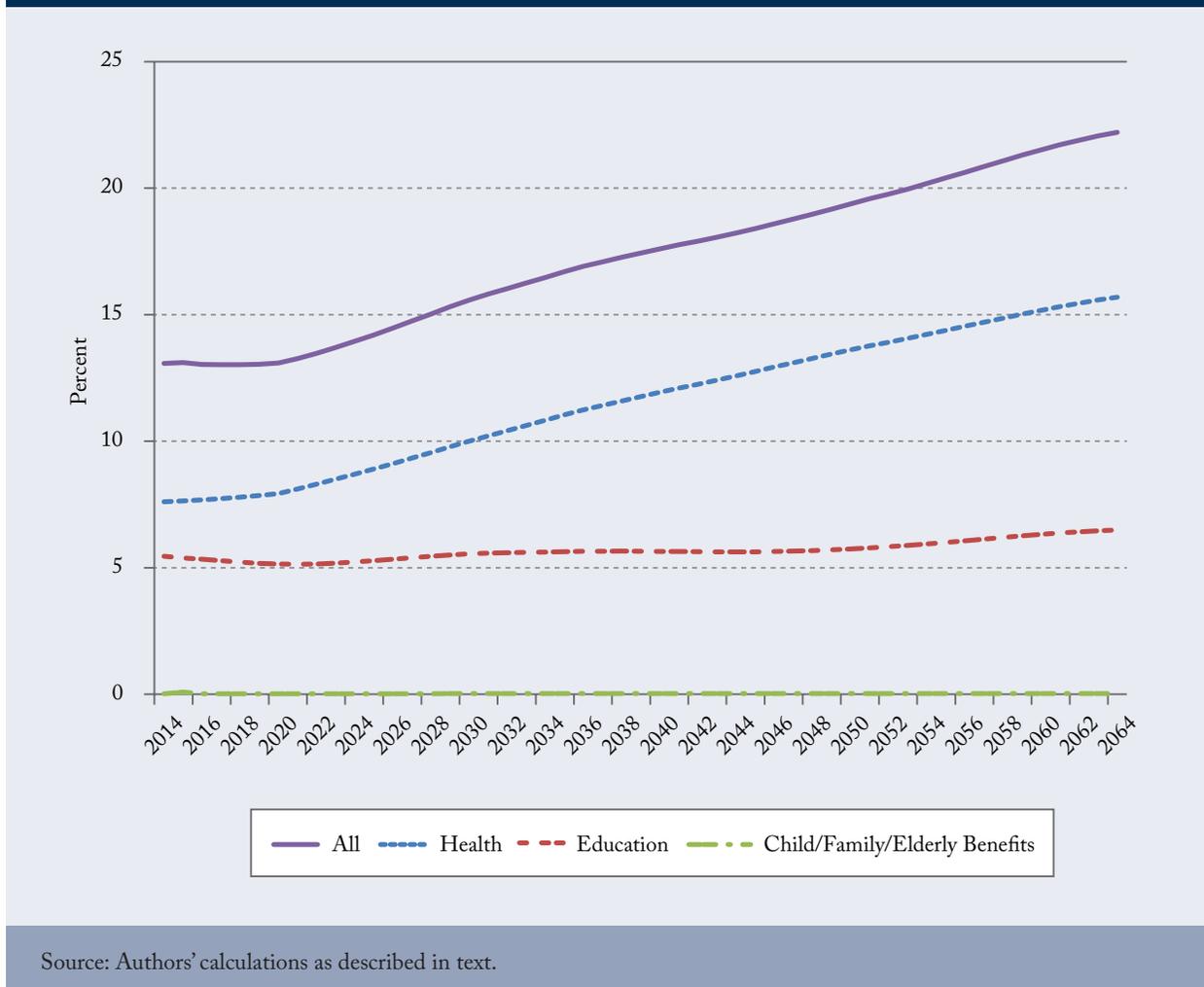
Such an enormous funding gap, and its implication of a massive increase in provincial taxation, strengthens the case for continuing changes to the BC healthcare system. What kinds of moves make sense?

2 The parallel with explicit liabilities is straightforward: if British Columbia decides to cover higher program costs by borrowing rather than raising its aggregate tax rate, the implicit liability would, over time, become higher public debt.

3 We use a nominal discount rate of 3.5 percent to discount future nominal costs.

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 British Columbia 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 13.3 percent of GDP in 2064 and the unfunded liability today would be \$323 billion. Historically, service intensity has tended to outpace productivity: if British Columbia let it grow 0.5 percentage points faster – 1.7 percent annually – demographically sensitive spending would be 22 percent of GDP in 2064 and the unfunded liability would be \$662 billion.

Figure 2: British Columbia's Demographically Sensitive Programs as a Share of GDP, 2014-2064



The False Hope of a Federal Bailout

A regular theme in discussions of fiscal pressures affecting Canada's provinces is the role the federal government could – and, especially when the conversation is with premiers and other provincial officials, should – play in helping them out.

This prescription is suspect in principle. The provinces and territories tax essentially the same revenue bases as Ottawa: personal incomes, corporate profits and consumption spending. Much of the money the federal government already transfers to the provinces simply reflects differences in the degree to which the two levels of government tax these bases – which are a matter of history and politics, not logic or economics. If the federal government increased its transfers further, the fiscal imbalance – the degree to which Ottawa is a tax-and-transfer machine supplying the provinces with revenues they could raise themselves to perform their constitutional functions – would simply get larger. British Columbians, like Canadians in other provinces, will be better able to hold their provincial government to account for the performance of publicly funded healthcare if the province is raising, and is seen to be raising, more of the necessary funds itself.

Table 1: British Columbia's Implicit Liabilities in a National Context

Demographically Sensitive Programs							
Region	Health	Education	Elderly Benefits	Child/ Family Benefits	All Programs	All Programs Relative to GDP (2014)	All Programs per Person
	\$ Billions					Percent	\$
BC	383.6	18.3	0.7	-1.2	401.4	171	87,029
AB	580.1	108.3	16.5	-0.6	704.3	204	171,999
SK	79.3	30.5	0.5	–	110.3	130	99,069
MB	90.6	27.4	0.0	0.0	118.0	189	92,775
ON	1,194.2	194.0	1.5	-6.4	1,383.3	195	101,265
QC	681.9	139.6	–	-14.7	806.8	218	98,373
NB	67.7	8.3	0.0	0.0	76.0	233	100,678
NS	89.1	9.3	–	0.0	98.4	247	104,814
PE	13.0	2.5	–	–	15.5	263	106,538
NL	65.1	7.4	0.0	0.9	73.4	201	140,209
YT	9.0	1.0	–	–	10.0	387	274,687
NWT	13.9	2.8	–	–	16.7	370	380,070
NU	13.9	3.1	–	–	17.0	681	464,111
Provincial	3,244.6	545.6	19.2	-22.0	3,787.4	197	107,200
Federal	0.0	-12.1	461.0	-21.1	427.8	22	12,100
Canada	3,281.4	540.4	480.2	-43.1	4,258.9	220	120,200

Source: Authors' calculations as described in text.

The lure of more federal funds is also open to a practical objection. Despite the premiers' complaints, the federal government's major continuing program transfers to the provinces – principally the Canada Health and Canada Social Transfer, and Equalization – have grown prodigiously over the past decade and a half. In dollar terms, they have more than tripled since the end of federal restraint in 1997/98, growing relative to the economy and even more when compared to other federal government programs. Indeed, Ottawa's cash transfers to British Columbia have more than quadrupled over that period.

A reasonable interpretation of what took place during this period would be that the provinces responded to increases in federal money mainly by spending more, rather than by undertaking reforms that would let them provide more bang for the buck in their services, including healthcare, over the long term.

In British Columbia's case, any hope of substantial increases in federal transfers is especially forlorn simply because the province is too big to bail. As a scan of our results across the country in Table 1 reveals, similar – often worse – pressures will afflict all jurisdictions. Since any increases in net federal transfers to British Columbia would have to come at the expense of other provinces, it is hard to see such increases being economically or politically attractive. The pressure of healthcare spending on other programs and taxes is a problem British Columbia should tackle on its own.

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, which converted them from pay-as-you-go to plans in which a portion of premiums collected from people today prefunds their future needs. Some programs, such as long-term care for the elderly, are like social security programs in that many people can prepare for predictable expenses by building a provident fund during their younger years.

Like other provinces, British Columbia could selectively convert pay-as-you-go programs so that the babyboomers, rather than their declining number of children and grandchildren, pay some of the higher costs that loom (Robson 2002; Stabile and Greenblatt 2010). Prefunding does not make sense for all programs with threatened cost increases, but can spread more fairly over time the needed tax increases for some health services that, like pensions, are related to age.⁵

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 make percapita healthcare spending so strongly associated with 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.

To the degree that healthcare spending is related to the end of life, the tendency of people to live longer, healthier lives could mean that future British Columbians will incur inevitable higher healthcare costs at a later age than today's, which would delay the demographic effects in our model.

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

Clearly, this is not a simple subject. As Felder (2013) points out, decisions to spend are at least partly driven by the life expectancy of the patient, so it is possible that a population that is living longer, healthier lives might encourage more spending on the “young elderly.” Given the difficulty of making firm judgments in this area, we are driven to look at what has actually happened to the age profile of provincial healthcare spending in British Columbia since CIHI’s first data in 1998. British Columbia provides the most striking example of a province that has changed the age profile of healthcare spending in recent years. A comparison of provincial expenditures per person by age in 1998 (the first year of CIHI’s data) to 2012 (see Figure 3) shows a decline in the relative costs of older age groups.

This change appears, in part, to be a consequence of per capita reductions in the public costs for nursing homes and residential facilities,⁶ as well as the 2001-2003 change from agebased to income-based eligibility for the BC Fair Pharmacare drug benefit program. As a result, unlike the case for most other provinces, a 1998 projection of the impact of demography on BC healthcare spending by 2012 would have overestimated the impact of aging. Our projections use the current age spending profile, and thus involve an assumption that this more recent pattern of lower relative spending on the elderly persists.

Accessible Reforms and Benchmarking Best Practices

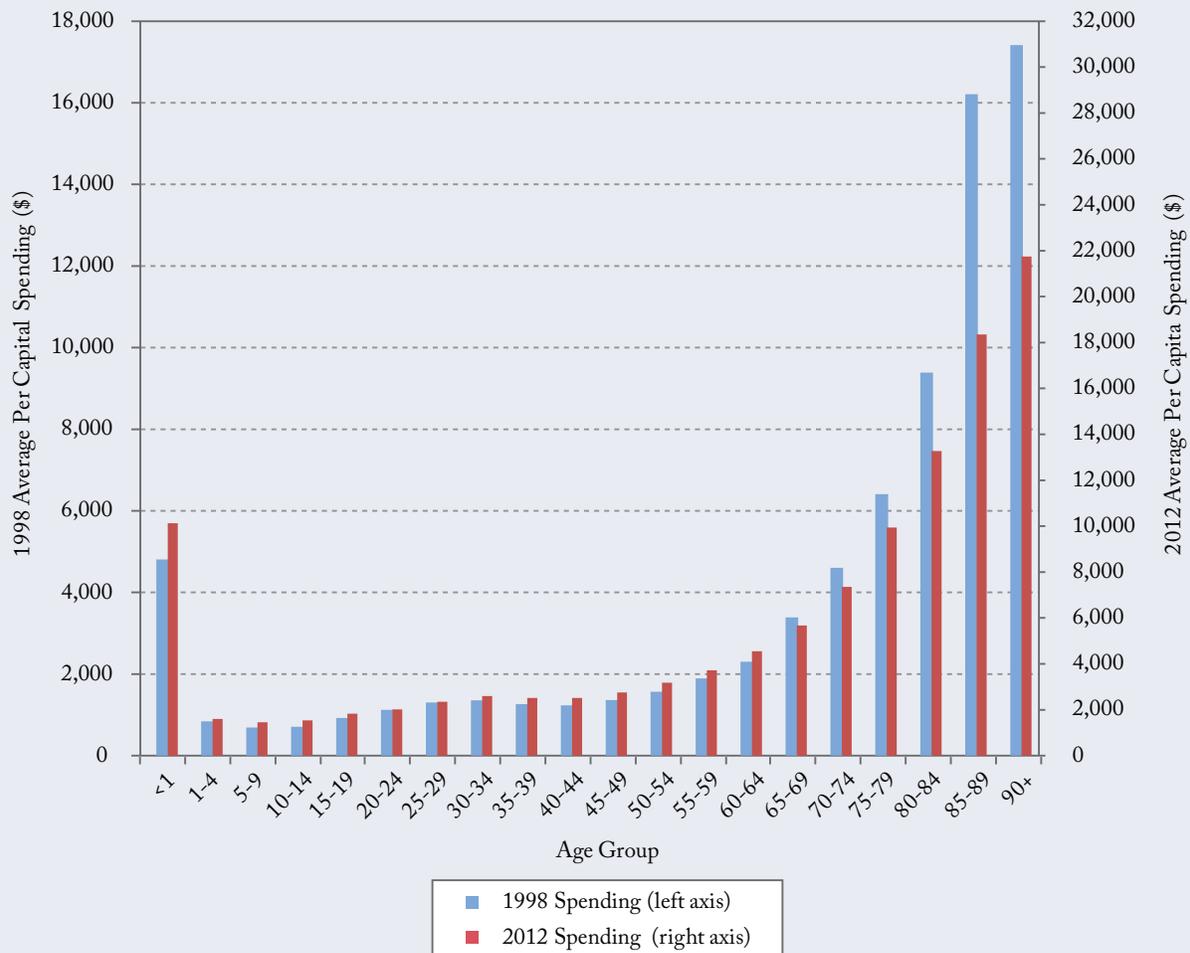
Where might British Columbia search for yet more bang per healthcare buck? As in other provinces, areas that experts have identified as promising include:

- scope-of-practice changes to get more services, but of similar quality, from such medical providers as pharmacists and nurse practitioners instead of from more expensive physicians;
- more coordinated team-based primary care, giving patients comprehensive nonacute services from an organized group of practitioners such as doctors, nurses, dieticians and physiotherapists;
- improvements in, and more use of, noninstitutional care for seniors with chronic conditions;
- establishment and expanded use of electronic health records;
- more use of clinical evidence to reduce variation in diagnostics and therapeutics use; and
- incentives for patients to take greater responsibility for maintaining their own health.

As well, Canada’s provinces exhibit large differences in spending in major categories that may yield further insights. British Columbia, for example, spends less per capita than any other province on drugs (see Table 2 and Table 3). It spends relatively more on “Public Health,” which includes expenditures for items such as food and drug safety, health inspections, health promotion activities, community mental health programs, etc. Perhaps British Columbia’s generally low perperson health costs reflect value from its investments in public health that other provinces can replicate. Conversely, British Columbia could emulate other provinces in its continuing efforts to make sure that dollars devoted to each area of healthcare are effectively deployed.

6 The Canadian Institute for Health Information classifies this spending as “other institutions,” primarily residential care facilities and homes for the aged (including nursing homes), but also includes facilities for persons with physical disabilities, developmental delays, psychiatric disabilities and alcohol and drug problems, as well as facilities for emotionally disturbed children.

Figure 3: Average Per Capita Health Spending by Age Group in British Columbia, 1998 and 2012



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 this 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 (2014).

Closing Comments

The current period of health spending restraint does not diminish the impact of demographic change on government budgets. Much like the short-lived period of health spending restraint in the mid-1990s, pressure for future increases in health spending should intensify. British Columbia has been relatively successful in making its healthcare spending less age sensitive over time, but even the current configuration threatens glaciersized

Table 2: Real Per Capita Health Spending, by Use of Funds, British Columbia vs. Other Provinces, 2012

Region	Hospitals	Other Institutions	Physicians	Other Professionals	Drugs	Capital	Public Health	Admin	Other Health Spending	Total
<i>Per Capita Spending 2012 (in 2014 dollars)</i>										
BC	1,745	218	901	39	227	184	379	46	285	4,024
AB	2,101	395	952	59	341	217	265	39	178	4,546
SK	1,706	618	874	32	308	226	425	47	305	4,541
MB	1,950	638	832	28	271	234	292	47	363	4,654
ON	1,457	405	953	32	343	169	264	32	171	3,826
QC	1,409	537	707	29	321	289	117	48	160	3,617
NB	1,993	549	813	9	277	267	174	41	274	4,399
NS	1,790	681	813	14	300	334	119	105	182	4,340
PE	1,907	551	694	18	270	566	232	114	214	4,566
NL	2,350	781	867	21	299	359	189	72	364	5,302
CAN	1,627	446	876	34	316	222	245	44	203	4,013
<i>10 = lowest</i>										
BC's Rank	7	10	3	2	10	9	2	7	4	8

Notes: Spending figures from 2012 have been inflated using CIHI's Government Expenditure Implicit Price Index to their 2014 values. "Other professionals" include care primarily provided by dental and vision care professionals; "Other institutions" include 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: Canadian Institute for Health Information, 2014.

increases in the province's aggregate tax take. As well, its implicit liability related to demographically sensitive programs is much larger than the provincial debt that receives much more attention. In the face of this challenge, selective prefunding and benchmarking against other provinces' best practices can help British Columbia deliver high-quality healthcare in a sustainable fiscal framework for years to come.

Table 3: Real Annual Per Capita Spending Growth Rate (1991-2013), British Columbia vs. Other Provinces

Region	Hospitals	Other Institutions	Physicians	Other Professionals	Drugs	Capital	Public Health	Admin	Other Health Spending	Total
<i>Real Annual Per Capita Spending Growth Rate (Percent)</i>										
BC	1.7	-2.1	1.3	-1.9	2.4	3.0	6.6	-1.7	4.3	1.7
AB	1.5	3.1	2.3	-3.5	4.1	2.8	2.7	0.4	0.9	1.9
SK	1.2	1.3	2.8	-3.5	2.6	-1.7	4.3	0.8	4.7	1.7
MB	1.2	2.0	3.3	-0.6	5.6	3.2	4.6	0.5	4.1	2.3
ON	0.6	2.3	1.4	-0.1	4.0	4.6	5.5	0.0	1.3	1.6
QC	1.0	1.3	2.7	-1.6	4.4	5.8	1.4	-1.3	1.6	1.8
NB	1.6	3.5	2.8	-2.8	2.7	-0.8	4.0	0.2	6.1	2.2
NS	0.8	6.3	3.5	-4.4	3.0	4.3	2.3	5.7	6.4	2.5
PE	2.1	2.5	3.0	-1.7	5.5	7.9	3.9	5.8	6.1	3.0
NL	2.3	3.7	4.1	0.6	4.7	10.5	4.9	2.8	7.4	3.5
CAN	1.1	1.6	2.0	-1.4	3.9	4.0	4.4	-0.3	2.5	1.8
<i>10 = lowest</i>										
BC's Rank	3	10	10	6	10	7	1	10	6	9

Notes: The growth rate is computed as a compound annual growth rate from three-year averages of expenditure around 1991 and 2013, where these expenditures have been inflated using CIHI's Government Expenditure Implicit Price Index. "Other professionals" include care primarily provided by dental and vision care professionals; "Other institutions" include 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: Canadian Institute for Health Information, 2014.

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Colin Busby is a Senior Policy Analyst at the C.D. Howe Institute.

William B.P. Robson is President and Chief Executive Officer of the C.D. Howe Institute.

Aaron Jacobs is a Research Intern at the C.D. Howe Institute.

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