CHSRF

Better Value:

An analysis of the impact of current healthcare system funding and financing models and the value of health and healthcare in Canada

CNA/CHSRF series of reports to inform the CNA National Expert Commission
The Health of Our Nation – The Future of Our Health System: Paper 3

June 2012

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This research report, commissioned by the Canadian Nurses Association, is a publication of the Canadian Health Services Research Foundation. Funded through an agreement with the Government of Canada, CHSRF is an independent, not-for-profit organization that is dedicated to accelerating healthcare improvement and transformation for Canadians. The views expressed herein are those of the authors and do not necessarily represent the views of CHSRF, CNA, or the Government of Canada.

ISBN 978-1-927024-55-3

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KEY MESSAGES

- Discussions of healthcare reform must acknowledge the following context: on the one hand, public opinion data suggest that Canadians are increasingly concerned about the future viability of public healthcare; on the other hand, Canadians remain highly supportive of universal healthcare in principle, and they remain largely pleased with their own interactions with the system.
- There has been a striking increase in public spending on healthcare over the last 10-15 years. Specifically, controlling for inflation, per capita spending on healthcare in Canada was more than 50% higher in 2010 than in 1996.
- This investment in healthcare has positive consequences where public assessments are concerned. Increased healthcare expenditures over the past decade appear to have made a difference: Canadians' assessments of the current system have improved alongside increased expenditures.
- Cross-provincial differences in the relationship between various measures of healthcare policy outcomes provide a valuable source of evidence on "value" in healthcare, and results confirm that value is not simply about spending more. For instance, the relationship between spending on physicians and the number of doctors per capita or wait times, or between hospital spending and the nursing workforce, clearly varies across provinces. In some cases increased spending appears to lead to better health policy outcomes; in other cases the relationship is much less clear.
- The relationship between increased spending and improved public assessments also appears to vary across spending domains. Specifically, investments in hospitals, in drugs and in public health are more reliably linked to improved public assessments of the system, while spending in other healthcare domains is not clearly associated with improved public assessments.
- Capturing "value" in healthcare is possible, then. But at present the required data – including data on key healthcare indicators and public attitudes on healthcare – are only intermittently available. A stronger commitment to monitor system outcomes should accompany a renewed investment in the Canadian healthcare system.

EXECUTIVE SUMMARY

This report examines the interrelationship between measures of government spending on healthcare, health policy indicators and public attitudes on health policy to identify policy approaches capable of achieving better value in the Canadian healthcare system. After describing its context, the report considers some of the many ways in which value can be defined, setting out a working definition that deems "better value" to mean improvements in healthcare policy indicators and/or Canadians' attitudes toward the healthcare system. Subsequent sections then explore the ways in which spending change has thus far been linked to shifts toward better value in healthcare.

Contrary to what is often heard in the public debate surrounding healthcare in Canada, Canadian attitudes about the current healthcare system are not overwhelmingly negative. At present, Canadians remain highly supportive of universal healthcare in principle, and they remain largely pleased with their own interactions with the system. But Canadians are also much more concerned about the ongoing viability of the system, and their prospective views of the system are rather bleak. As a result, there is more support now than ever before for user fees and various forms of privatization in the healthcare domain. Consequently, public (and political) support for the continuation of a single-tier healthcare system depends at least in part on successful policy change in the short term.

As a first step toward identifying better value in the Canadian healthcare system, we look at cross-sectional differences across a range of health policy indicators. Specifically, examining the variation that exists between Canadian provinces in terms of levels of healthcare expenditure and policy indicators may reveal efficiencies, and difficulties, in translating spending into healthcare. The relationship between numbers of doctors and wait times, for instance, or between hospital spending and the nursing workforce, clearly varies across provinces, and we suggest that these differences may be revealing where "value" in healthcare is concerned. For example, we suggest that increased spending on hospitals tends to coincide with increases in the number of hospital beds and the size of the nursing workforce, while the impact of increased spending on doctors – where policy outcomes are concerned at least – is much less clear.

Our second step toward identifying better value focuses on public opinion. Drawing on data capturing general attitudes toward current system quality over time, we examine trends in public assessments of the Canadian healthcare system. Results suggest that assessments have been improving over the last decade. Moreover, an analysis of opinions across provinces suggests links between public spending, policy outcomes and Canadians' attitudes about the healthcare system. In short, expenditures on hospitals, on drugs and on public health appear to be the most reliably linked to improved public assessments of the system.

These results are discussed in the report as they relate to value in healthcare. The report produces some clear results where spending and outcomes are concerned, but it also points to a range of possibilities for future discussions (and analyses) of "better value" in the Canadian healthcare system.

1 CONTEXT

As part of a series of reports commissioned for the Canadian Nurses Association's *National Expert Commission*, the goal of this paper is to explore "better value" in the Canadian healthcare system. The following section considers some of the many ways in which value can be defined and sets out some working definitions for the purpose of this report. Subsequent sections explore the relationships between public spending, healthcare indicators and public attitudes about healthcare.

The end results are intended to contribute to the discussions of the National Expert Commission about transformations in the Canadian healthcare system. While the research that follows is wide-ranging, results will focus on policy-making. The objective here is to provide useful background for those interested in the role that "value" plays in future discussions of Canadian healthcare policy. Moreover, we provide specific recommendations to the National Expert Commission on policy changes directed at achieving better value in a future healthcare system.

What is the context under which the Expert Commission is operating? The 2003 First Ministers' Accord on Health Care Renewal will be up for renegotiation in 2014. Leading up to that renegotiation, major research groups throughout Canada are surveying the field, in preparation for what is likely to be a critical moment in the evolution of the Canadian healthcare system.

Budgetary policy change is not the only reason to focus on healthcare at this time, however, as recent research on Canadians' attitudes about healthcare point to a system currently under pressure. Canadians remain highly supportive of universal healthcare in principle. They remain largely pleased with their own interactions with the system. But Canadians are also much more concerned about the ongoing viability of the system, and their prospective views of the system are rather bleak. One consequence is that there is more support now than ever before for user fees, as well as consideration of various forms of privatization in the healthcare domain.

Existing research makes evident that public (and political) support for the continuation of a single-tier healthcare system depends at least in part on successful change in the short term. And some – indeed, perhaps a good deal – of that change must be focused on the extent to which public spending produces positive outcomes. In short, "better value" will need to be a central feature of any future Canadian healthcare system. This is a critical time, then, to look over recent decades of experience in spending, in policy indicators and in public opinion. What can we learn from recent trends that will help lead to healthcare policy that is of better value?

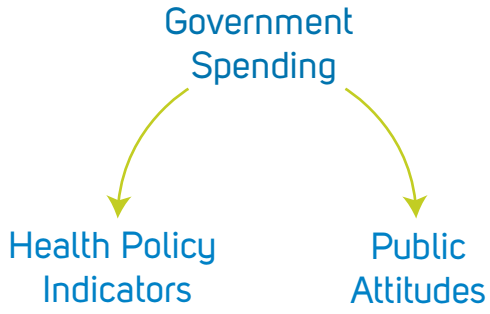
2 DEFINING "BETTER VALUE"

But first, what exactly is "better value" in healthcare? Put simply, it has something to do with value for money – something to do with the reliability with which public investment in healthcare leads to positive outcomes. But outcomes in the healthcare field are by no means clear. We might think about a set of outcomes related to healthcare system capacity – the number of available hospital beds, or doctors and nurses, or diagnostic equipment. We might also think about the efficient use of this capacity, captured in measures such as the proportion of the population with family doctors or reductions in wait lists for specialists or surgeries.

Alternatively, we might focus on more fundamental epidemiological outcomes such as mortality rates. We might think more broadly about the quality of individuals' interactions with the healthcare system – are Canadians happy with the level of care they receive, and are they reliably given the most efficient or appropriate treatment? And we might also think about investment, not just in terms of economic capital but also in terms of human capital. We might think, for instance, not about the efficient use of money but of the efficient use of human resources such as the working hours of doctors, nurses and other healthcare professionals.

In short, there are many different ways to think about value in healthcare. Accordingly, many different ways to measure it exist as well. In defining "better value," the theoretical task may not be as difficult as the empirical one. There are relatively few reliable measures of capacity and efficiency in the Canadian healthcare system, and, even where we can think of (hypothetically) good measures of value in healthcare, these measures may not be readily available. (Consider, for instance, a 2010 *Globe and Mail* article in which the Auditor General argues that value in healthcare cannot be examined because governments are not regularly measuring performance.[1])

However, the difficulties of measuring better value do not mean that the task is not critical. There is consequently a growing body of work focused on how to think about, and measure, value in healthcare.[i] It is increasingly obvious that we need to take stock of where the Canadian healthcare system is, and where it could be. We need to think seriously about how best to use the resources available for healthcare, because the ongoing viability of the single-tier Canadian healthcare model requires that we build a newer, better, more effective healthcare system. How can we do this? The current report represents one effort at addressing this question. It does so by drawing together a new body of data to explore one, admittedly narrow, definition of "better value" in healthcare. Here, we explore better value in terms of *the extent to which financial investment by provincial and federal governments is systematically related to improvements in healthcare policy indicators and/or improvements in Canadians' attitudes toward the system.*



[i] See, for instance, *Value for Money: Making Canadian Health Care Stronger,* by the Health Council of Canada, 2009, Toronto: Health Council, available from: www.healthcouncilcanada.ca); or recent work by Uwe Reinhardt on the US system.

Note that this definition is not intended to focus only on *increases* in spending that produce shifts in policy or support. The focus is on levels of spending – whether they are increasing, decreasing or remaining constant – and the extent to which those levels are being used in ways that are effective in improving the quality of healthcare Canadians receive. The analyses below should make this point clear. A measure of value cannot be about spending the most; it must be about spending the most effectively.

Where that effectiveness is concerned, our analyses concentrate on two relationships: first, the impact of government spending on a series of health policy indicators, and second, the impact of government spending on public attitudes about the healthcare system. We view each of these relationships as good starting points for a discussion about better value in healthcare. They are not the only ways in which to think about value, of course. For instance, we do not consider at least one further possibility for capturing value in healthcare spending, namely, the relationship between spending and actual health outcomes (rather than health policy outcomes or public attitudes). This area of research has been the focus of some epidemiological research in the United States and has potential for further work in the Canadian case.[ii] In addition, "quality of care," a central component of value in healthcare broadly construed, is notoriously difficult to capture, and we explore it here only indirectly through citizens' attitudes about the care they receive. We acknowledge some important limitations to our approach, and we regard this paper as just a first step in exploring empirically "better value" in the Canadian healthcare system.

Nevertheless, policy indicators and public attitudes are critical, and empirically tractable, indicators of health system performance. As we shall see, they also provide some valuable insights into the nature and impact of public spending on healthcare in Canada.

[ii] See, for example, "The Implications of Regional Variables in Medicare Spending, Part 1: The Content, Quality and Accessibility of Care," by E. S. Fisher et al., 2003, *Annals of Internal Medicine, 138,* pp. 273–287.

3 MEASURES AND MODELS

Following from this definition of "better value," we examine the interrelationships between three sets of measures:

1. *Government spending.* This paper investigates trends in healthcare spending over the last two decades. We extracted budgetary data mainly from the National Health Expenditures (NHEX) database of the Canadian Institute for Health Information (CIHI). The NHEX database has the advantage of tracking spending not only back to 1975 but also across provinces and across eight different subdomains within healthcare. As we shall see, these distinctions are critical to our analysis.
2. *Health policy indicators.* The capacity of the Canadian healthcare system can be measured in many ways. We focus on several different types of measures in particular: (a) measures of human capital, including the numbers of doctors and nurses; (b) measures of infrastructure, such as hospital beds; and (c) measures of system efficiency, such as wait times for specialists and surgeries.
3. *Public attitudes on health policy.* In recent years several reports have focused on the state of Canadians' attitudes towards the healthcare system.[2-7] Using a combination of commercial and academic polls, these reports demonstrate systematic relationships between public attitudes and trends in the healthcare system, and they suggest the potential for public opinion as a measure useful for policy assessment and development.

Our objective is to look at the interrelationships between these variables over time. What is the relationship between changes in government spending and health policy indicators? What is the relationship between changes in spending and public attitudes? Assessing the strength of these links is the critical component of the sections that follow. At present, relatively little research has connected the three variables outlined above. This paper consequently represents an important step forward in the ongoing effort to better understand the existing Canadian healthcare system and to produce useful information for upcoming discussions focused on the future of that system.

4 TRENDS IN SPENDING ON HEALTHCARE

Let us begin with an overview of recent trends in spending on healthcare in Canada. Figure 1 sets the stage, showing per capita spending on healthcare in Canada from 1975 to 2010. Data are drawn from the NHEX database and are presented in (thousands of) 1997 dollars to control for inflation.[iii] The figure shows a clear and steady increase in spending on healthcare over almost the entire period, save for the mid-1990s, a period of fiscal restraint in which the federal government reduced spending on healthcare (mainly through reduced transfers to provinces). But starting in the late 1990s, there has been a striking increase in spending on healthcare. Per capita spending as of 2010 – even controlling for inflation – was more than 50% higher than in 1996.

Some of the increase apparent in Figure 1 is a product not of public spending on healthcare, but of private spending. Figure 2 separates the two, presenting the trend in each over time. This separation shows an obvious retrenchment in government spending on healthcare in the mid-1990s. The figure also makes evident that, as with public healthcare spending, the past decade has seen a steeper increase in private spending. To be clear, the rate of increase post-1996 is higher than the rate of increase pre-1992, for both public and private healthcare spending.

Private spending has seen a greater increase, proportionally speaking, than has public spending. Projected per capita public spending in 2010 was roughly 2.2 times greater than in 1975; projected per capita private spending was nearly 3 times greater. The proportion of total healthcare spending that is private has been shifting accordingly over the past 30 years. In 1975, private spending accounted for roughly 23% of total healthcare spending in Canada; by 2010, that figure was nearly 30%.

What exactly are public and private funds used for? Figure 3 shows the distribution of spending in 2008 across the eight categories tracked in the NHEX database.[iv] The main expenditure streams, and the differences between the use of public and private funds, are very clear. Approximately 37% of public funds go to hospitals; another 19% go to physicians.[v] Where private spending is concerned, the focus is on other professionals (34%, including dentists, chiropractors, optometrists, physiotherapists, etc.)[vi] and drugs (34%, including both prescription and non-prescription drugs purchased in retail stores). Past research points toward strong public support for increased government coverage of both other professional services and drugs,[8-13] and these data serve to illustrate why – these are the areas in which most private spending on healthcare is focused.

Clearly, private funds have been taking on a greater role in the Canadian healthcare system. Does public or private spending tend to yield better value? This is an important but difficult issue to deal with, in part because – as we have seen above – private spending is directed at different categories than is public spending. There is some overlap, of course, and it is in the areas in which we see a considerable degree of both public and private funding, aimed at the same objectives, where an analysis of value for each type of spending seems most plausible.

A comparison of value in public versus private spending is an important piece of the Canadian healthcare puzzle, but one that will be left for future work for the time being. However, we continue the process of exploring value in healthcare by focusing on variations in public spending across provinces in the next section.

[iii] NHEX data are available from CIHI at www.cihi.ca. Inflation-controlled measures used here are based on the implicit price indices available in the NHEX database; per capita measures are based on population figures in the same database.

[iv] The current NHEX data at the time of writing included data up to 2010, but the final two years were spending estimates rather than final figures. We accordingly used data for 2008 here, the last year for which final figures were available.

[v] Full definitions for the spending categories are available in *National Health Expenditure Trends, 1975 to 2010,* by the Canadian Institute for Health Information, 2010, Ottawa: Author, available at www.cihi.ca.

[vi] According to the CIHI documentation, nurses are included in hospital expenditures.

5 INTERPROVINCIAL DIFFERENCES IN SPENDING

Considerable differences in spending exist across the provinces. Figure 4 shows levels of per capita spending (in thousands of 1997 dollars) during 1998 and 2008, by province. Focusing first on 2008 (middle panel of Figure 4), we see that Newfoundland and Labrador shows the highest level of per capita spending, followed closely by the Prairie provinces; Ontario and British Columbia show levels of spending closer to the national average (roughly $2,800); and Quebec is the one province where spending was clearly well below the national average. (Note that the spending gap for Quebec may be reflected in the state of public opinion. See the discussion of Figure 11 below.) Of course, some of the cross-provincial differences can be explained by economies of scale – densely populated urban areas may be better positioned to reduce the overall cost of healthcare provision, for instance. Some differences also have to do with demographics – certain provinces have greater proportions of older or younger Canadians, for instance. But some of the differences in spending may result quite simply from gaps in the quality and efficiency of healthcare systems across provinces.

Differences in spending levels in 2008 are in part a consequence of different spending trajectories over the past decade. The left panel of Figure 4 shows levels of per capita spending as of 1998. There are some similarities in interprovincial differences in 1998, but some notable differences as well (such as the positions of Quebec and British Columbia as compared with in 2008). The situation in 2008 was thus a consequence of quite different budgetary policy commitments over the previous decade. This is clear in the rightmost panel of Figure 4, which shows percent changes in spending over the decade – British Columbia and Quebec show smaller than average increases, while Alberta shows the largest single increase. One consequence of these different approaches is that differences in per capita spending in 2008 were greater than they were previously. In 1998, for instance, the highest-spending province (Manitoba) spent roughly 16% more than the lowest. In 2008 the highest-spending province (Newfoundland and Labrador) spent about 25% more than the lowest.

The allocation of healthcare funds within provinces varies in interesting ways as well. Figure 5 shows spending on five subdomains in 1998 and 2008. Spending here is shown as a percentage of provinces' total healthcare budgets, so the top left panel shows that provinces spent between 33% and 52% of their total healthcare budget on hospitals. But the gaps between the 1998 and 2008 data also show that provinces shifted their spending in different ways. Newfoundland and Labrador and British Columbia are the only provinces that increased the proportion of their budget allocated to hospitals – all others reduced the proportion of healthcare spending in this category – though overall, interprovincial differences in proportional spending on hospitals were narrower in 2008 than they were in 1998. The same is less true in other categories. All provinces reduced the proportion of healthcare spending going to other professionals (which does not include nurses, who appear in the hospitals category in these data), but the drop in some provinces (British Columbia and Manitoba) was quite considerable. All provinces spent more of their healthcare budget on drugs in 2008, but again, the shift was noticeably greater in some provinces (Quebec, Ontario, Saskatchewan and New Brunswick). Public health commitments also varied widely across provinces. In each of these healthcare spending domains, interprovincial differences were greater in 2008 than in 1998.

The specific differences in levels or proportions of spending apparent in figures 4 and 5 are certainly of interest to those involved in the details of healthcare policy. Here, what is most important is the fact that these differences cannot be accounted for solely by economic and demographic factors. Among other factors, provinces differ in fiscal capacity, in age distributions and in levels of urban versus rural concentration. All of these things matter to healthcare spending. But cross-provincial differences in spending over the past decade were driven by political and policy-making decisions as well. To be clear, Canadian healthcare spending has not been reacting simply to economic and demographic change. The last decade of interprovincial differences in healthcare spending clearly demonstrates that there is room for policy change and innovation. The task, then, is to figure out where this change and innovation might be most valuable.

6 HEALTH POLICY INDICATORS AS MEASURES OF BETTER VALUE

A first step toward identifying policy approaches leading to better value in the Canadian healthcare system is to look at cross-sectional differences across a range of health policy indicators. Specifically, examining the variation that exists between Canadian provinces in terms of levels of healthcare expenditure and policy indicators may reveal efficiencies, or difficulties, in translating spending into healthcare.

Figure 6 shows interprovincial differences across four different measures. The two left panels show measures of healthcare personnel – the number of physicians and nurses, per 1,000 population, across provinces. Data on physicians corresponds to the fiscal year 2009/10[14] and distinguishes between physicians in family medicine and specialists. Results point to some important gaps between provinces, in particular, a lower than average supply of doctors in Prince Edward Island and Saskatchewan and relatively high supplies in Nova Scotia, Newfoundland, Quebec and British Columbia.

Is there a relationship between spending on physicians and the number of available doctors within a province? The left panel of Figure 7 explores this possibility. For each province, the graph plots both per capita spending on doctors (in 1997 dollars) in 2009 (bottom axis) and the number of physicians per 1,000 population in the same year (left axis). If more spending plainly produced more doctors, we would see an upward trend – dots scattered from the lower left to the upper right of the figure. Clearly, this is not the case. There is no obvious relationship between spending and the availability of doctors across provinces. (If anything, the result may be the opposite.)

Does the number of doctors matter to the quality of healthcare across provinces? The right panel of Figure 7 explores one possibility, namely, the relationship between the number of doctors per 1,000 population (bottom axis) and wait times (left axis), as shown in the top right panel of Figure 6.[vii, 15] This relationship is of some significance – analyses of public opinion show a strong connection between concerns about access generally, and wait times specifically, and concerns about hiring more doctors. But just how strongly are these issues related in practice?

Here, we can see that Prince Edward Island shows comparatively low levels of doctors and comparatively high wait times, but there may be a weak relationship among the remaining provinces as well. Figure 7 points to the possibility, at least, that as the number of doctors per capita goes up, wait times go down. However, the relationship across provinces is very weak. Some of this weakness is due to measurement error, particularly where recalled wait times are concerned. But it does appear as though having more physicians per capita only barely translates into shorter wait times, if at all.

We believe that this kind of analysis is an interesting way to address value in healthcare. Why doesn't spending on physicians produce more physicians? And why, in provinces with similar levels of physicians per capita (such as Ontario, New Brunswick and Alberta), are there such wide gaps in wait times? These are complicated issues, surely, and beyond the scope of this first analysis. But these kinds of questions, based on variations in spending and healthcare policy indicators, are an important first step in considering value in healthcare.

[vii] There are many ways to measure wait times (median wait time between referral by GP and appointment with specialist, or between appointment with specialist and treatment, etc.). Here, we use just one possible measure, the time from the GP referral to the treatment. Note also that Fraser Institute data are based on survey responses from practitioners in 12 different medical specialties. Full information is provided in Barua et al., 2010.

Returning to Figure 6, we see no apparent relationship between the supply of doctors (top left panel) and the registered nursing workforce (bottom left panel).[viii, 16] But the number of nurses per 1,000 population does vary widely across provinces, as Ontario and British Columbia in particular display a considerably lower number of nurses than the Maritime provinces. And the nursing workforce appears to be strongly related to the number of hospital beds, per 1,000 population, shown in the bottom right panel.[17] (No data on hospital beds were available for Quebec.) The provinces that have high or low levels of one of these indicators tend to have correspondingly high or low levels of the other, as both seem to capture provincial commitments to hospital spending.

The link between spending on both nurses and hospital beds is more apparent in Figure 8, which shows two scatter plots. The left panel shows the number of nurses per 1,000 population (left axis)[ix] plotted against levels of spending on hospitals (bottom axis). The right panel shows the number of hospital beds per 1,000 population (left axis) plotted against spending levels on hospitals (bottom axis). The overall trends are relatively clear – increased spending on hospitals is associated with increases in the numbers of nurses and hospital beds. These results lend support to the notion that spending data can be a useful proxy for other indicators of healthcare.

Nevertheless, the relationships between spending and healthcare policy indicators are not perfect – as in Figure 7, the data in Figure 8 point to differences across provinces that might be valuable for further work on value in healthcare. Why does hospital spending in British Columbia lead to comparatively lower levels of both nurses and beds than similar levels of spending in Alberta, for instance? The difference may be a consequence of practices worth emulating – there may be other valuable uses of hospital funds in British Columbia. The difference may also point to flaws in British Columbia's hospital funding. Again, this is beyond the scope of the current paper. Yet it is clear that relationships between spending and healthcare policy indicators can provide useful information for future work on efficiency and effectiveness in healthcare.

[viii] Although data were available for four years (2003-2007), we focused only on the most recent year here. Differences over time in this relatively brief period are rather small.

[ix] In each case, spending data were for the same year as the healthcare policy indicator.

7 PUBLIC OPINION AS A MEASURE OF BETTER VALUE

Recent work on public attitudes about the Canadian healthcare system points to the potential for the use of public opinion as an alternative measure of health policy outcomes. We know that, in the aggregate, public attitudes toward healthcare move alongside a variety of health policy outcomes. We also know that, at the individual level, attitudes about the quality of the Canadian healthcare system are affected by a combination of personal experience and "impersonal" experience, such as media content. Public opinion polls appear to capture public sentiments that react to shifts in healthcare policy. Therefore, it follows that public opinion may be a useful means for capturing the successes and failures, as well as the value, of healthcare policy.

This is not the only way in which an analysis of public opinion may be important to policy-oriented work on healthcare in Canada, however. Public opinion reacts to policy change, to be sure, but public opinion can drive or constrain policy change as well. Much of the current debate about the Canadian healthcare system centres on public support for the current system and/or its alternatives. So public opinion offers not only a measure of system performance but also a signal of the ongoing support for and thus viability of that system.

It is for this reason that some recent research examines the impact of media content on public attitudes about healthcare. The prevailing concern is that media content will highlight the negative and help push public opinion toward increased support for something other than a single-tier system – not due to the actual performance of the system, that is, but due to the potentially misleading crisis-focused content in mass media. To be sure, there are public attitudes that have been moving in this direction. Perceptions that the current system is in a state of crisis have been on the rise, so too has the sense that the quality of healthcare available to Canadians will decline.

Figure 9 shows a now familiar trend – a gradual decline in public attitudes about the future quality of the Canadian healthcare system. The figure shows results from the following Ipsos Reid question: "Overall, do you think health care services in your community will get much better, somewhat better, somewhat worse or much worse over the next two or three years?"[x, 18] The single trend was produced by subtracting the proportion of respondents saying "much worse" or "somewhat worse" from the proportion of respondents saying "much better" or "somewhat better." Thus, positive values indicate a greater proportion of respondents saying "better" rather than "worse," while negative values indicate that a greater proportion of respondents said "worse." The trend is clear: over the course of close to a decade Canadians' attitudes about the future quality of health services have strongly shifted from positive to negative.

Attitudes about the future of Canada's healthcare system can have serious consequences – they structure debate about healthcare and affect citizens' voting behaviour and politicians' proposed policy solutions. But recent research makes clear that these attitudes are driven, necessarily, by media content. Citizens do not interact with the healthcare system at large or in the future. When asked about the system in ways that go beyond our own personal experience, we take cues from others, particularly from information in media. And while media-driven attitudes may matter greatly to the ongoing viability of the current Canadian healthcare system, they are not an ideal indication of what actually is going on, day to day, in people's interactions with the healthcare system.

However, a series of other measures of attitudes are more clearly related to the current (not future) quality of healthcare and to individuals' own personal experiences with the system. Consider each of the following public opinion survey questions or statements:

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[x] Sample sizes for this survey are between roughly 1,000 and 3,000 per year.

- "Overall would you say that Canadians are or are not receiving quality health care right now?" (Pollara)
- "Overall, how would you rate the quality of health care available to residents of your community? Would you rate it ...?" (Gallup)
- "Overall, would you say that Canadians are or are not receiving quality health care services right now?" (Health Care in Canada surveys)
- "What mark/letter grade would you give to: 1) The overall quality of the healthcare services available to you and your family?" (Ipsos Reid)
- "I am confident that if I or a family member were to become seriously ill, we would be able to access the necessary health care services." (Ekos)

The first three questions are very similar and focus on respondents' impressions of the current system. The final two items are narrower in scope – they focus on perceptions about the current availability and quality of healthcare available to respondents and their families. Existing research suggests that each of these questions/statements is less likely than the one in Figure 9 to be driven by media content and more likely to be affected by Canadians' actual experience with the healthcare system. Each, then, offers an opportunity to explore the link between health policy indicators and public attitudes.

For the purpose of analyzing trends over time, responses to each of these measures would, ideally, be available across long periods. Unfortunately, this is not the case. Response data for the Ipsos Reid question are available for nine years (2001-2010), and most of the other questions were asked much less regularly. The result is that we are typically very constrained in our ability to look at the relationship between public opinion and healthcare indicators over time. Indeed, we usually cannot get a good picture of how exactly Canadians' attitudes about the healthcare system have evolved over the past two decades.

In this report, we take a first step toward solving this problem. We do so by relying on a method developed by James Stimson to capture the "policy mood" in the US context.[19] Stimson was interested in combining results from disparate survey questions to capture the general left-right mood of the American public over the entire postwar era. To do so, he developed a method of standardizing results from quite different survey questions and then capturing the general underlying trend in those standardized responses over time. Here, we use the same approach to capture the underlying trend in the five survey questions/statements listed above. We do not have results for all survey questions for every year, but each one overlaps with some of the others, and that is all that is required for this approach. The resulting measure, called "healthcare mood," is illustrated in Figure 10.[xi]

Values of healthcare mood, ranging here from about 55 to 18, are not easily interpreted – they are a combination of trends in survey marginals, weighted for variance. But *trends* in healthcare mood are readily interpretable and show what we would expect given what we have seen in trends in public opinion reported elsewhere. Three things are worth noting. First, Canadians' impressions of the current system declined fairly steadily from the mid-1990s to the early 2000s – likely a consequence, in part, of reduced budgetary commitments to healthcare in the mid-1990s. Second, attitudes toward healthcare have been steadily improving over almost the last decade. Indeed, the positive shift in mood from 2004 to 2010 is rather striking, and this leads to a third observation: healthcare mood as of 2010 was no worse than in the early 1990s, before the temporary reductions in healthcare spending.

[xi] Healthcare mood was estimated using Stimson's WCalc software (www.unc.edu/~jstimson/). Polling data were available through ODESI (www.odesi.ca), the Canadian Opinion Research Archive (CORA, www.queensu.ca/cora), Ipsos (www.ipsos-na.com) and the Canadian Medical Association (www.cma.ca).

These results are reassuring – they suggest that the renewed commitment to healthcare spending over the last decade, readily evident in figures 1 and 2, has not gone unnoticed. That is, increases in spending appear to be associated with increases in public support for the healthcare system; Canadians were more positive about their experiences with the healthcare system in 2010 than they were 10 years before. In this sense, public investment in healthcare works.

Just how well it works, or how it works, is another matter. Connecting health policy indicators directly to national healthcare mood is difficult – for the most part, the availability of healthcare indicators over time is very limited.

However, we can take advantage of the availability of spending data and of interprovincial differences. Our opinion data are not ideal, to be sure. Only three of the five measures used in the national mood measure were available at the provincial level, and in some cases provincial sample sizes were very small. Rather than rely on a mood measure, our interprovincial analyses rely on a single survey question. Thankfully, it is the question that most directly captures individuals' own experiences with the current system: "What mark/letter grade would you give to: 1) The overall quality of the healthcare services available to you and your family?"

Results for this question, across provinces, are shown in Figure 11.[20] (Due to small sample sizes, the four Atlantic provinces were combined, as were Manitoba and Saskatchewan.) A single measure was produced by subtracting the percentage of respondents giving a grade of "C" or a failing grade of "F" from the percentage of respondents giving a grade of "A" (the highest grade) or "B." The fact that the resulting values were consistently positive indicates that more respondents gave A's and B's than C's and F's. Even so, there was obvious variance across provinces and over time.

The left panel of Figure 11 shows results from the first and last years for which such data were available, 2001 and 2010. The right panel shows the magnitude of change from 2001 to 2010. (For instance, the left panel shows that Atlantic Canada shifted from 15% in 2001 to 52% in 2010; the right panel shows that the magnitude of this change was +37 percentage points, that is, from 15 to 52.) Some regions showed marked improvements – the Atlantic region, Ontario, Manitoba and Saskatchewan combined, and British Columbia each showed improved assessments of the quality of healthcare. Alberta showed very little change over the period, although assessments there were already quite high in 2001. Even so, the province was a clear leader where public assessments were concerned in 2001, and was not by 2010. Quebec displayed a similar though more muted dynamic – with middling assessments in 2001, only mild improvement over the decade and similarly middling assessments in 2010.

However, the objective for showing the data in Figure 11 is not just to reveal differences in public attitudes across provinces – it is to try to link those attitudes to changes in provincial healthcare spending. Doing so requires a somewhat more sophisticated approach, though. In short, we seek to make links between healthcare indicators and public attitudes by estimating an econometric model of change over time in public attitudes as a function of changes in government spending in each of the eight healthcare subdomains shown in Figure 3.

The detailed results of this time-series cross-sectional estimation are included in the Appendix. Here, we focus just on the results, illustrated in Figure 12. The figure shows the estimated impact of a $100 increase in per capita spending (in constant 1997 dollars) on the provincial measures of public attitudes (net grades) shown in Figure 11. Estimations are based on 10 years' worth of data on both opinion and spending (2001–2010), across all 10 provinces. Statistically significant results are shaded in blue (darker), and insignificant results are in grey (lighter).

Based on variations across provinces and over time, these results suggest that there are three areas of healthcare spending that are systematically related to improvements in public assessments of healthcare: hospitals, drugs and public health. An increase of $100 in per capita spending on hospitals is associated with an average shift of 2.5 points in the net grade measures in Figure 11. A similar increase in spending on drugs is associated with a 5.7-point increase, and, in public health, a 6.4-point increase. Spending in other domains has no systematic impact on public attitudes on healthcare (using these measures over this time period, that is).

However, we cannot be sure that it is spending *per se* that is moving public assessments of healthcare. It may be that increases in spending on public health reflect something broader about the approach to healthcare in a province – something not necessarily exclusively related to spending – that is associated with more positive public assessments. But the spending domains that are found to matter most here are in line with existing research on public attitudes toward healthcare. They are also in line with the preceding results regarding the link between spending and healthcare policy indicators.

Consider the difference between the impact of spending on physicians, for instance, and spending on hospitals. In the preceding section, we saw no clear link between increased spending on physicians and improvements in the number of available physicians across provinces. In short, increases in spending in this domain do not clearly lead to improved policy outcomes. And in this analysis of public opinion, we see no impact from spending on physicians on provincial respondents' assessments of the quality of healthcare. In contrast, results in the preceding section pointed to a stronger connection between spending on hospitals and policy outcomes (both nurses and hospital beds). And here, we see that spending on hospitals is associated with improved public assessments. Overall, the domains where spending is more clearly linked to policy outcomes appear to be the domains in which spending leads to improved public assessments.

These results lend support to the notion that public attitudes are a valuable measure of policy success and of value in healthcare. Public attitudes shift with spending, at least where that spending is more noticeably linked to actual policy change. This kind of comparison of policy and opinion is thus another critical method for exploring value in healthcare.

8. CONCLUSIONS AND RECOMMENDATIONS

This paper has explored recent trends in public spending on healthcare in Canada. In addition, it has suggested two different methods for evaluating value in healthcare.

The first approach concentrates on the relationship between spending and healthcare policy indicators. Spending on hospitals is associated with increased numbers of hospital beds and increased numbers of nurses. But there is variance across provinces in the reliability with which increased spending results in increased capacity. So, too, is there variance in the relationship between increased numbers of doctors and reduced waiting times. These differences in value across provinces may offer useful lessons for healthcare policy-makers. Why does hospital spending produce different results in one province versus another? Answers to questions such as this are no doubt very complicated and may well need to be addressed with much finer data than has been investigated here. Nevertheless, as suggested above, exploring these interprovincial differences may be useful in assessing value in healthcare spending.

The second approach to capturing value in healthcare focuses on public attitudes about the healthcare system as a measure of health policy outcomes. A growing body of data exists on Canadians' attitudes about their healthcare system. We have tried to capitalize on that body of data, focusing in particular on variations in attitudes across provinces and over time. As we have seen, and contrary to what is often heard in the public debate surrounding healthcare in Canada, Canadian attitudes about the current healthcare system are not overwhelmingly negative. Indeed, while there are serious concerns about the viability of the system, there is also widespread (and rising) satisfaction with the existing system. There is some variance in this satisfaction, of course, both over time and across provinces. So we have tried to use that variance to explore the link between changes in government spending and public attitudes.

Our analyses suggest, first, that public attitudes about healthcare have been improving alongside increases in public expenditures. However, there are some domains in which increases in spending have been more reliably associated with improvements in public assessments of the system. Investments in hospitals, in drugs and in public health stand out in these analyses. This finding is roughly in line with what we would expect given recent reviews of public opinion. It is also in line with our analysis of spending and healthcare indicators – an analysis that suggests that shifts in public sentiment tend to coincide with shifts in healthcare spending that systematically bring about noticeable changes in policy outcomes.

In light of the fact that this report is directed at the Canadian Nurses Association's National Expert Commission, we note also that hospitals and public health are two domains in which considerable proportions of spending are directed at nurses. These are the front lines of our national healthcare system, and they are the domains where increasing spending most clearly leads to improvements in public attitudes. When value is assessed by the Canadian public, the data investigated above demonstrate that dollars spent in these domains may be particularly effective in improving the quality of healthcare and in shaping positive attitudes about the ongoing viability of the Canadian healthcare system.

Our closing observations and recommendations are as follows:

- The ongoing assessment of value in healthcare depends on the ongoing supply of data on healthcare indicators and on public attitudes about healthcare. Currently, these data are only intermittently available. A renewed investment in the Canadian healthcare system should be accompanied by stronger commitments to monitor the various outcomes investigated above.

- Investing in the Canadian healthcare system clearly has positive consequences where public assessments are concerned. This finding is critical – it reminds us that Canadians are generally pleased with the level of care the system provides, and it makes evident that greatly increased healthcare expenditures over the past decade have made a difference to the quality of care provided.
- Cross-provincial differences in the relationship between various measures of healthcare policy outcomes are a valuable source of evidence on value in healthcare. The relationship between numbers of doctors and wait times, for instance, or between hospital spending and the nursing workforce, clearly varies across provinces. We see these differences as potentially revealing where value in healthcare is concerned.
- Some spending change appears to matter more to public assessments than others, however. In particular, investments in drugs and in the front lines of the healthcare system – hospitals and public health – stand out as particularly valuable, where value is based on improved public assessments of the current quality of healthcare in Canada.

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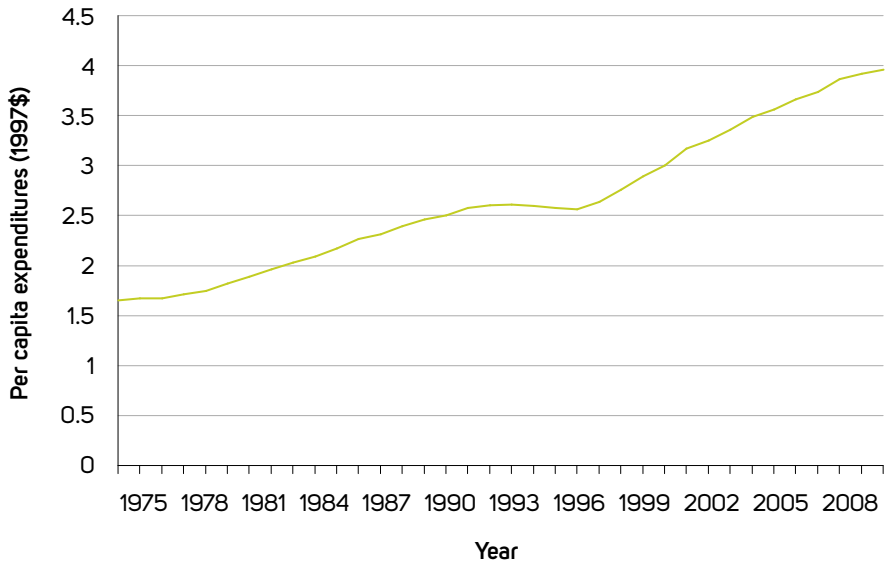
APPENDIX

Values in Figure 12 are based on a time-series cross-sectional model, estimated using a random-effects GLS (generalized least squares) regression. The model regresses current opinion on last year's opinion and on last year's spending across each of the eight spending domains. Model results are listed in the following table.

	Dependent Variable: Opinion $_t$	
	Coefficent	Standard Error
Opinion $_{t-1}$	0.181	-0.110
Spending: hospitals $_{t-1}$	24.562	-9.413
Spending: other institutions $_{t-1}$	-3.043	15.310
Spending: physicians $_{t-1}$	12.109	32.406
Spending: other professionals $_{t-1}$	-5.520	26.385
Spending: drugs $_{t-1}$	57.121	22.008
Spending: capital $_{t-1}$	3.262	27.677
Spending: public health $_{t-1}$	63.628	24.132
Spending: administration $_{t-1}$	49.273	30.770
Spending: other $_{t-1}$	-51.830	15.165
R-squared (within)	0.416	
R-squared (between)	0.946	
Observations	90	
Groups	10	

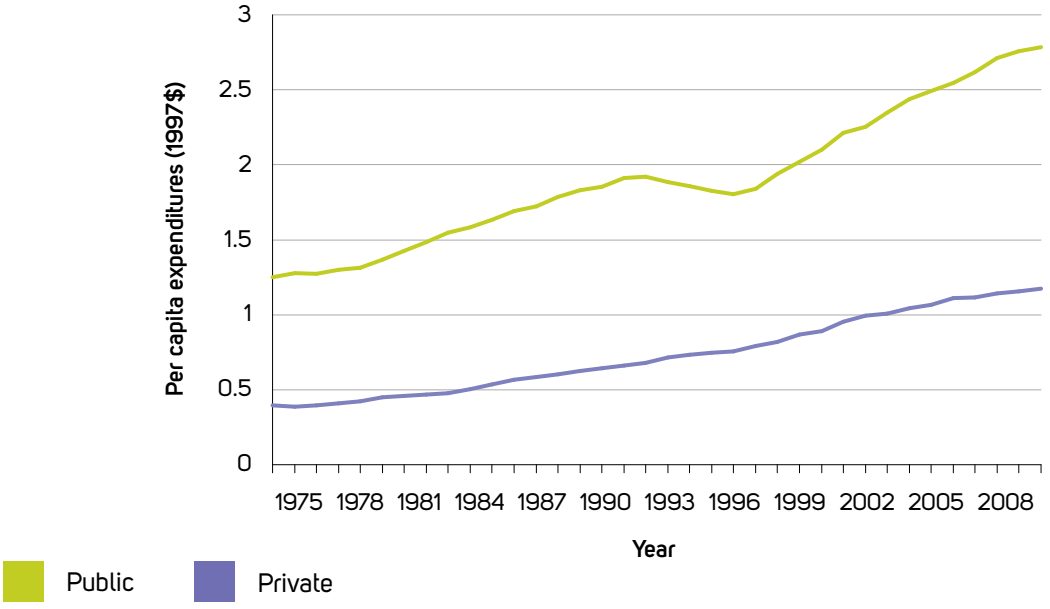
FIGURES

Figure 1: Total per capita health expenditures ($000's), Canada, 1975-2010



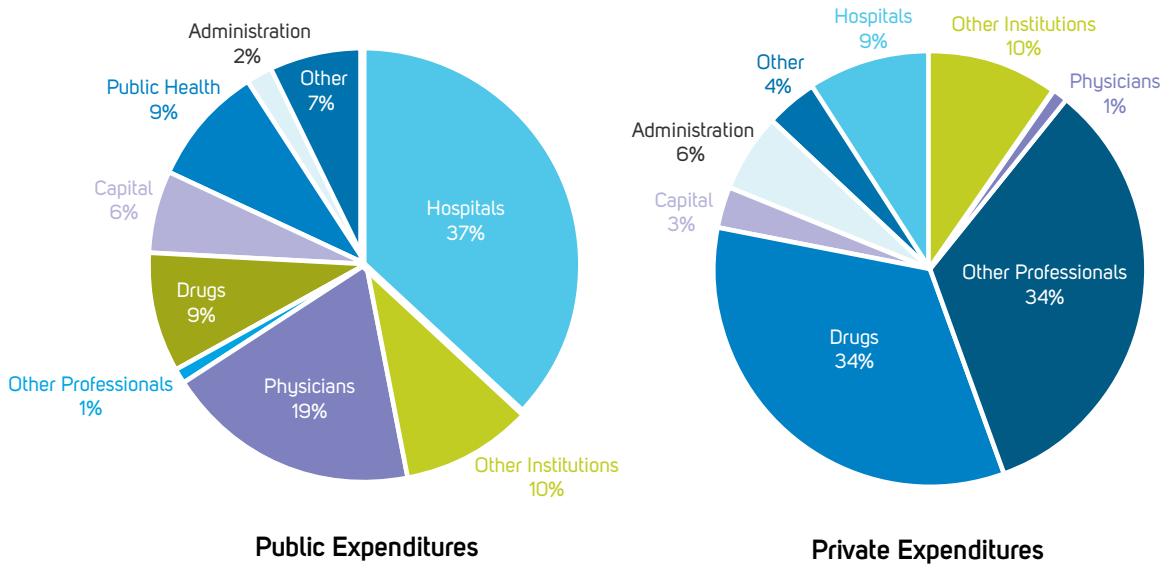
Source: National Health Expenditures Database, Canadian Institute for Health Information
Note: Projected spending estimates are used for 2009 and 2010

Figure 2: Public and private per capita health expenditures ($000's), Canada, 1975–2010



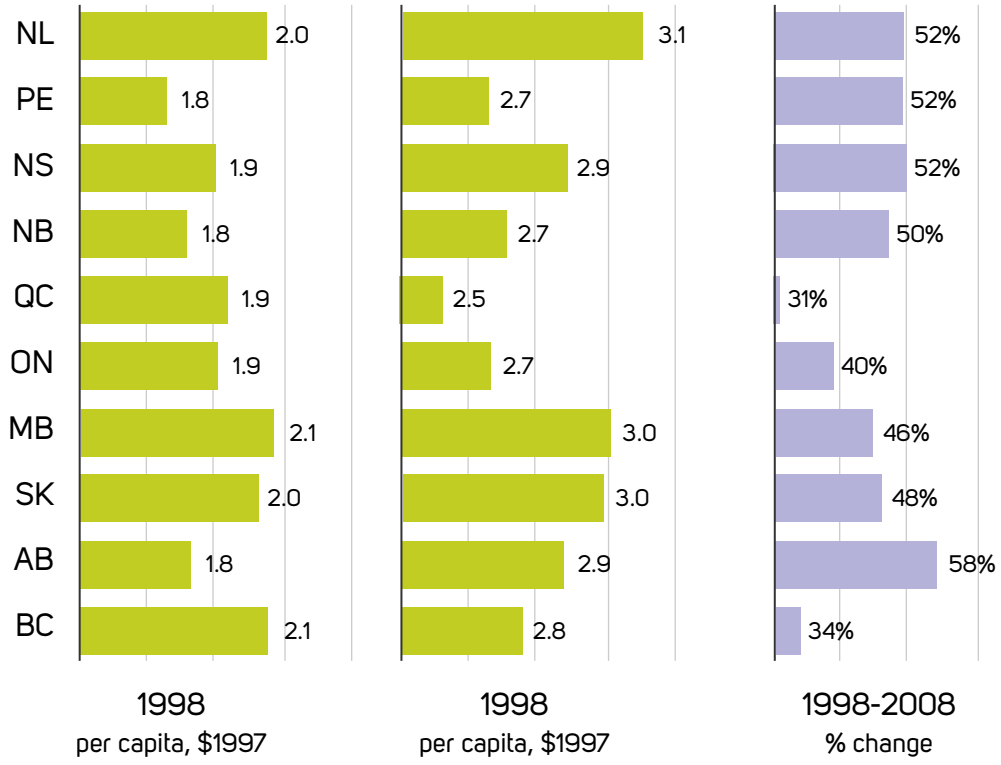
Source: National Health Expenditures Database, Canadian Institute for Health Information
Note: Projected spending estimates are used for 2009 and 2010

Figure 3: Public and private health expenditures, by domain of use, Canada, 2008



Source: National Health Expenditures Database, Canadian Institute for Health Information

Figure 4: Total per capita healthcare spending ($000's), by province, 1998 and 2008



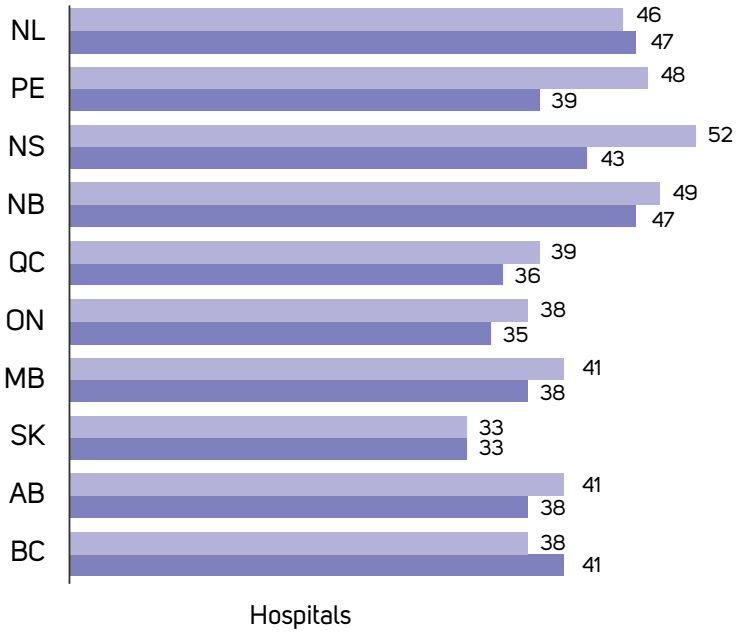
Source: National Health Expenditures Database, Canadian Institute for Health Information

Figure 5: Distribution of total healthcare spending (%), by province and domain, 1998 and 2008

1998

2008

Spending as a proportion of total provincial public health care spending.

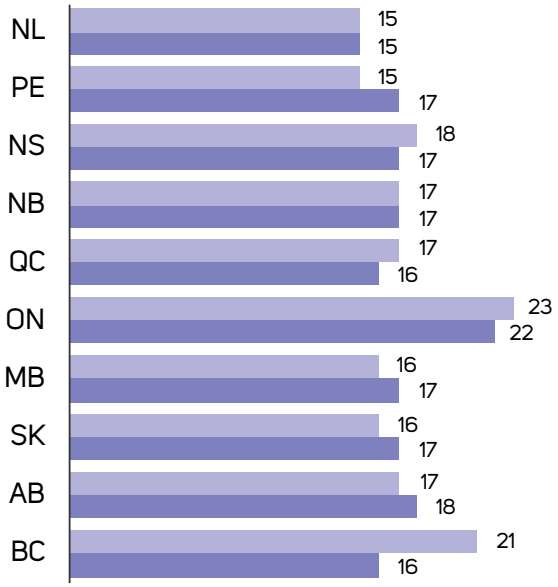


Hospitals

1998

2008

Spending as a proportion of total provincial public health care spending.

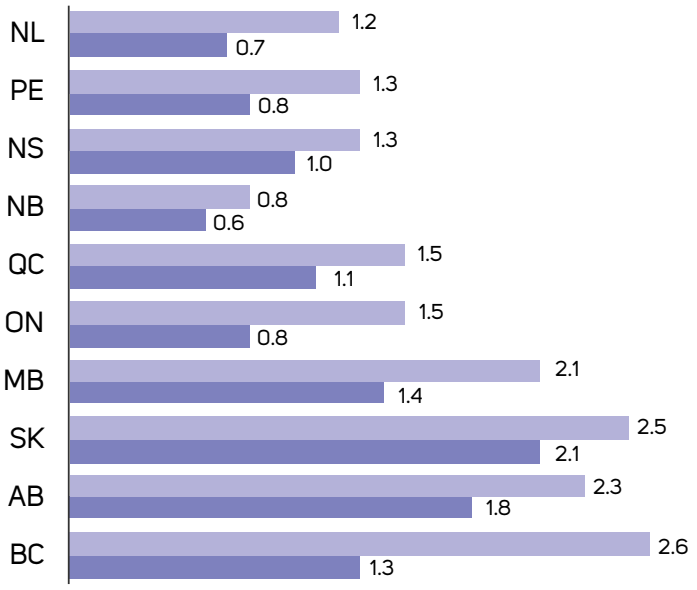


Phusicians

1998

2008

Spending as a proportion of total provincial public health care spending.

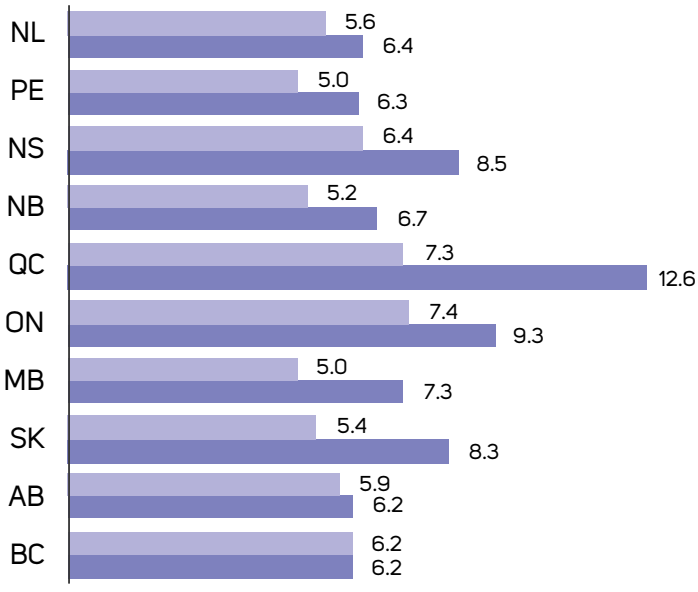


Other Professionals

1998

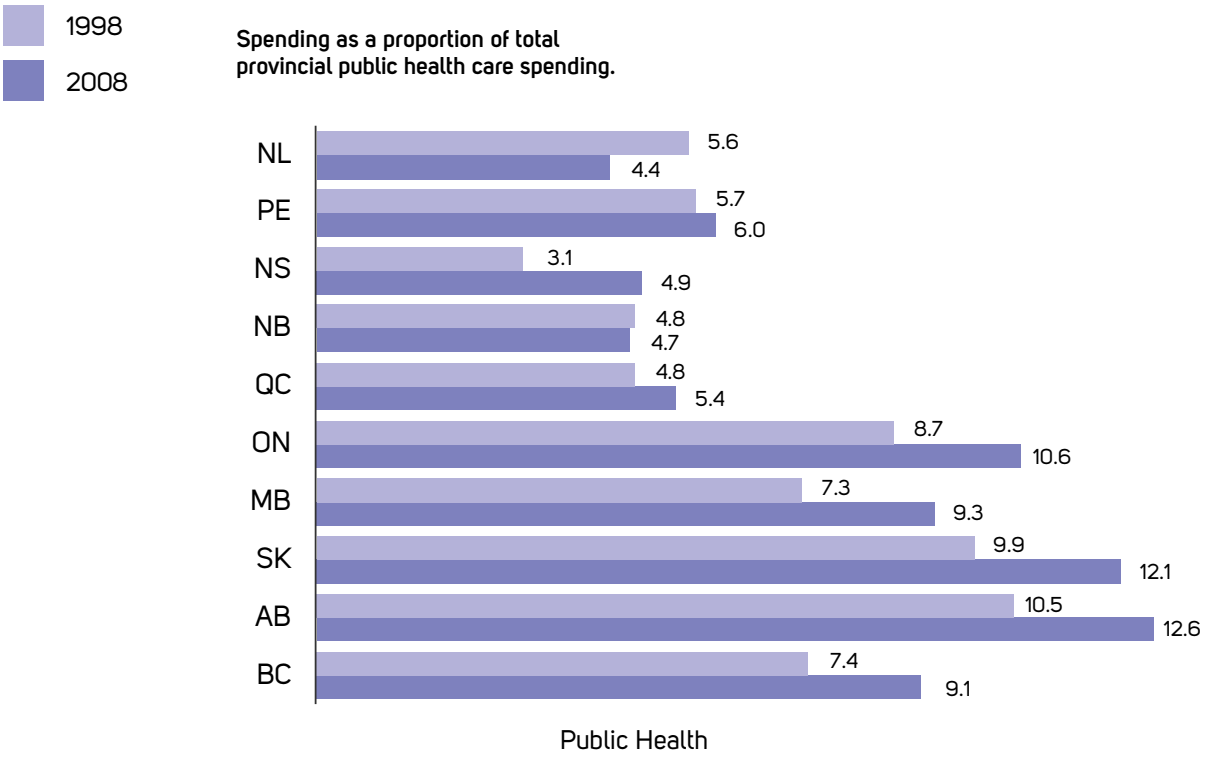
2008

Spending as a proportion of total provincial public health care spending.



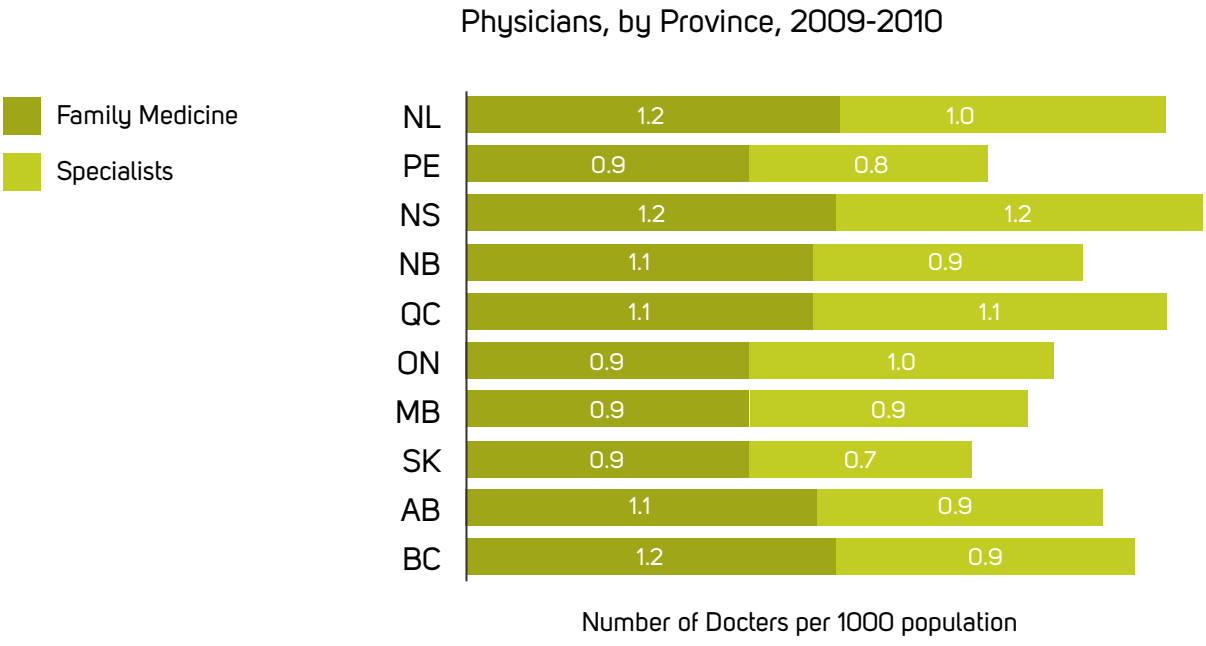
Drugs

Figure 5: Distribution of total healthcare spending (%), by province and domain, 1998 and 2008 (continued)

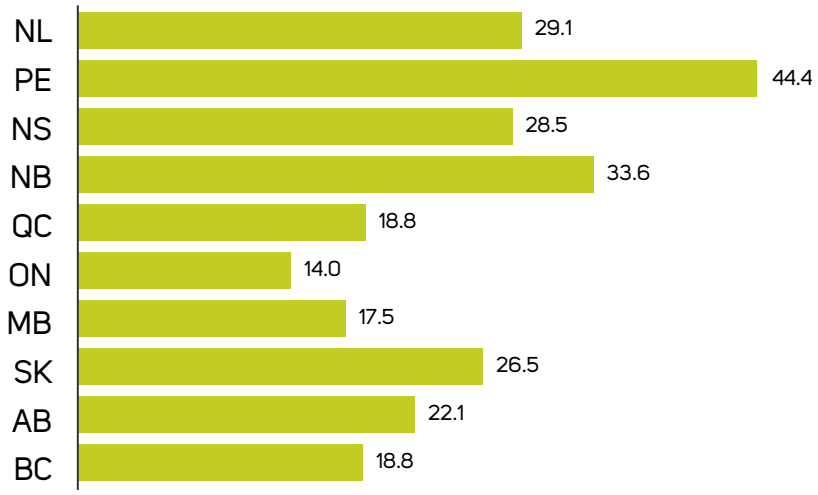


Source: National Health Expenditures Database, Canadian Institute for Health Information

Figure 6: Health policy indicators, by province, 2007, 2009/10 and 2010



Wait Times, between GP Referral & Treatment, 2010



Registered Nursing Workforce, by Province, 2007

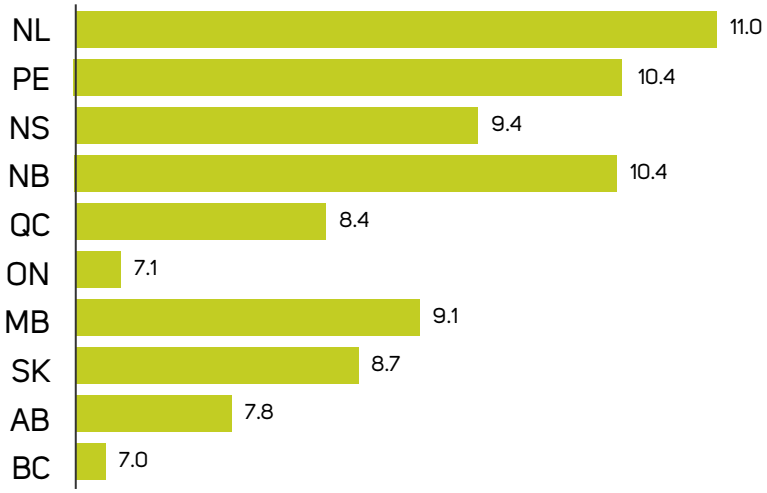
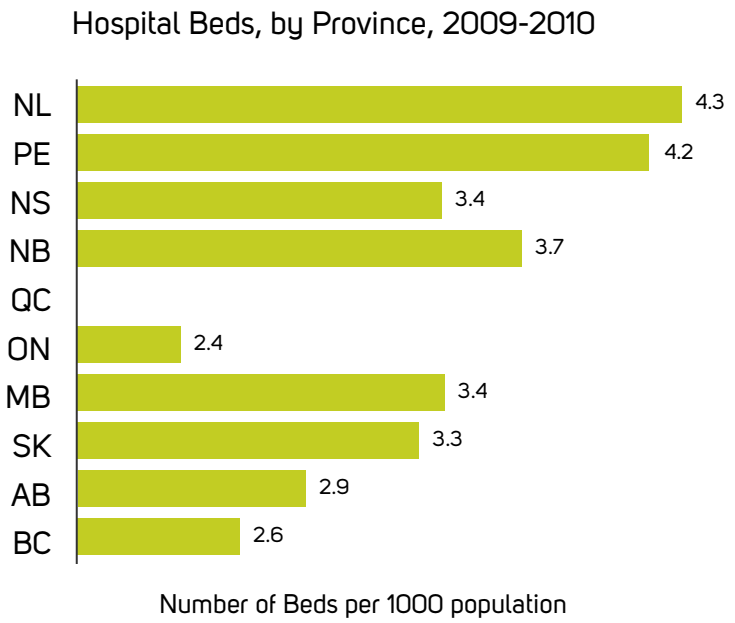
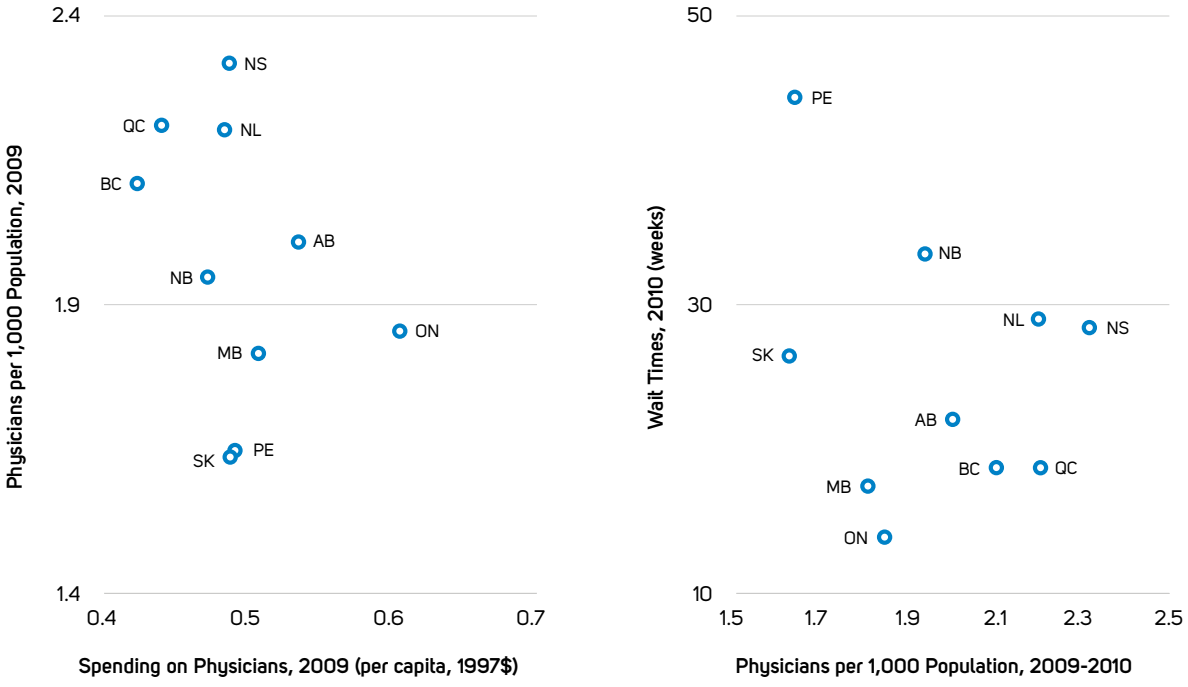


Figure 6: Health policy indicators, by province, 2007, 2009/10 and 2010 (continued)



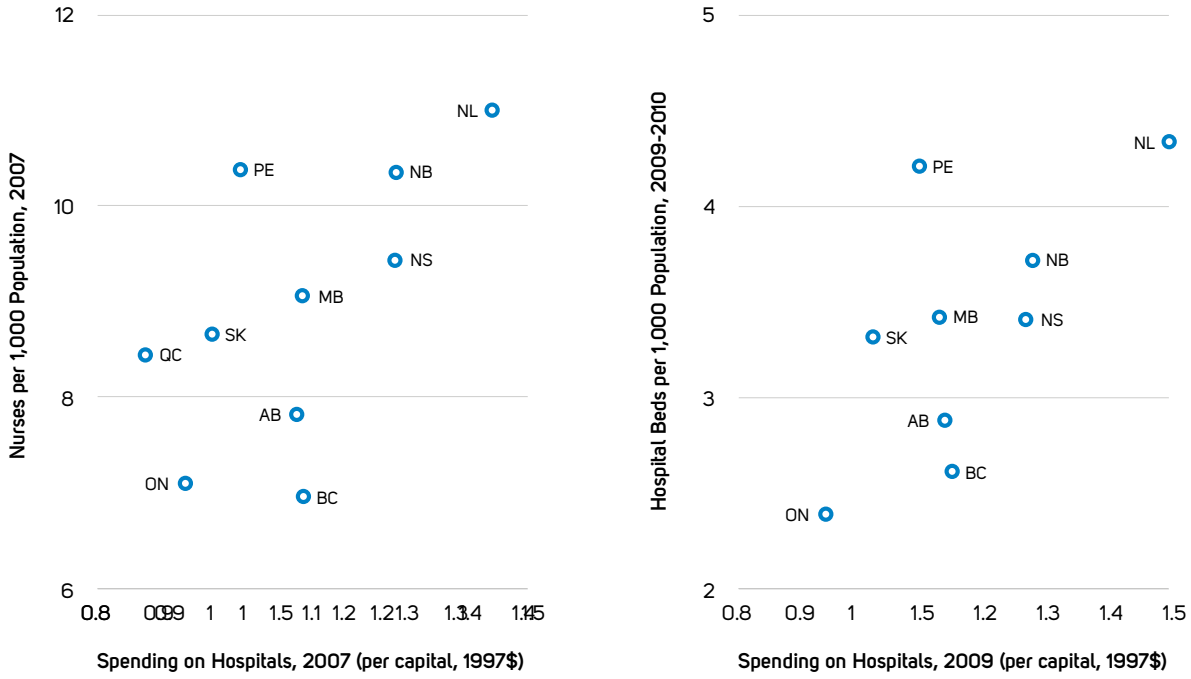
Sources: Scott's Medical Database; Canadian Institute for Health Information; and Barua et al., 2010
Note: No data were available on hospital beds for Quebec.

Figure 7: Spending on physicians compared with wait times, by province, 2009, 2009/10 and 2010



Sources: National Health Expenditures, Canadian Institute for Health Information; and Barua et al., 2010
Note: Wait times refer to time (in weeks) between referral by GP and treatment by specialist or surgery.

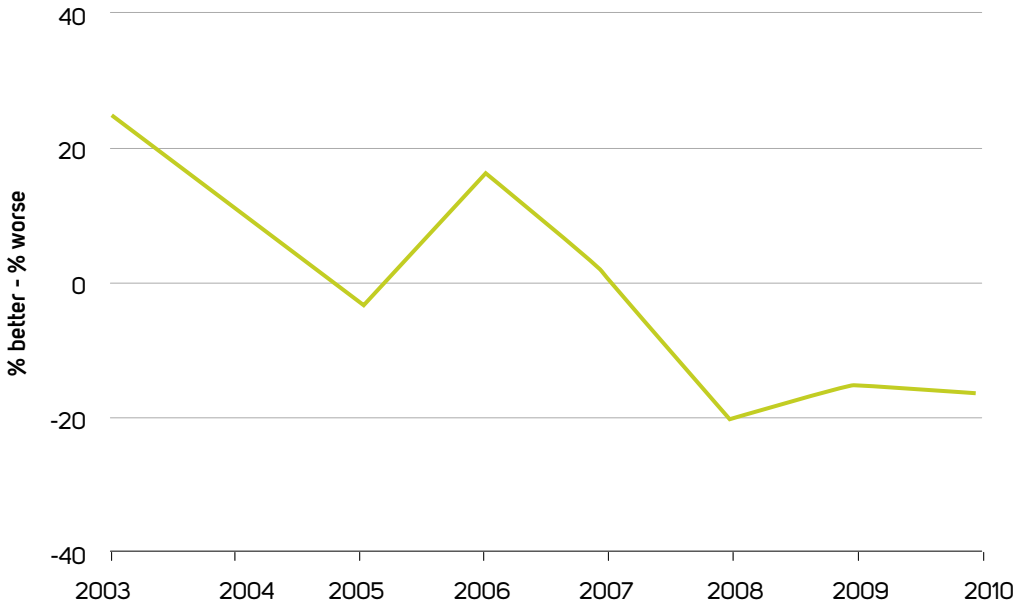
Figure 8: Spending on hospitals compared with number of nurses and hospital beds, by province, 2007, 2009 and 2009/10



Source: Canadian Institute for Health Information

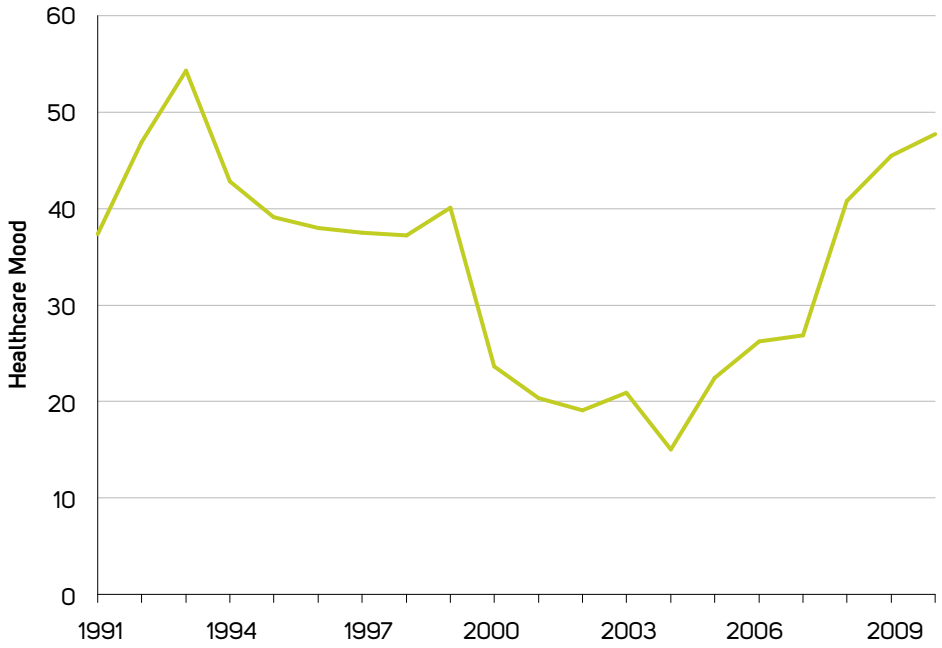
Figure 9: Perceived future of healthcare services, Canada, 2003-2010

Overall, do you think health care services in your community will get much better, somewhat better, somewhat worse or much worse over the next two or three years? (% better - % worse)



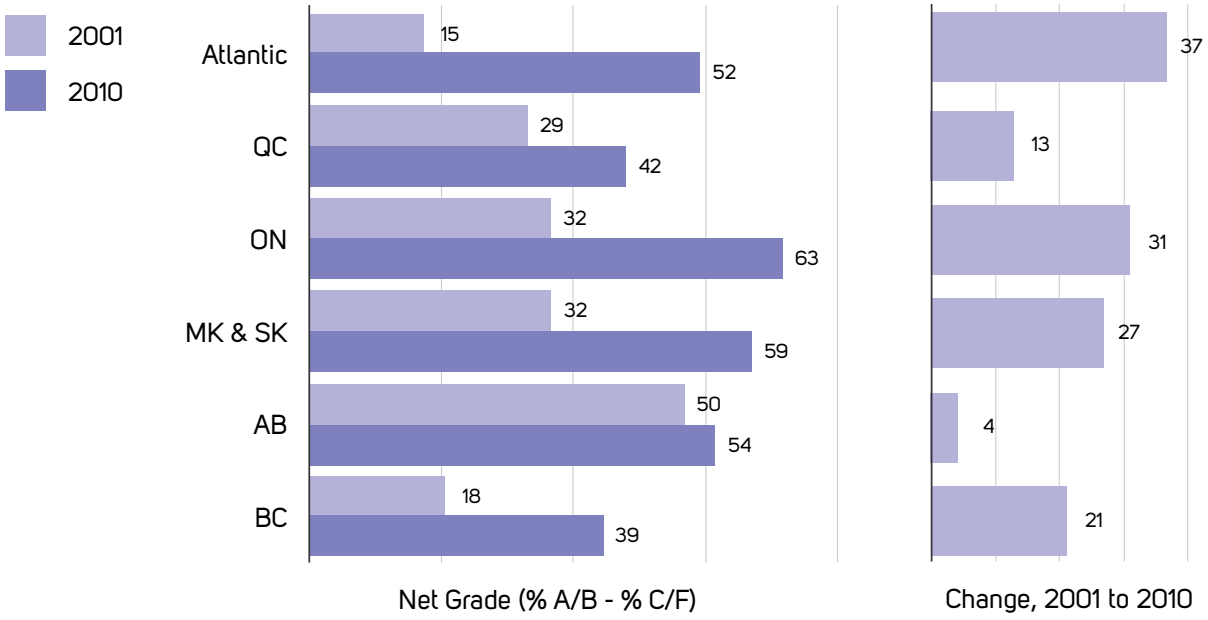
Source: Ipsos Reid, 2003-2010

Figure 10: Perceived current quality of healthcare: A measure of "mood," Canada, 1991–2010



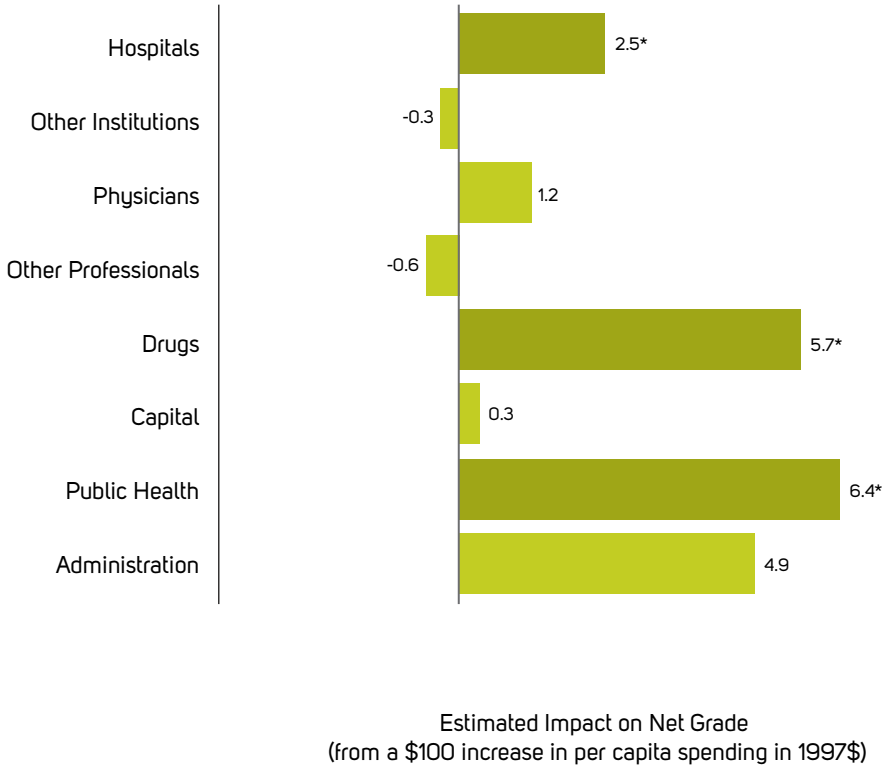
Sources: Stimson, 1999; ODESI; Canadian Opinion Research Archive; Ipsos Reid; and the Canadian Medical Association

Figure 11: Public opinion on healthcare, across provinces, 2001 and 2010



Source: Ipsos Reid, 2001 and 2010
Note: "A" is the highest grade, and "F" is a failing grade. The grade choices were A, B, C or F.

Figure 12: The impact of spending on public opinion, by domain, Canada, 2001–2010



* Statistically significant impact