Provincial Government Health Spending and Value for Money: An Overview of Canadian Trends, 1975-2016

Livio Di Matteo
Department of Economics, Lakehead University
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Outline

- Health Spending in Canada and the Provinces: Trends and Issues
- Value for Money in Canadian Health Spending: A Very Brief Evaluation

Health spending in Canada & The provinces: Some trends and issues

The Canadian Health System

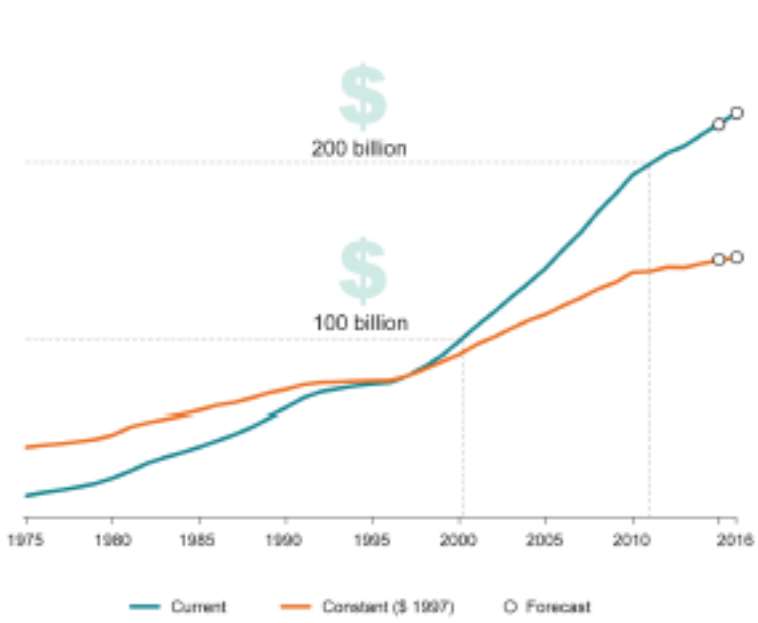
- Is there a Canadian health care “system”?
- In Canada, the federal and provincial governments jointly finance public expenditures on health but provincial governments deliver publicly funded health care to citizens.
- Provincial and territorial government health expenditures: spending for insured health services and extended health care and are funded by federal transfers as well as own source revenues.
- The federal government makes some direct health care expenditures:
  - First Nations
  - Members of the Armed Forces and health research.
- Private sector health care expenditures include:
  - expenditures from health insurance firms,
  - out-of-pocket expenditures of individuals and patient service revenue paid by private insurers for items such as preferences for private hospital rooms or charges for services that are deemed not medically necessary.

Canadian Health Expenditure Data

- National expenditure data from CIHI for public and private health expenditure are available by eight expenditure categories. They are:
  - Hospitals
  - Other Institutions
  - Physicians
  - Other Professionals
  - Drugs
  - Capital
  - Public Health
  - Other

Total Health Spending in Canada

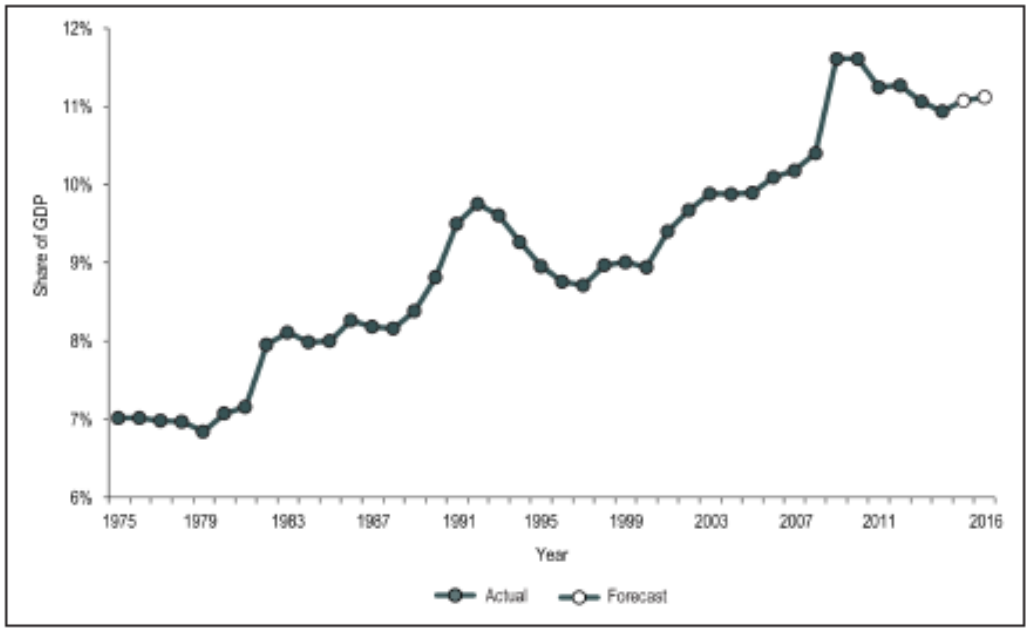
Figure 1 How much will we spend on health in 2016?



Source
National Health Expenditure Database, Canadian Institute for Health Information.

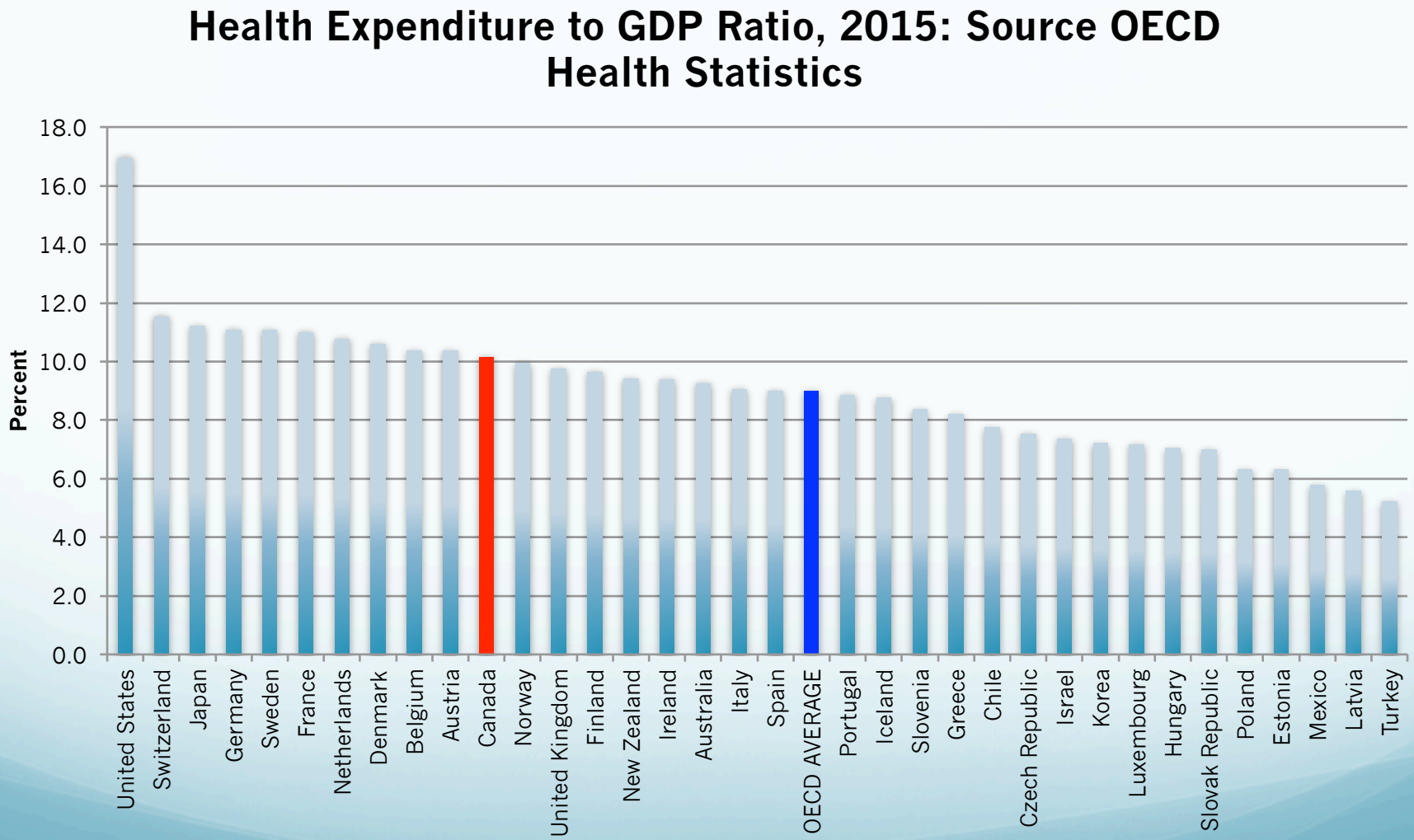
Health spending as a share of GDP

Figure 2 Total health expenditure as a percentage of GDP, Canada, 1975 to 2016

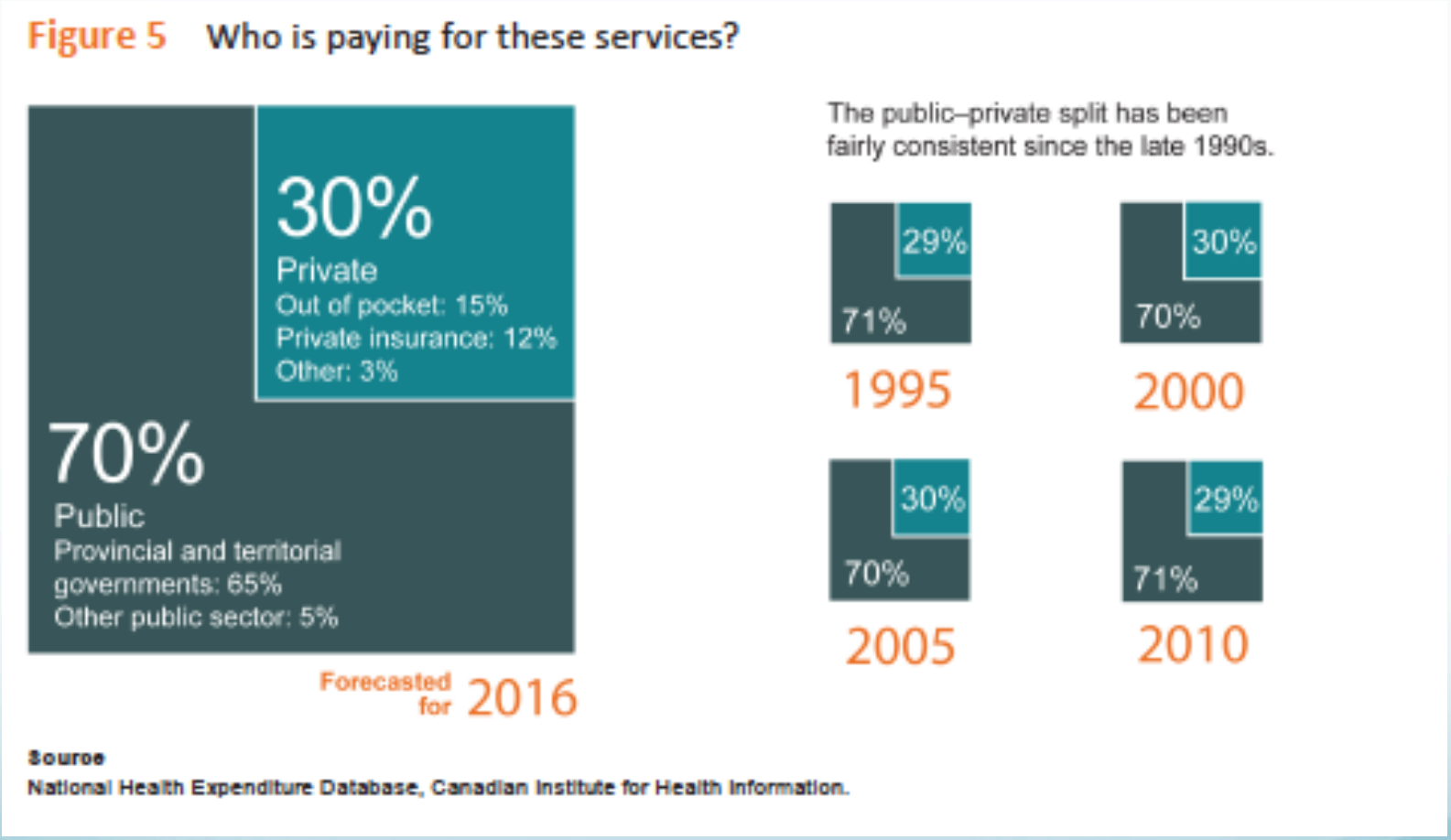


Note
See data table A.1 in the companion Excel file.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

International comparison

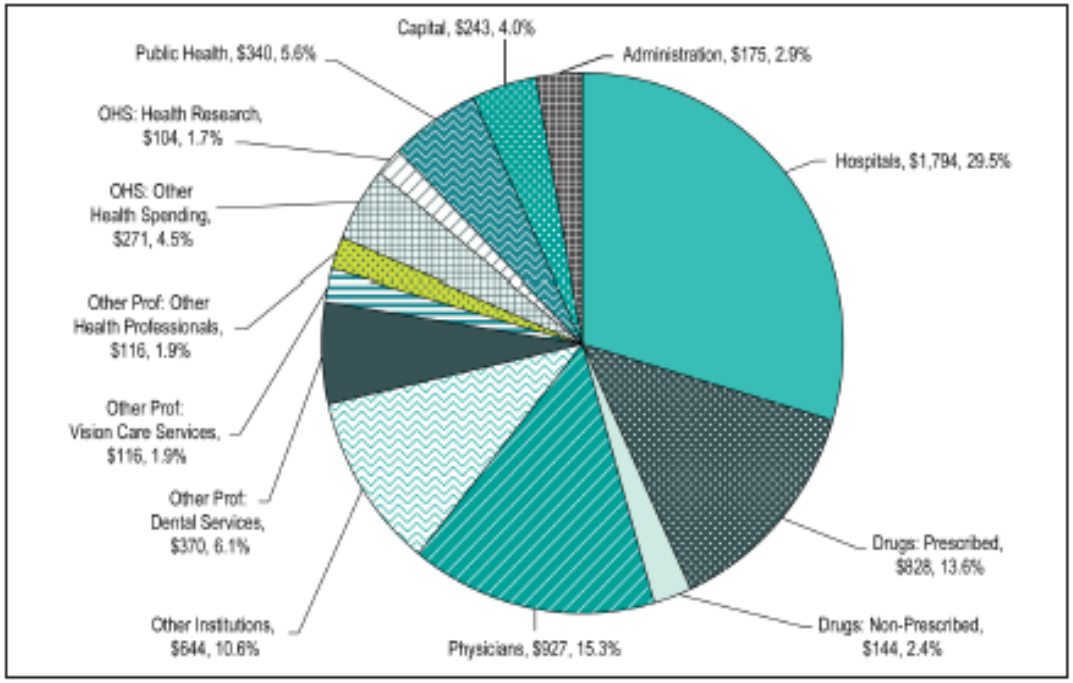


Health Spending by Finance Source



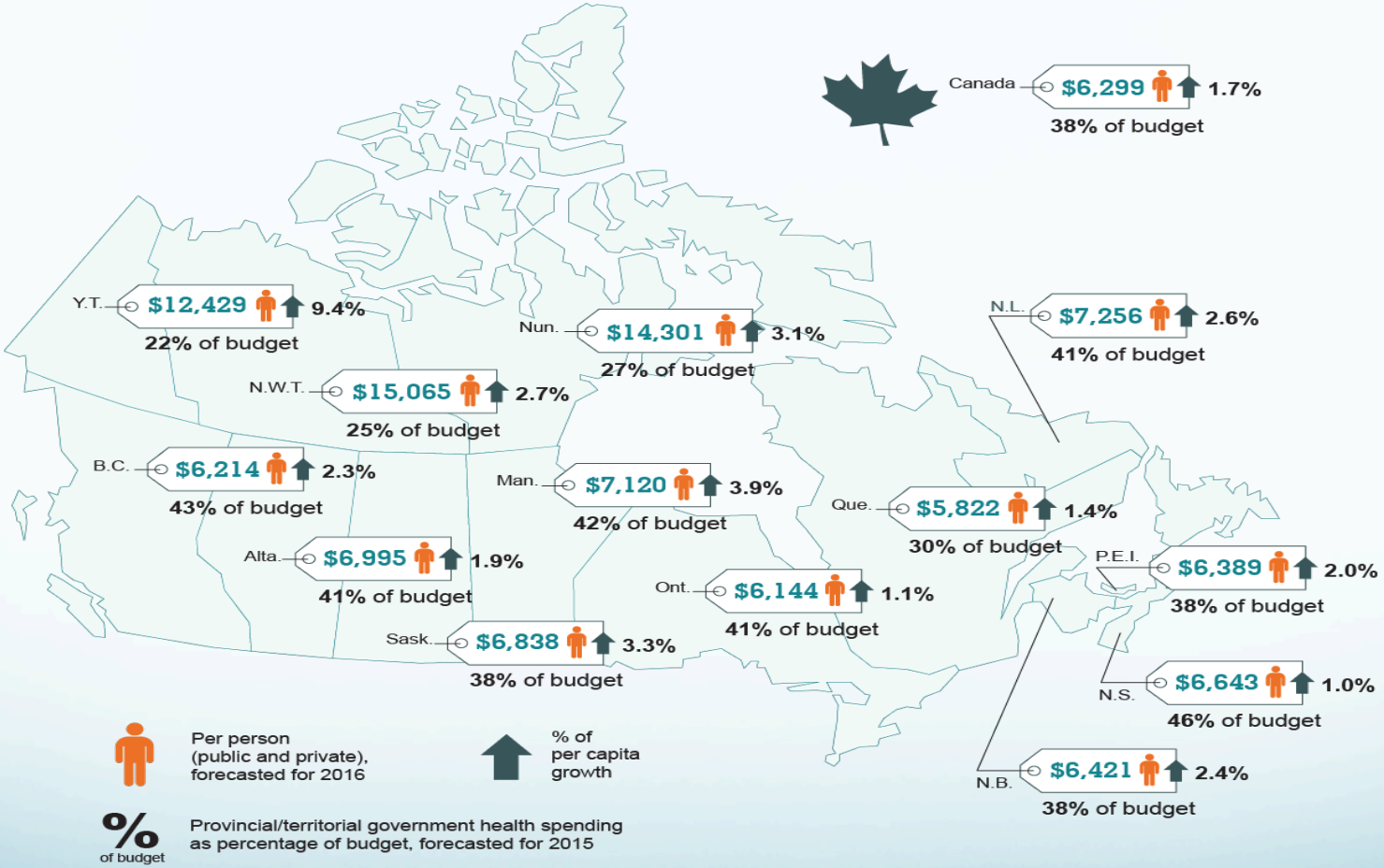
Total Health Spending by Use of Funds

Figure 9 Total health expenditure per capita by use of funds, Canada, 2014 (dollars and percentage share)



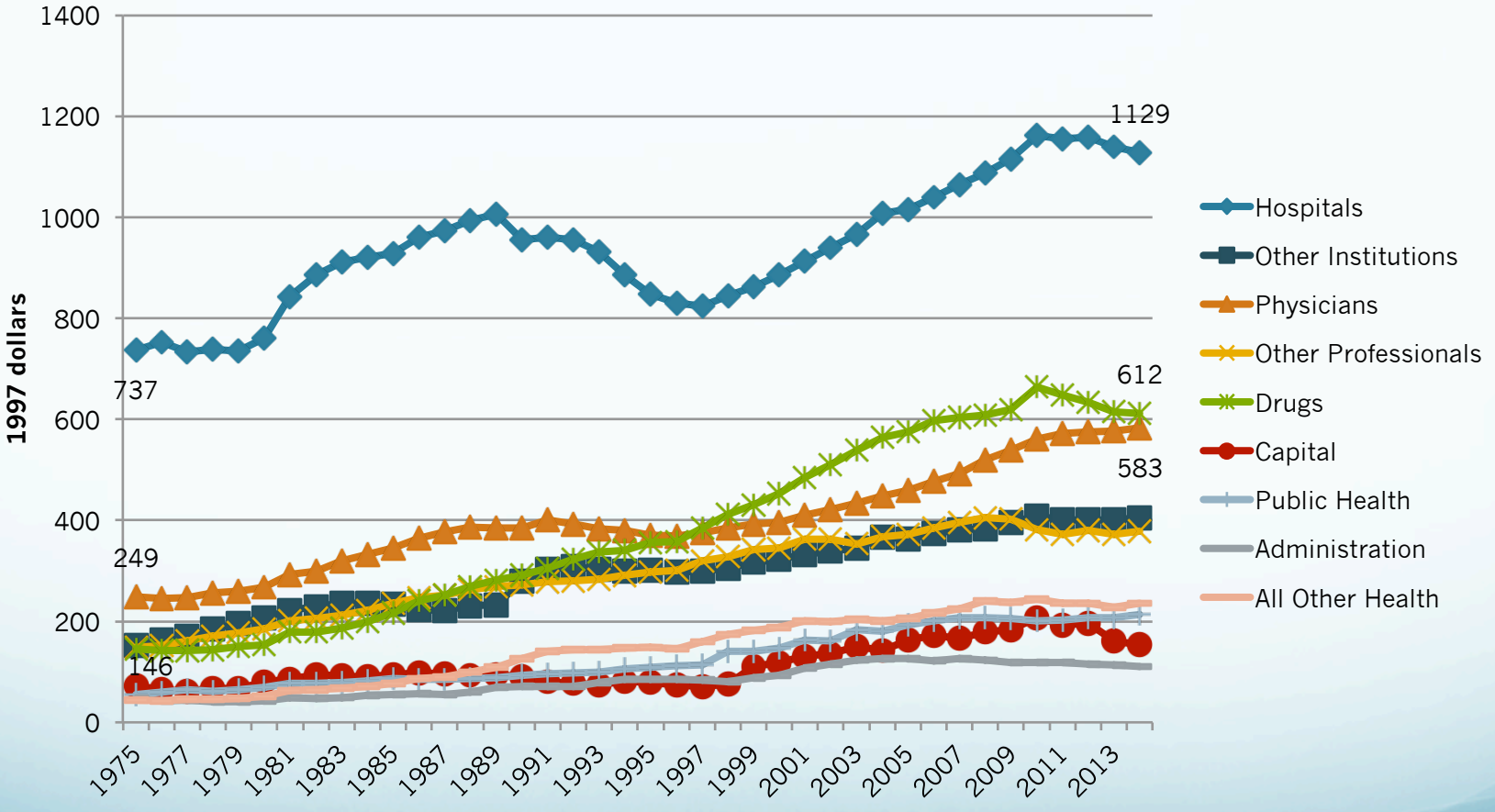
Notes
OHS: Other Health Spending.
2014 is the latest year of actual expenditure data available.
See data tables A.3.1.2 and A.3.1.3 in the companion Excel file. See the Methodology Notes for definitions.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

Health spending continues to vary across Canada

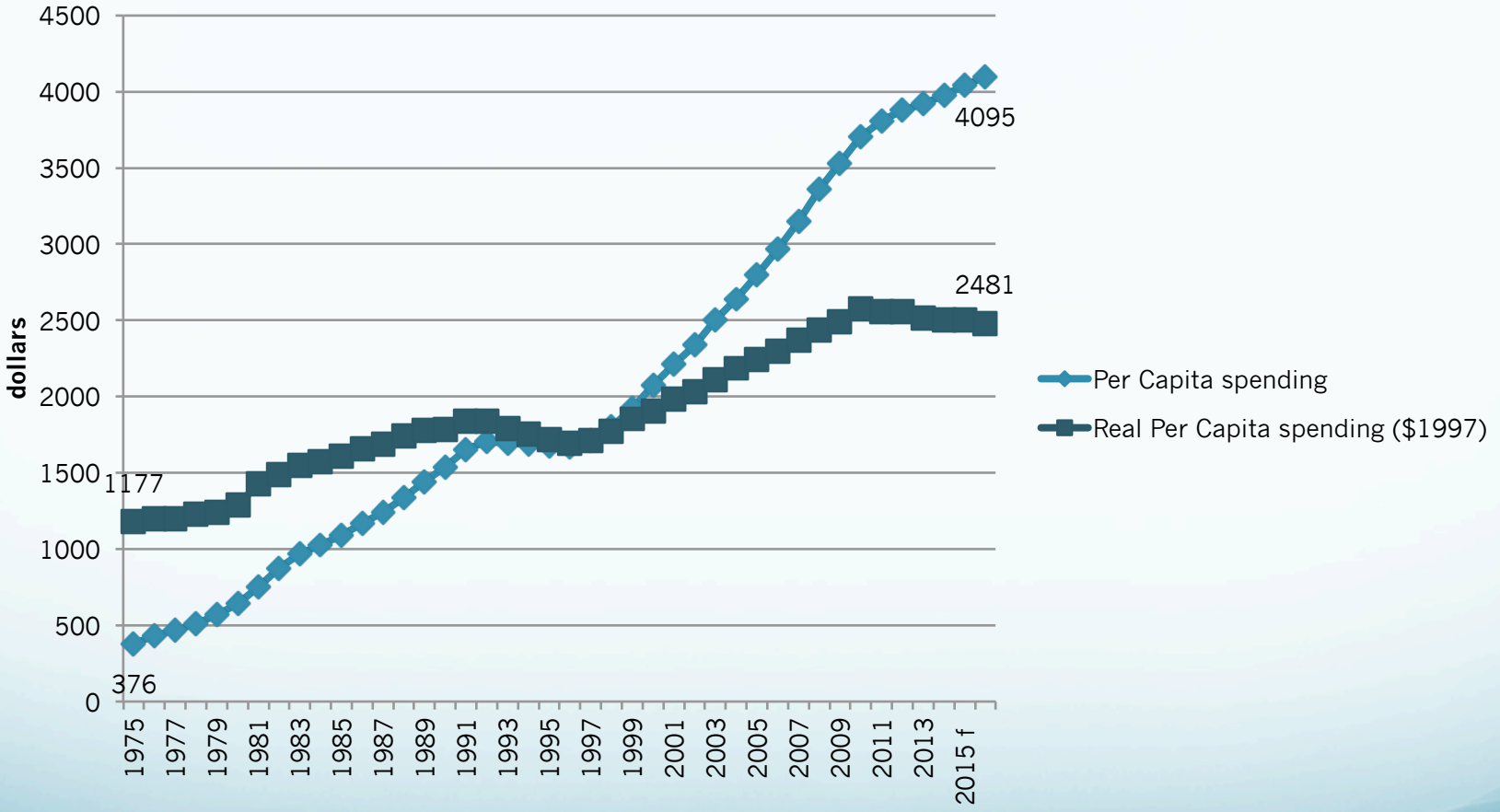


Source
National Health Expenditure Database, Canadian Institute for Health Information.

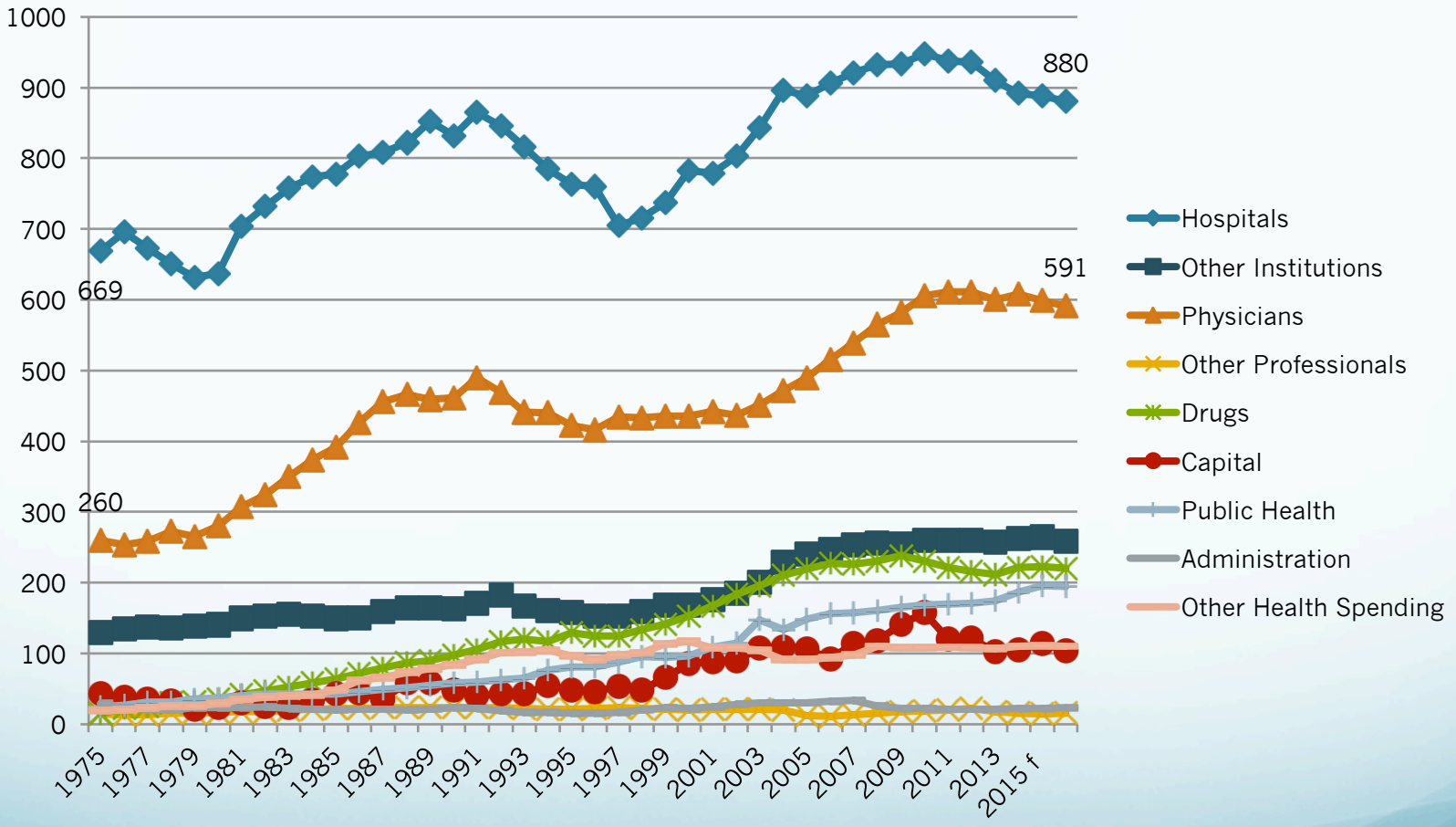
Total Health Spending, Per Capita and Inflation Adjusted, *Canada*,1975-2014 (Source: CIHI NHEX 2016)



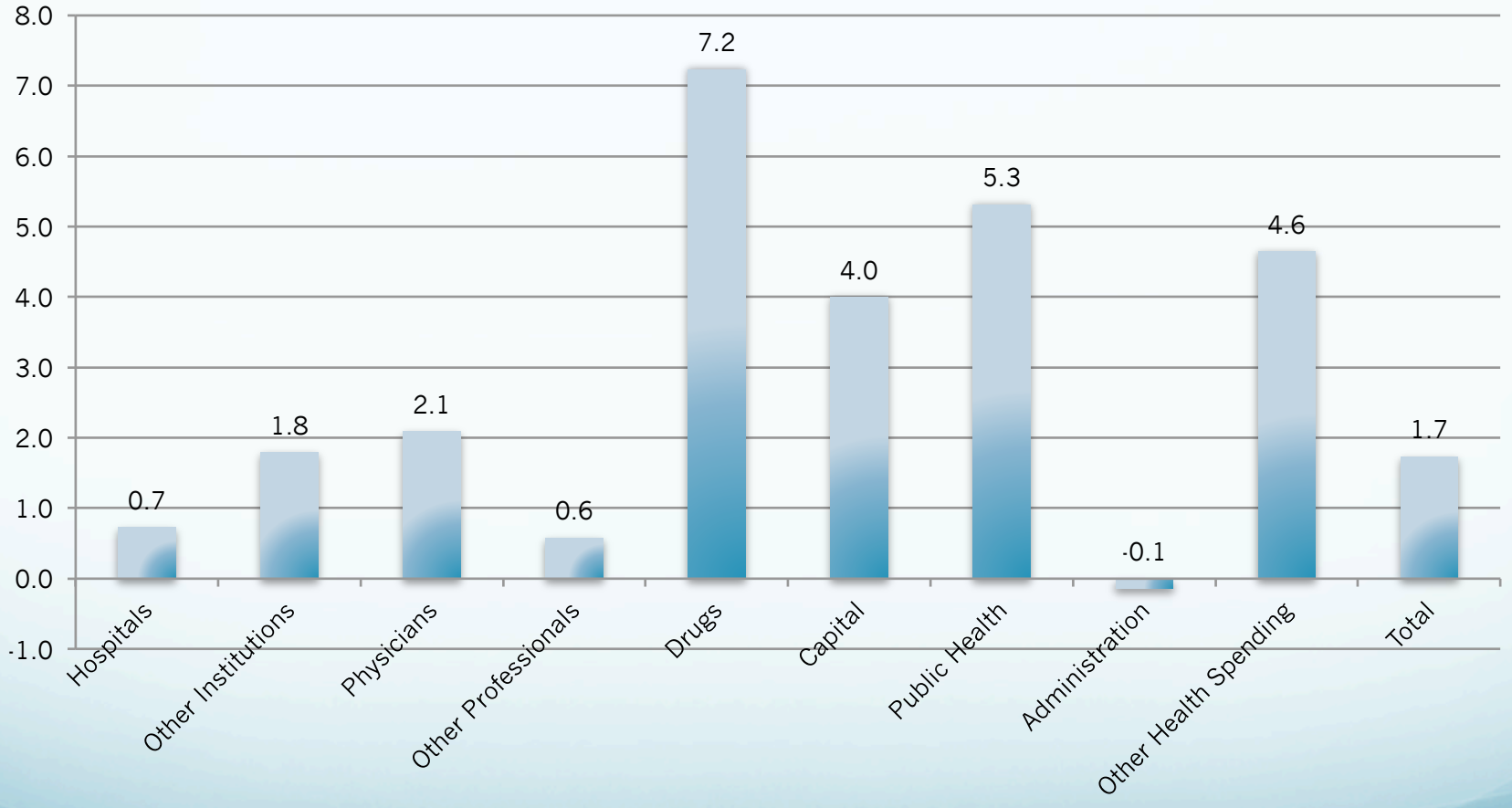
Per Capita Provincial Government Health Spending, Canada, 1975-2016f



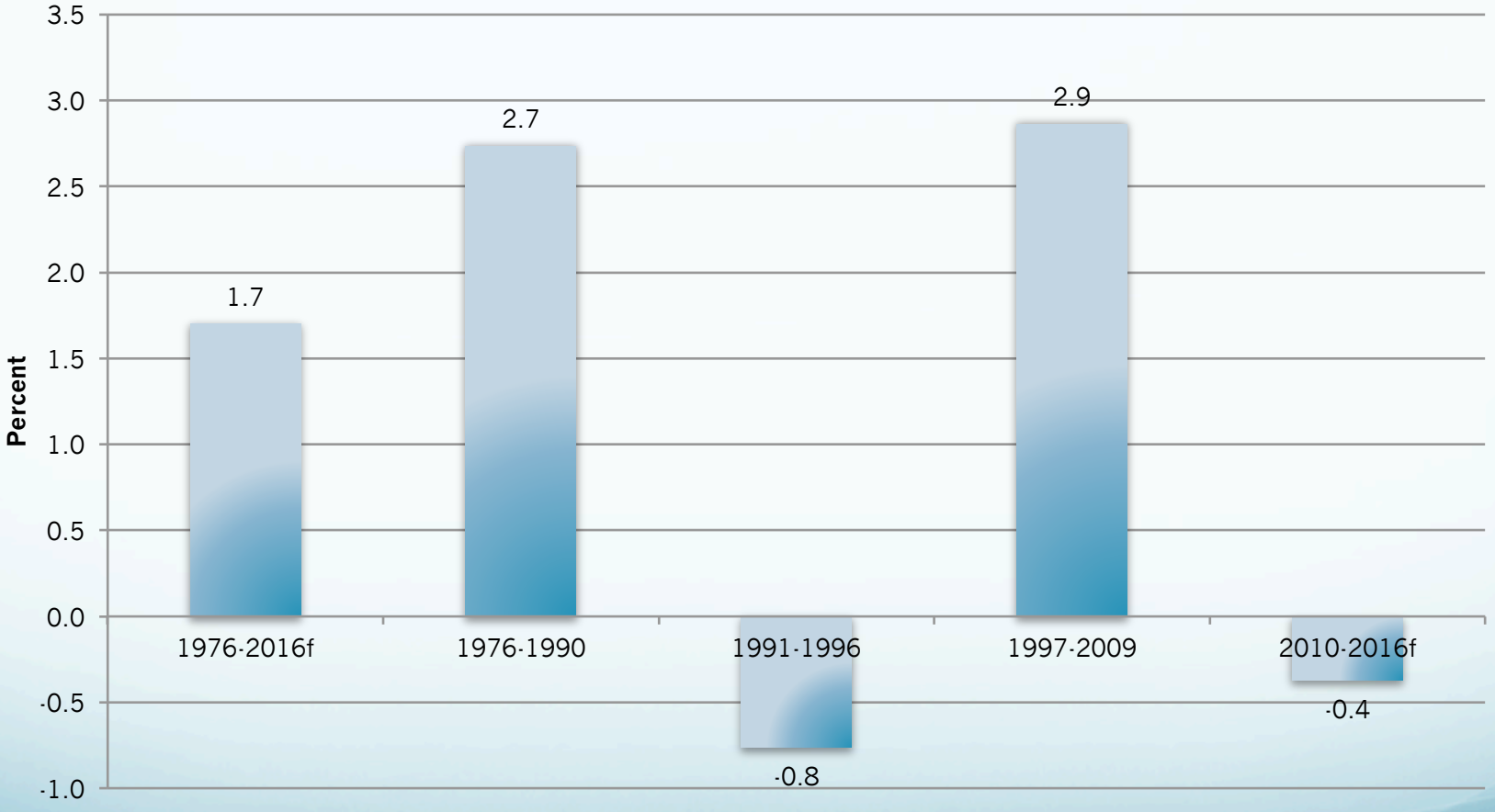
Provincial Government Health Spending, Per Capita and Inflation Adjusted ($1997), *Ontario*, 1975-2016f (Source: CIHI NHEX 2016)



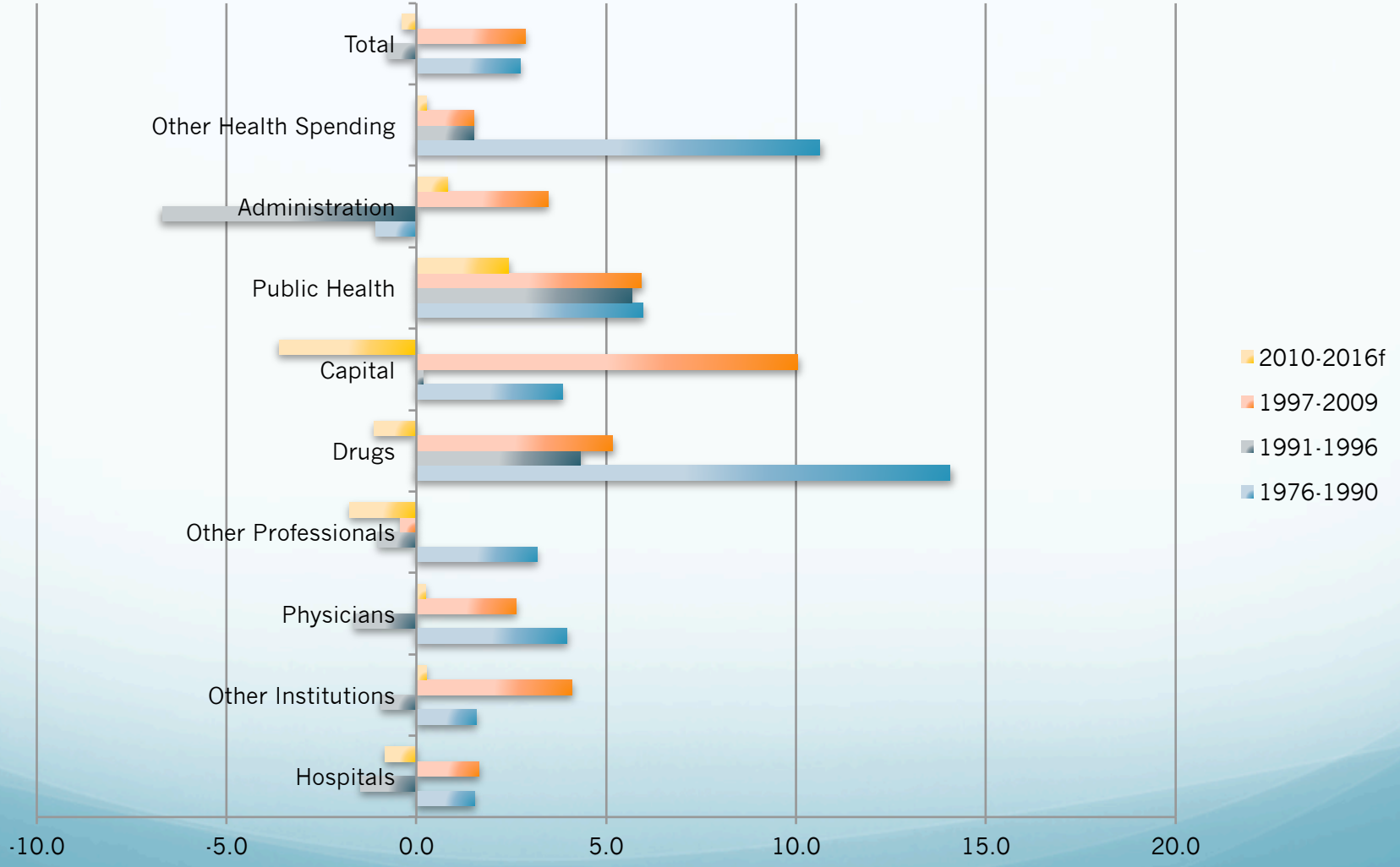
Average Annual Growth Rates, Real Per Capita Ontario Provincial Government Health Spending by Category, 1975-2016f



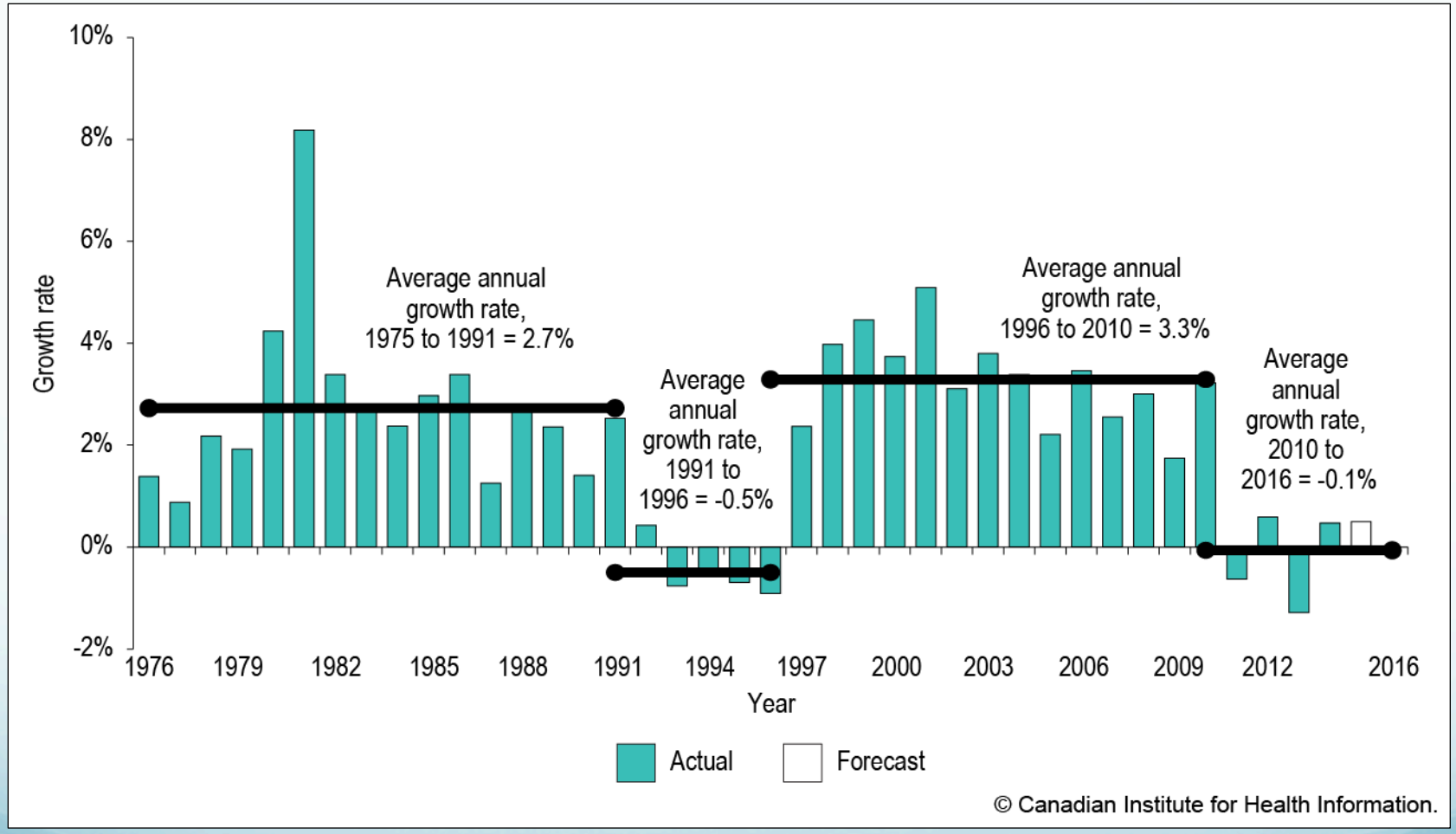
Average Annual Growth Rates, Real Per Capita Ontario Provincial Government Health Spending



Average Annual Growth Rates of Real Per Capita Ontario Provincial Government Health Spending by Category & Time Period, 1975-2016f



Modest growth in total health expenditure per capita since 2011, similar to that experienced in the mid-1990s



Notes

* Calculated using constant 1997 dollars.

See data table A.1 in the companion Excel file.

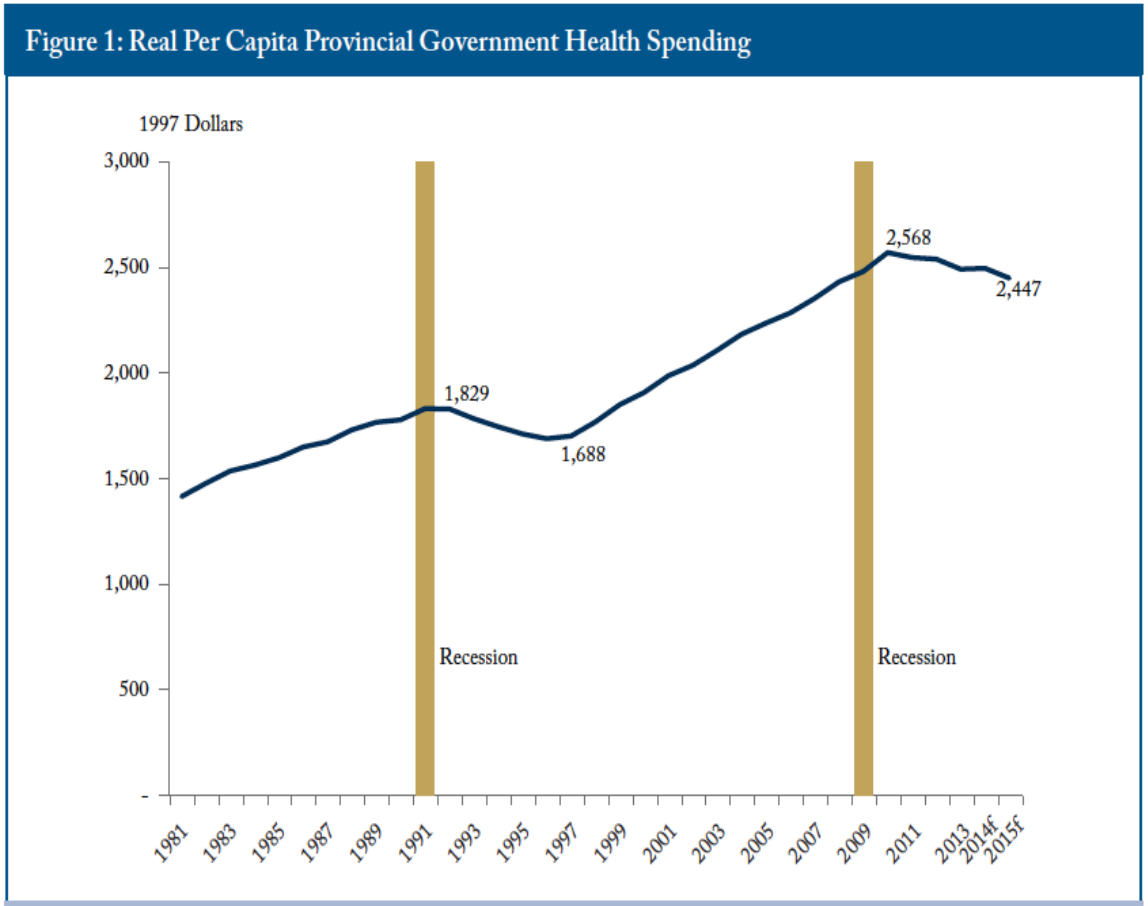
Source

National Health Expenditure Database, CIHI.

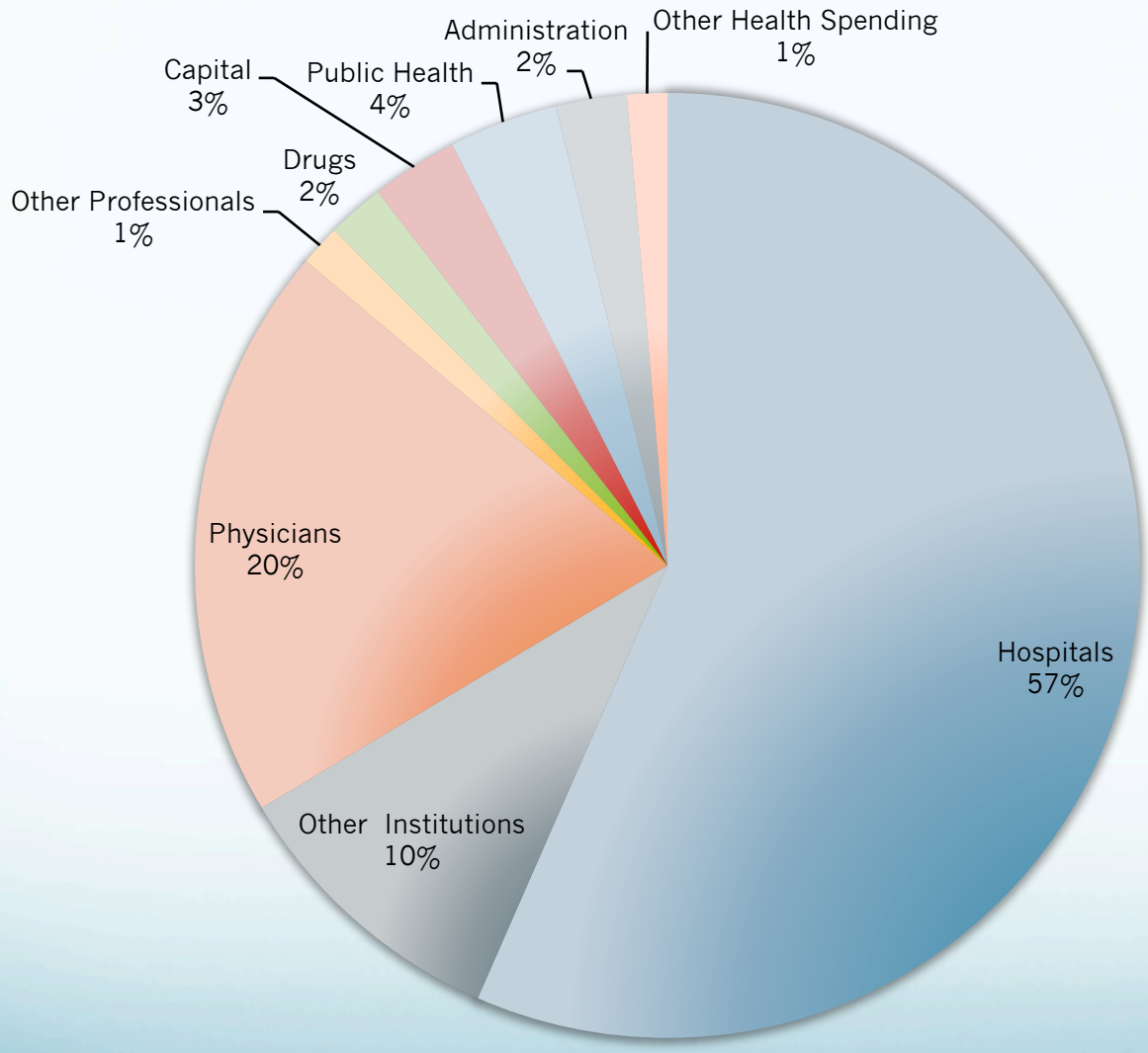
Key Questions

- Is public health spending in Canada sustainable?
  - What is sustainability?
- In light of the recent expenditure slowdown, is the cost curve being successfully bent?
- Changing narratives: Pre 2009 concern with rising spending and alarming predictions. Post 2009, a decline in growth rates internationally. A new era of dampened growth?

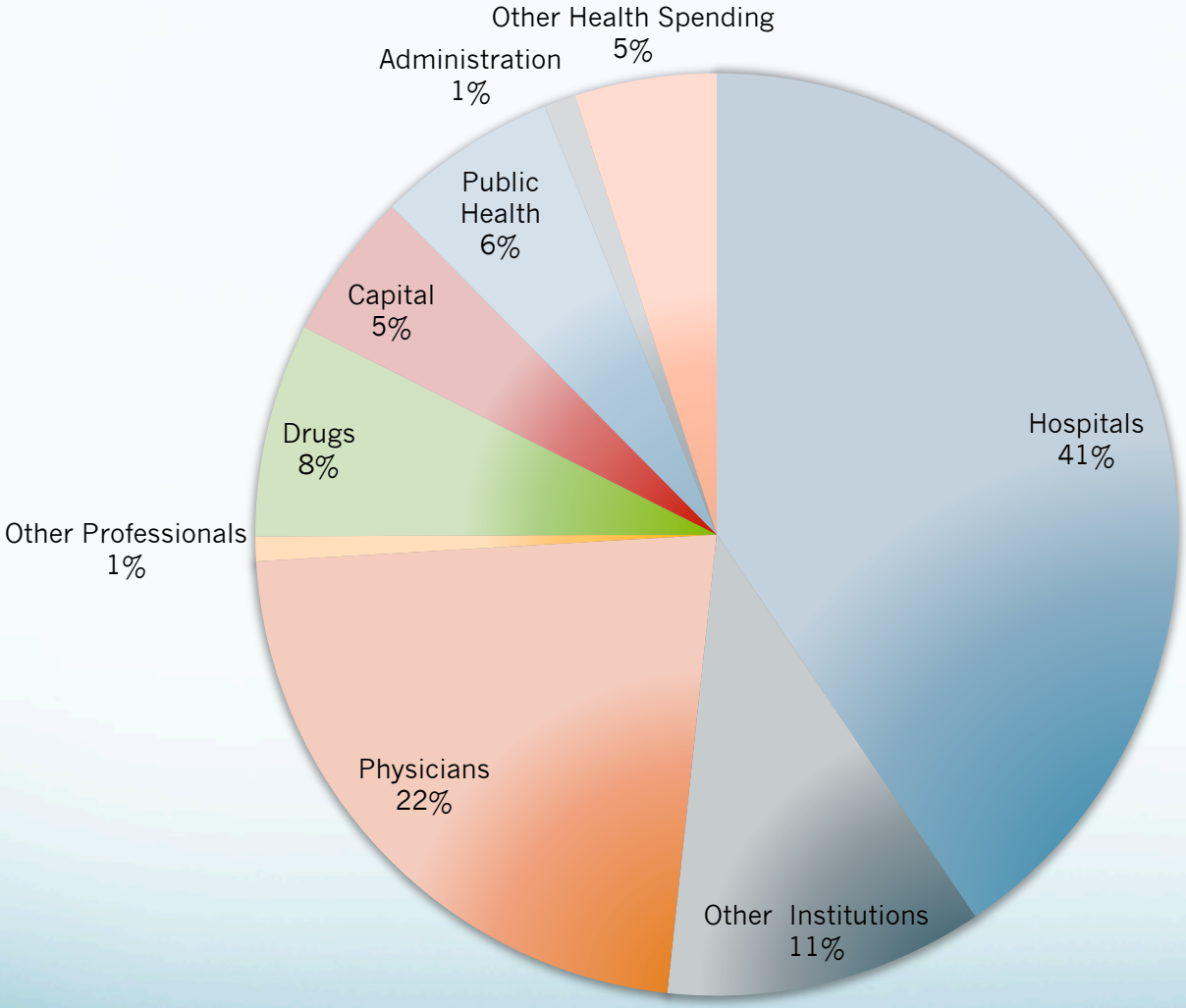
Provincial Government Spending (Source: Di Matteo & Busby, 2016)



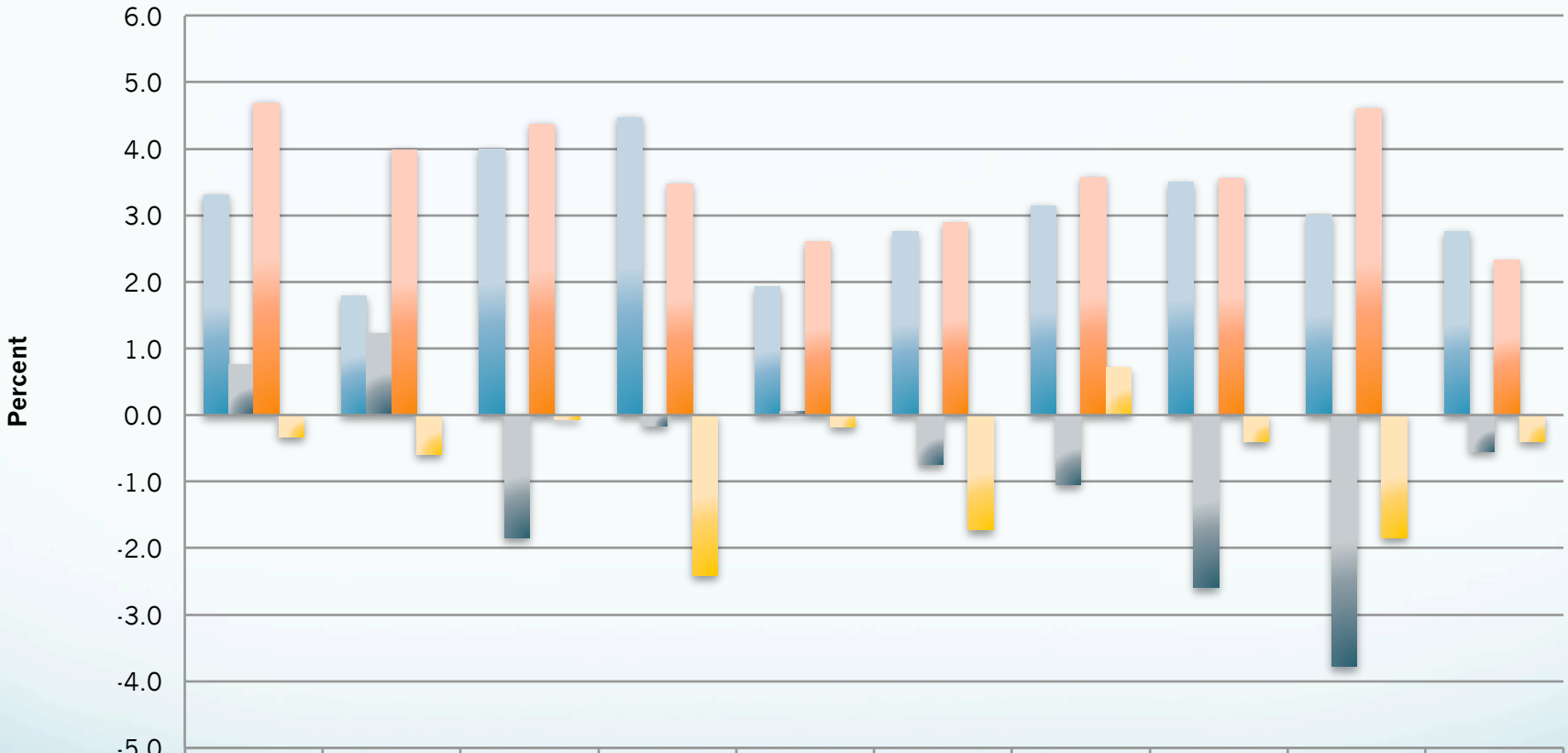
Distribution of Provincial-Territorial Government Health Spending, 1976



Distribution of Provincial-Territorial Government Health Spending, 2013



Average Annual Growth Rates of Real Per Capita Provincial Government Health Spending by Time Period: "*Tap on, Tap off*"



	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1976-1990	3.3	1.8	4.0	4.5	1.9	2.8	3.1	3.5	3.0	2.8
1991-1996	0.8	1.2	-1.8	-0.2	0.1	-0.7	-1.0	-2.6	-3.8	-0.5
1997-2010	4.7	4.0	4.4	3.5	2.6	2.9	3.6	3.5	4.6	2.3
2011-2013	-0.3	-0.6	-0.1	-2.4	-0.2	-1.7	0.7	-0.4	-1.8	-0.4

Statistical Determinants of Spending (Source: Di Matteo & Busby, 2016)

VARIABLE	EFFECT ON REAL PER CAPITA PROVINCIAL GOVERNMENT HEALTH SPENDING
Real per Capita GDP	*Each $1 in real per capita GDP (in 2002 terms) is associated with about 2 cents in additional per-capita spending.*
Real per Capita Federal Transfers	*Each $1 in increased transfers is associated with about 36 cents in additional per-capita spending.*
Net Debt to GDP Ratio	*Each increase of 1 percent in net debt to GDP is associated with about $5 decrease in per-capita spending.*
Healthcare Cost Inflation Relative to General Inflation	*Each increase of 1 percent in this ratio is associated with $12 in additional per-capita spending.*
Family Physicians per 1,000 Persons	*No significant effect.*
Specialist Physicians per 1,000 Persons	*Each specialist physician per 1,000 persons is associated with $720 in additional per-capita spending.*
Proportion of the Population Aged 65 to 74	*No significant effect.*
Proportion of the Population Aged 75 and Older	*Each increase of 1 percent in this ratio is associated with $110 in additional per-capita spending*
Provincial Variables	*Each of Nova Scotia, Quebec, Alberta, and Manitoba generally spend less per capita than Ontario.*
First Restraint Period (1991-1996)	*In this period, per capita spending was about $67 lower.*
Second Restraint Period (2011-2013)	*In this period, per capita spending was about $75 higher.*

Di Matteo & Busby (2016)

- Hold the applause, provincial health care spending restraint might not last.
  - after controlling for broader economic and fiscal variables – such as provincial GDP and federal transfers – as well as physician supply growth and population aging, there is no clear evidence that a lasting period of health spending restraint is underway.
  - inability of provinces to maintain relatively large decreases in capital spending, rising cost pressures from "nichebusting" drugs, and the large number of medical school graduates being assimilated into the health system each year.

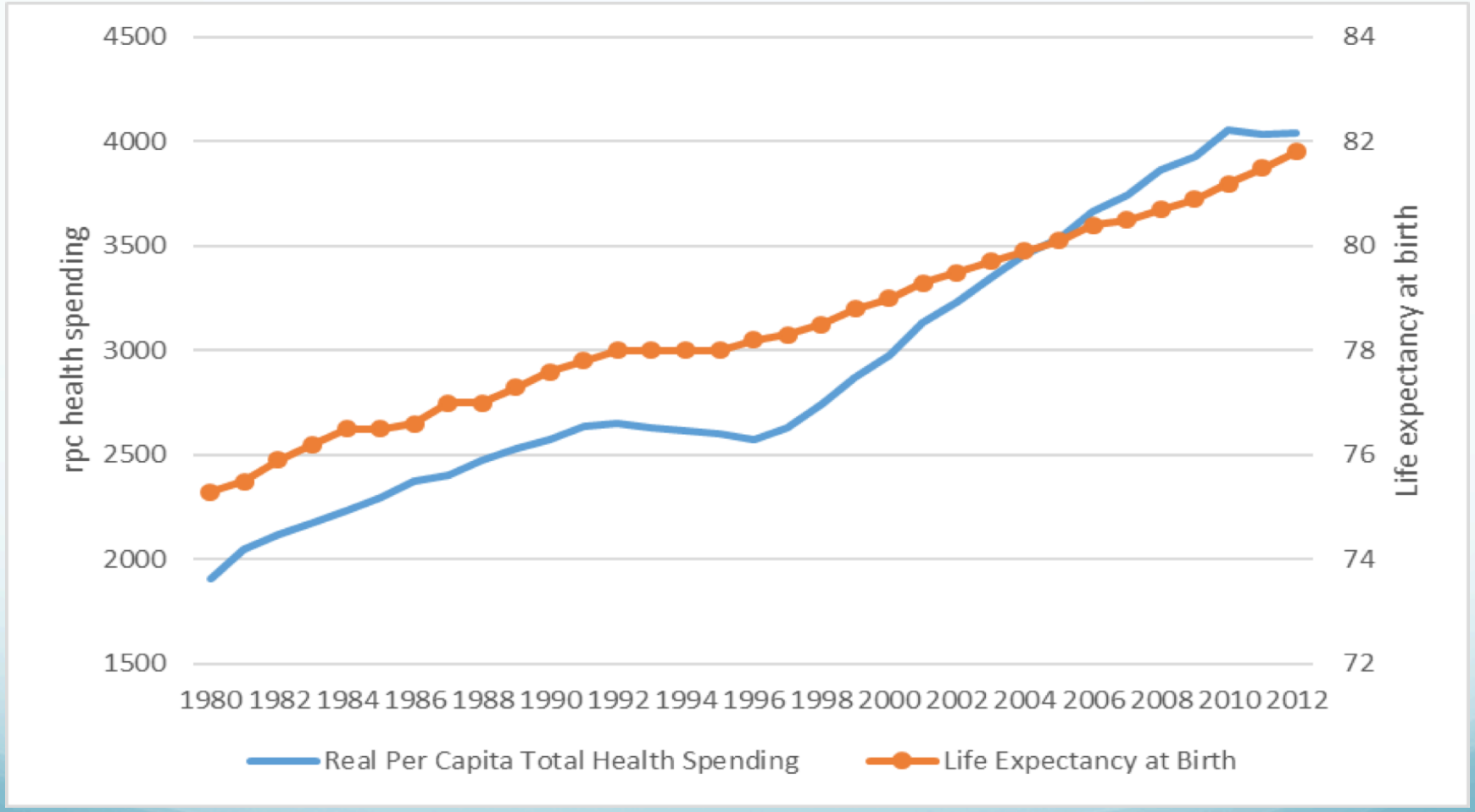
Is More Health Spending 'Bad'?

- Value for Money in Canadian Health Spending: An Evaluation
  - R. Ariste & L. Di Matteo (2017) *Int. J. of Health Econ. & Management*.
- Is more health spending bad? It depends…
  - Is it what society wants?
    - As society's wealth and income rise, devoting more resources to health is a social choice.
  - Is the spending sustainable?
    - Is the resource base keeping up with the expansion in spending?
  - Are we getting value for money?
    - How effective is more health spending in terms of outcomes?

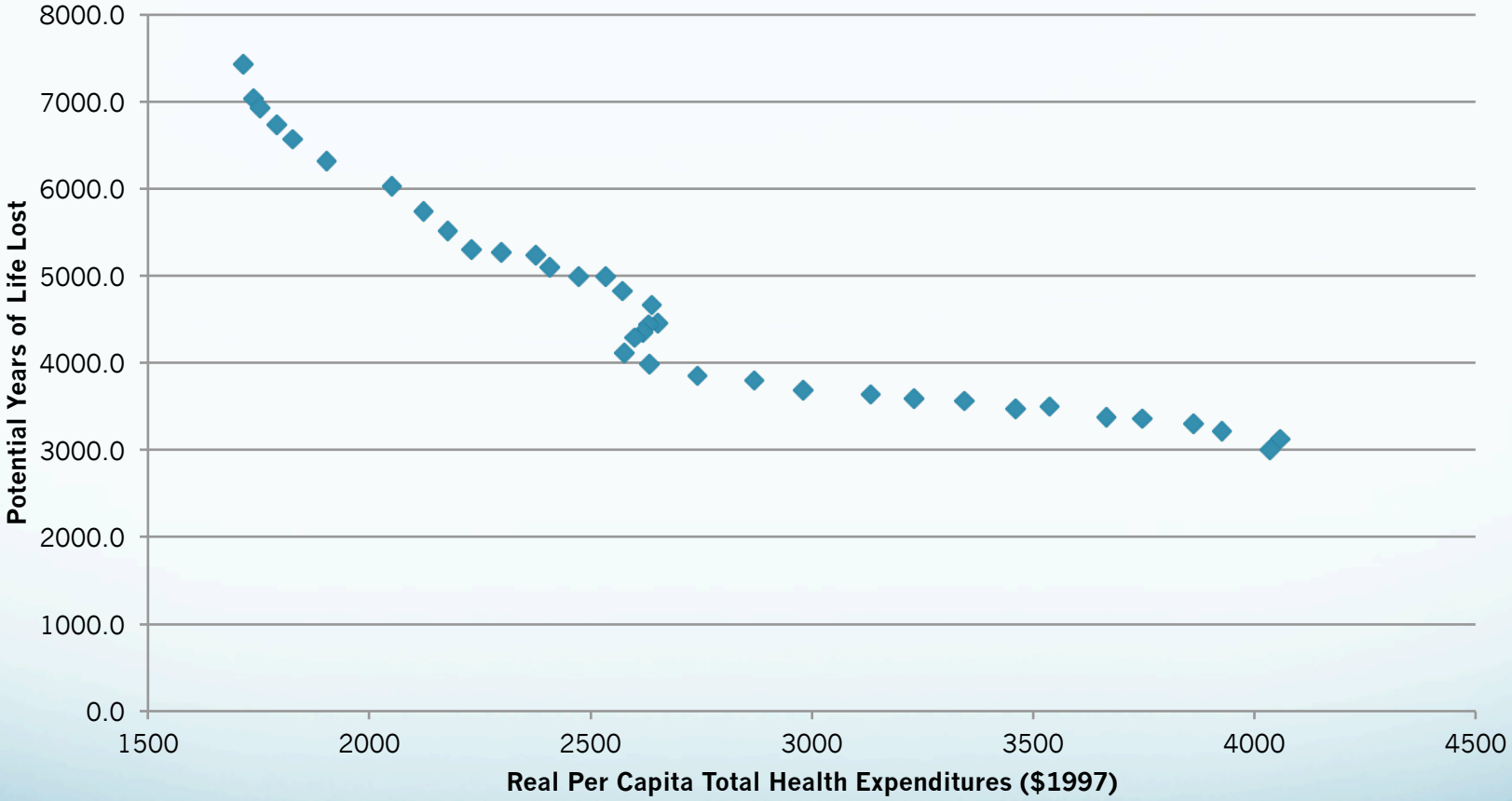
Value for Money in Health

- Specific medical procedures can be evaluated using tools of economic evaluation:
  - Cost benefit analysis; cost-effectiveness analysis; cost analysis
- What about aggregate health spending?
  - What is the efficacy of health spending at a system level?
  - As spending goes up, do outcomes improve?
    - The answer is complicated as health outcomes are a function of environment, lifestyle, biology, socio-economic determinants, i.e., broader determinants of health
    - However, there is a correlation between spending and outcomes.
    - Any discussion of sustainability must include the value produced by spending and the improvement in outcomes.

Trends in Real Per Capita Total Health Spending and Life Expectancy at Birth, Canada 1980-2012



PYLL (Avg of Males & Females) Versus Total Real Per Capita Health Expenditures ($1997), Canada, 1975-2011



Data and Methodology (1)

- P/T health spending by age group was obtained from the historical and current National Health Expenditures (NHEX) report
- Evaluation was conducted for the 1980-2012 period with four sub-periods considered: 1980-89; 1989-1998; 1998-2007; 2007-2012.
- We estimated lifetime cost/spending that prevailed in each period.
- We use a similar approach as in Cutler (2006).
  - Cutler found that the cost per year of life gained was $19,900 between 1960 and 2000 in the U.S.; though it was much higher for the most recent decade ($36,300 in the 1990s)

QALY

- QALY stands for Quality Adjusted Life Years.
  - A measure of health outcomes that combines quantity & quality of life
- are calculated by first measuring the extra years of life that a treatment provides and then combining this figure with a value from a matrix of *illness state ratings*.
- The benefit of treatments is then calculated by adjusting the additional years of life by the illness state ratings to produce a QALY.
  - Example:
    - Additional years of life - 5
    - Illness state Rating - 0.972
    - QALY= 5*0.972= 4.86

Data and Methodology (2)

- Data for Constructing QALYs
  - Data on mortality based on life tables from Statistics Canada
  - Data on morbidity based on the Health Utility Index 3 (HUI3) from Statistics Canada
  - Health-Adjusted Life Expectancy (HALE) = Product of LE times the HUI3
- In this manner, we constructed a picture of the medical care system, as it existed at each time; which enabled us to explore how that picture changed over time.

Data and Methodology (3)

- How much improvement in QALY could be explained by improved health care?
- A range of health contribution scenarios was used: *Source*: Heidenreich & McClellan (2001);Cutler et al; (2006).
  - 40% as a medium contribution scenario
  - low and high contribution scenarios of 30% and 50% also presented as sensitivity analysis.
  - In general, more optimistic scenarios with respect to the contribution of health spending to LE result in lower costs per QALY.

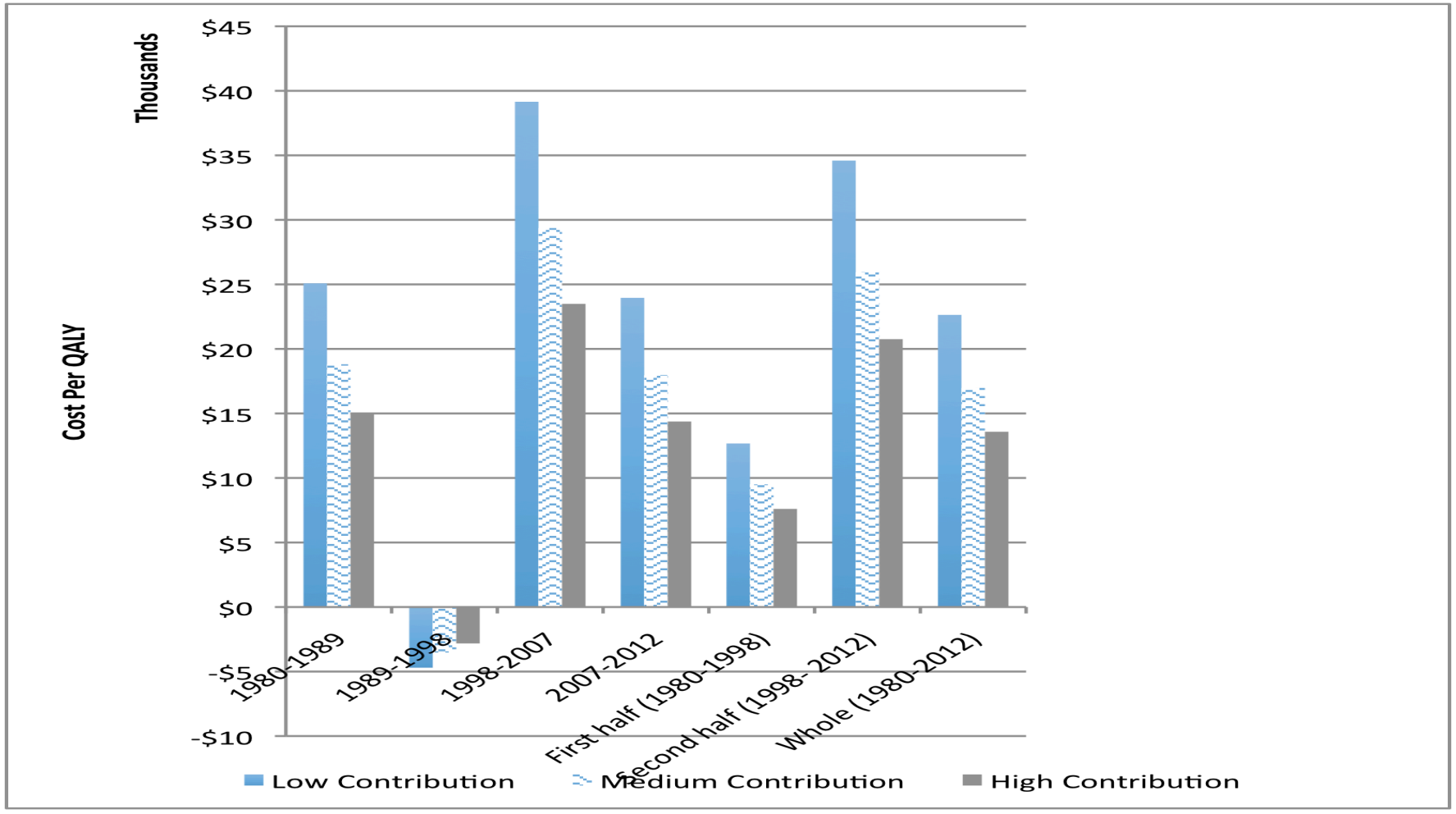
Results and Analysis (1)

- Estimates of the cost per QALY gained in Canada between 1980 and 2012 show a range of costs depending on assumptions of the contribution of such spending to health outcomes.
- Under the medium health contribution scenario, the cost per QALY gained for the general population was on average $16,977 for the whole 1980 through 2012 period. (Note: all costs in $1997).
- It averaged $14,968 for the seniors with a more substantial declining trend during the time periods.

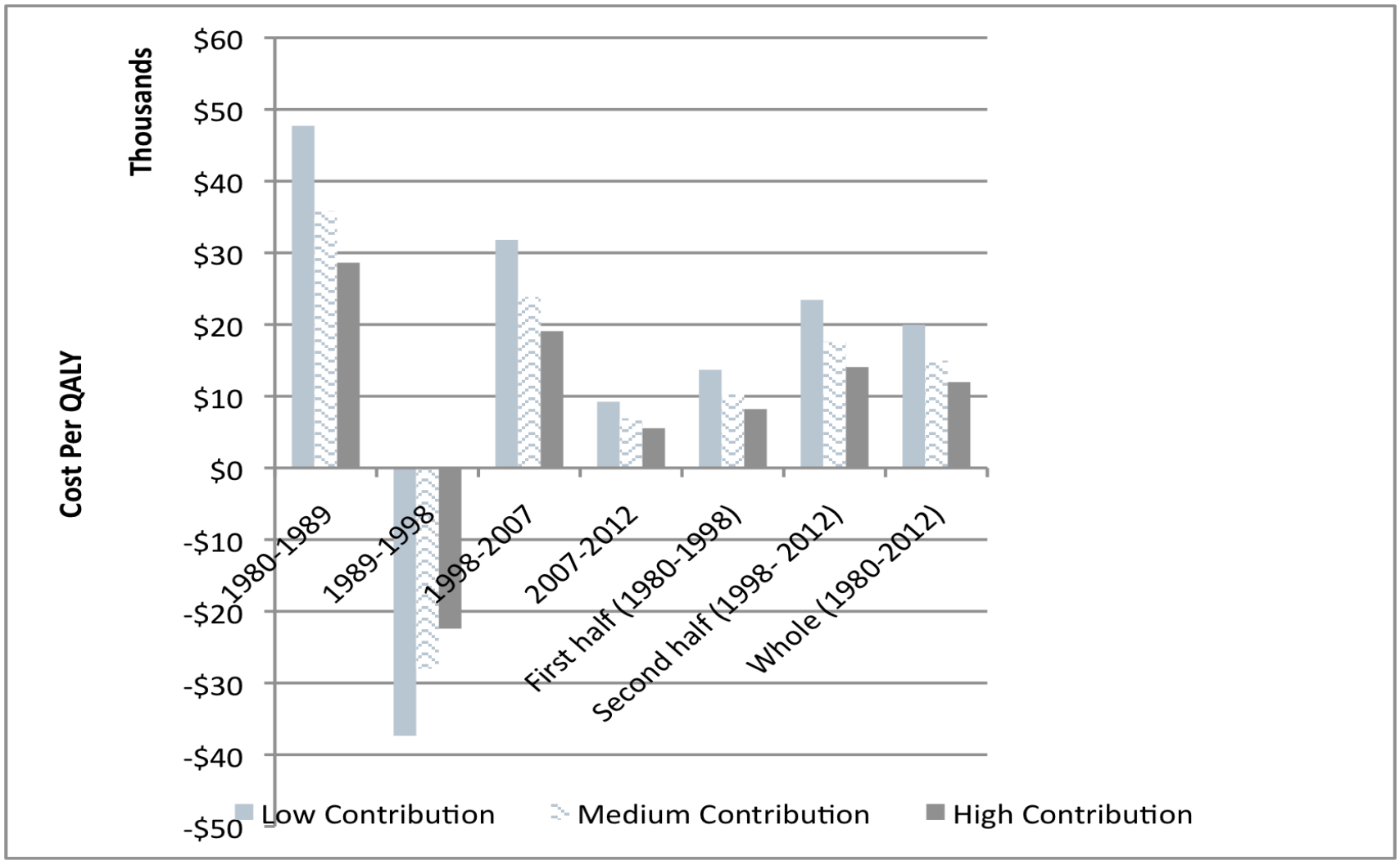
Results and Analysis (2)

- It would be expected that cost per QALY gained would be higher for seniors than for the general population but only the case for 1980-1989 period.
- For the 1980-1998 period, cost per QALY gained was $9,504 for general population and $10,283 for seniors.
- For the 1998-2012 period, cost per QALY gained was $25,945 for the general population and $17,582 for seniors.
- Effect of aging on spending moderate. This was due to the higher gain in LE for seniors compared to the general population and fact that per capita health spending growth for seniors not higher than that of all age groups.

Cost per QALY in Different Periods and Different Health Spending Contribution Scenarios, CPI-adjusted and Same Level of Morbidity Assumption, General Population



Cost per QALY in Different Periods and Different Health Spending Contribution Scenarios, CPI-adjusted and Same Level of Morbidity Assumption, Seniors



Comparison of Cost per QALY, Canada (CPI-adjusted), UK and US (Inflation and PPP adjusted)

Table 2: Comparison of ICER, Canada, US, UK

a. Comparison of ICER (Cost* per LY), Canada, US (50% of LE gains due to health spending)			
	Canada (CPI-adjusted)	Canada (GDP def-adjusted)	US
Cost /QALY (2005 constant local currency)	$17,040	$18,373	$21,526
Cost /QALY (2005 constant international $, ppp)	$14,040	$15,138	$21,526
*: Lifetime cost in Canada adjusted to account for total health spending			
b. Comparison of ICER (Cost[&] per QALY), Canada, UK (40% of LE gains due to health spending)			
	Canada (CPI-adjusted)	Canada (GDP def-adjusted)	UK
Cost /QALY (2005 constant local currency)	$24,514	$26,431	£11,902
Cost /QALY (2005 constant international $, ppp)	$20,199	$21,778	$18,709
&: Lifetime cost in Canada adjusted to match NHS health spending			

Spending Growth Less for Seniors and Outcome Growth Better

- Real per capita P/T health spending has increased at 23.5 per cent for seniors between 1998 and 2012 and 44.0 per cent for all age groups.
- In the same 14-year period, LE for seniors has increased at 14.8 per cent for seniors and only 3.8 per cent for all age groups.

Conclusion

- Increased health spending has been associated with an improvement in outcome.
- The Canadian health system produces good value for money and the baby-boomers may not bankrupt the system
- Costs per QALY gained in Canada were generally lower than those found for the US, but not for the UK.
- However, we are spending more per capita lately to produce about the same amount of additional health outcome; which could be a concern for sustainability of health spending.