



January 9, 2015

HEALTH POLICY

Managing the Cost of Healthcare for an Aging Population: Prince Edward Island's \$13 Billion Healthcare Squeeze

by

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"In the next year, we expect most of Government to hold expenditures at current levels. The two exceptions are Community Services and Seniors, and Health PEI, which will have increases of 4.6 and 2.9 percent, respectively." (2013 PEI Budget Address, p.5.)

The contrast between steady growth in healthcare spending and a general emphasis on restraint in Prince Edward Island's budget is symbolic of a huge, ongoing tension. There is fundamental disagreement over healthcare spending's sustainability in the face of demographic change – whether providing publicly funded healthcare to an aging population will financially stress Canadian governments.

One camp has emphasized that aging itself adds no more than one percentage point to annual increases in health costs and, drawing an analogy with a glacier rather than an avalanche, has argued there is 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 emphasizes that a one-percentage--point annual increase is substantial, especially when it compounds over many years. Moreover, aging will slow the growth of the tax base (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 emphasizes their

This E-Brief is part of a provincial series profiling the fiscal challenge of aging and publicly funded healthcare in each province. It updates a previous series in 2013. We gratefully acknowledge the support of Alexandre Laurin in calculating program costs and thank members of the C.D. Howe Institute's Health Policy Council for comments on earlier drafts. However, we alone are responsible for any errors and the conclusions.

formidable impact when they arrive. So it tends to urge major reforms to healthcare delivery and financing to mitigate an otherwise painful squeeze of demographically sensitive programs on other fiscal priorities.

While the debate has raged, the cost of publicly funded healthcare in Prince Edward Island has risen from 8.4 percent of provincial GDP in 1991 to about 10.8 percent in 2014. Over the same time period, it has risen from 29 percent of provincial program spending to about 44 percent. Meanwhile, its share of provincial own-source revenue – that is, taxes Prince Edward Island raises itself rather than funds transferred from Ottawa – has risen from 46 percent to about 70 percent.

Whatever the precise impact of aging and its interactions with changes in treatment, publicly funded healthcare's claim on Prince Edward Island's resources has increased. How much worse might the squeeze get in the future?

Mapping Today's Spending onto Tomorrow's Population

We answer that question with a well-known, straightforward approach. We project Prince Edward Island'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 out-migration to other provinces falling to zero over 10 years and net international in-migration continuing at a rate equivalent to the 1997–2013 average.

We then multiply the potential workforce, which we define as Islanders 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 projections of real gross domestic product (GDP), which we convert into nominal dollars. (Nominal provincial GDP is real GDP times the same 2 percent inflation rate we assume will prevail nationally.)

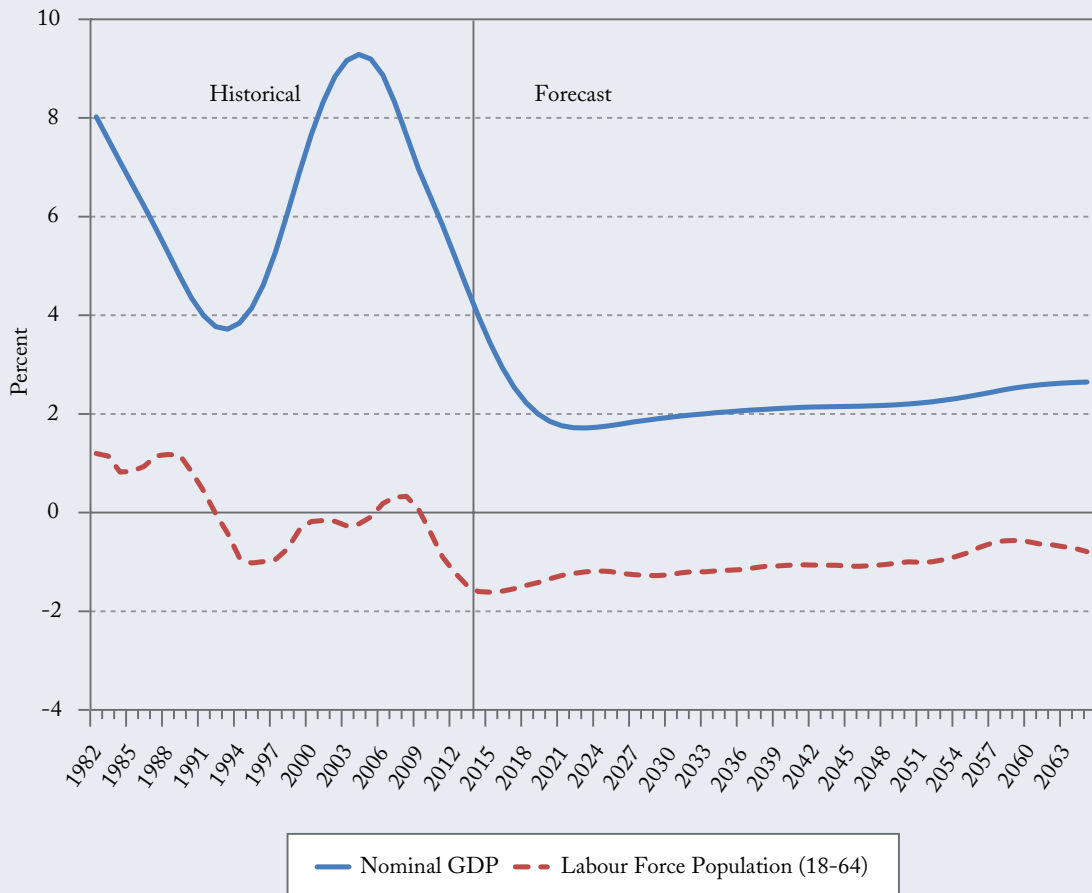
The impact of aging on future workforce growth and GDP often gets little attention in the healthcare spending debate. But they are set to grow much more slowly than they have over the past few decades (Figure 1). Hence, PEI's tax base will grow more slowly than in prior years and reduce the province's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

Turning to the cost pressures on healthcare, we project provincial spending for each sex in 20 age groups across six types of spending. 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 from the Canadian Institute of Health Information (CIHI) for 2012, pro-rated 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 (see Box 1 for more detail). In terms of cost increases, the government

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 Prince Edward Island’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.

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.

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.

Another key program affected by demography is education. We apply a similar method to project the impact, first determining per-student costs in the elementary and secondary systems on one hand and for tertiary students

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. 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 the tendency for 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. 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.

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).

on the other. We then apply a common index of service intensity, similar to that in healthcare (Box 1 spells out our approaches in more detail). As a result, we can see whether education offsets, or exacerbates, any fiscal challenge presented by healthcare.

Prince Edward Island's Outlook: Trends and Implicit Liability

Our projections show Prince Edward Island's healthcare spending rising from 10.8 percent of provincial GDP this year to 16.1 percent in 2035 and to 20 percent in 2064. Taking account of other demographically sensitive programs does not change the prospect of fiscal stress. Although the pressure of student numbers alone on education spending is not large, education is like healthcare in being labour intensive, so increases in service intensity raise its share of provincial GDP. As a result, the GDP share of education and healthcare together rises from 20 percent to 31.7 percent over the next half-century (Figure 2).

Most public discussion of healthcare and other programs emphasizes maintaining them – perhaps enhancing, but certainly not cutting. The opening quotation cited above, like other provincial communications, supposes no rise in tax rates. These political understandings create an implicit liability on the government's balance sheet, because meeting its healthcare 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,³ PEI's implicit liability amounts to \$16 billion, more than 80 percent of which (\$13 billion) relates to healthcare (see Table 1).⁴ In other words, to cover the additional 50-year cost of these programs without raising tax rates, the province would need some \$16 billion in assets yielding income at the same rate as Canadian long-term bonds do. The required amount is more than 2.6 times the provincial GDP, or about \$106,000 per Islander – a major squeeze indeed.

Policy Pressures and Responses

We see a funding gap this large, and its implication of a massive increase in provincial taxation, as strengthening the case for ambitious changes to Prince Edward Island's healthcare system. What kinds of reforms make sense?

The False Hope of a Federal Bailout

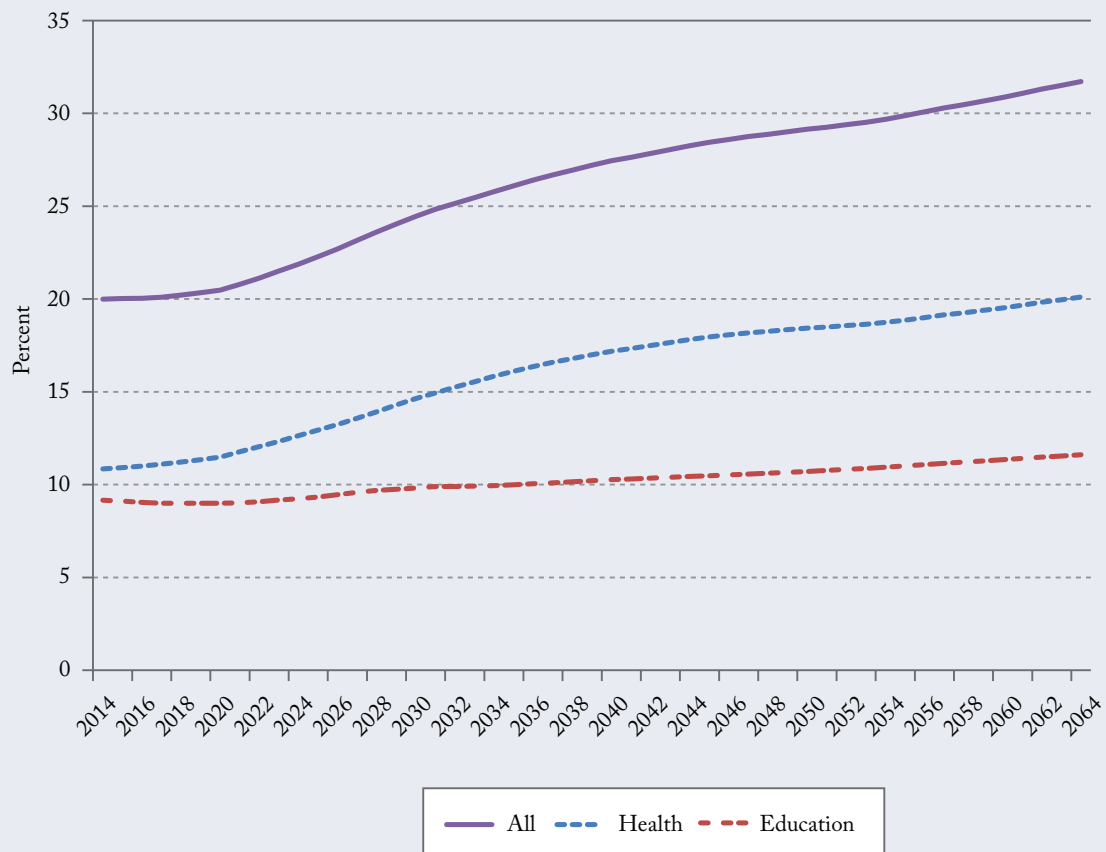
A regular theme in discussions of fiscal pressures affecting Canada's provinces is the role the federal government

2 The parallel with explicit liabilities is straightforward: if Prince Edward Island decides to cover the 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 Prince Edward Island manage to constrain growth in service intensity to 0.7 percent annually, instead of 1.2 percent as assumed, demographically sensitive spending would be 28.5 percent of GDP in 2064 and the unfunded liability would be \$13 billion. Historically, service intensity has tended to outpace productivity: if the province let it grow 0.5 percentage points faster than productivity – 1.7 percent annually – demographically sensitive spending would be 39.6 percent of GDP in 2064 and the unfunded liability would be \$25 billion.

Figure 2: Prince Edward Island's Demographically Sensitive Programs as a Share of GDP, 2014-2064



Source: Authors' calculations as described in text.

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 the revenues they could raise themselves to perform their constitutional functions – would simply get larger. Islanders, like Canadians in other provinces, will be better able to hold their provincial government to account for the performance of publicly funded healthcare in Prince Edward Island, if the province is raising, and is seen to be raising, more of the necessary funds itself.

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

Table 1: Prince Edward Island'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	196	106,886
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	298	164,700

Source: Authors' calculations as described in text.

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 PEI have more doubled over that period.

If more federal transfers were the answer to provincial fiscal woes, this money should have eased their plight. Yet aggregate provincial deficits are larger now than they were following the federal restraint of the late 1990s.

In PEI's case, federal cash transfers were \$292 million in 1997/98 when the province ran a deficit of \$7 million. Yet in 2013/14, when federal transfers more than doubled to \$623 million, the provincial deficit had increased more than seven times to \$52 million. A reasonable interpretation of that experience 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. The pressure of healthcare spending on other programs and taxes is a problem PEI 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 Pension Plan that converted it from pay-as-you-go to a partially funded plan, in which a portion of premiums collected from people today prefunds their future needs. Some health programs, such as long-term care, are like social security programs in that many people will need, and can prepare for, predictable expenses by building a provident fund during their younger years.

Like other provinces, Prince Edward Island could selectively convert pay-as-you-go programs so that the babyboom Islanders, 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 the needed tax increases necessary 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 change over time. The camp that says aging by itself is not a major problem has tended to emphasize that some factors that make per-capita 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.

So far, such changes do not appear to have had much impact on the age profile of PEI healthcare spending. A comparison of the first year of health spending by age, published by CIHI in 1998, to the latest data in 2012 shows little net change in the overall spending profile – a slight decline in relative per-person spending on the younger elderly on the one hand but an increase in relative per-person spending on the older elderly on the other (Figure 3). So a 1998 projection of the impact of demography on Prince Edward Island's healthcare spending by 2012 would have been pretty close to the mark.

5 For a detailed exploration of prefunding and its mechanics, see Busby and Robson (2011).

One aspect of PEI's healthcare bundle is particularly sensitive to the pressures of aging on costs – long-term care for the elderly. Well over one-half of the population will need continuing care support at one point in their lives – a proportion that jumps to almost three-quarters after age 65. But many citizens mistakenly believe that governments are going to cover most of their future long-term care costs. This is because public subsidies to long-term care in institutions or at home are generally opaque and misunderstood. The ambiguity of current public-private responsibilities for financing long-term care dampens private savings and pressures the public sphere to pick up the slack.

But an expanded public role here would heighten intergenerational equity concerns, which is why provincial authorities must clearly define the extent to which the province will cover future costs. To reduce the connection between public health spending and aging, public subsidies for long-term care must be targeted to those without the means to pay for it. At the same time, the government should require that those who can afford it absorb a meaningful share of the costs. Doing so means setting, and publicizing, government subsidies clearly so that private options – increased savings and insurance – grow to complement public subsidies (Blomqvist and Busby 2014).

Accessible Reforms and Benchmarking Best Practices

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

- more coordinated team-based primary care, giving patients comprehensive non-acute services from practitioners such as doctors, nurses, dieticians and physiotherapists;
- scope-of-practice changes to substitute services from providers such as pharmacists and nurse practitioners for similar services offered by more expensive physicians;
- integration of follow-up care for patients once they are discharged from hospital;
- improvements in, and more use of, non-institutional care for seniors with chronic conditions;
- incentives for patients to take greater responsibility for maintaining their own health;
- more use of clinical evidence to reduce variation in diagnostics and therapeutics use; and
- the establishment of electronic health records.

As well, Canada's provinces exhibit large differences in spending in major categories that may yield further insights and potential areas for provincial collaboration (Table 2).

At one end of the cost scale, Prince Edward Island spends less per capita than most provinces on physicians and drugs. By contrast, it spends much more on administration, and its administration spending has risen faster than in any other province (Table 3). Perhaps Islanders get appropriately greater coordination in their care from their administration than other provinces, but absent reliable calculations of the payoff, it seems reasonable to recalibrate to ensure that dollars devoted to each area of healthcare are effectively deployed.

Closing Comments

The 2014 PEI Budget's commitment to increasing healthcare spending as most other spending is capped, coupled with a rapidly aging population, means the province must focus hard on efficiencies in delivery and innovations in financing. Demographic change is an unhelpful complication in Prince Edward Island's budgetary

Figure 3: Average Per Capita Health Spending by Age Group in Prince Edward Island, 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).

position. The current configuration of demographically sensitive spending threatens to produce large increases in the province's aggregate tax take over time. Indeed, Prince Edward Island's implicit liability related to demographically sensitive programs is much larger than the provincial debt or deficit that regularly receives media attention.

In the face of this challenge, selective prefunding and benchmarking against other provinces that allocate their healthcare budgets differently are two steps that could help Prince Edward Island deliver high-quality healthcare in a sustainable fiscal framework, and mitigate the province's looming demographic squeeze.

Table 2: Real Per-Capita Health Spending, by Use of Funds, Prince Edward Island 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>										
PEI's Rank	5	5	10	8	9	1	6	1	6	3

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.

Table 3: Real Annual Per Capita Spending Growth Rate (1991-2013), Prince Edward Island 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>										
PEI's Rank	2	5	4	5	2	2	7	1	3	2

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" 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: Canadian Institute for Health Information, 2014.

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This E-Brief is a publication of the C.D. Howe Institute.

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