The Canadian Index of Wellbeing: Key findings from the Healthy Populations Domain[1]

(Running title: Healthy populations in Canada)

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[1] This paper is an abbreviated version of a full-length report published by the Canadian Index of Wellbeing foundation that is available at: http://www.ciw.ca/Libraries/Documents/HealthyPopulation_DomainReport.sflb.ashx

Abstract

Objectives: The Canadian Index of Wellbeing (CIW) is an ambitious undertaking that aims to measure and track Canadians' overall 'wellbeing'. One of eight CIW domains, the Healthy Populations domain brings together both population health outcomes and important proximal influences on health.

Methods: Indicators from eight sub-domains (personal wellbeing, life expectancy/mortality, physical health conditions, functional health, mental health, lifestyle and behaviour, health care and public health) make up the Healthy Population framework. Following a review of worldwide literature on health and wellbeing indicators and expert external validation, ten core indicators and six secondary indicators were selected to capture current noteworthy trends in Canadian health and well-being. Indicators were examined for disparities at the provincial/ territorial levels, and stratified by age, sex, income, and education.

Results: Analysis over a fifteen-year time period found that Canadians are living longer, but with fewer years in optimal health. Diabetes rates have risen over time, alongside the obesity epidemic, while smoking rates are on the decline and regular physical activity is becoming more common. There were notable income and education gradients for virtually all indicators measured and gender disparities for life expectancy, health adjusted life expectancy, diabetes, and depression. A worrisome downward trend in health outcomes for Canada's youth (12-19 years) was observed. The majority of Canadians continue to rate the quality of the health care system as experienced, as high.

Conclusion: Analysis of a broad range of heath indicators underscores well-known gaps that exist between socioeconomic groupings and reinforces the growing body of research on the social determinants of health, many of which are topics of other CIW domains. Disparities in health status point to the need for policy and programmatic interventions, and learning about their effectiveness

that may close these gaps. There is wide consensus that reducing health disparities is central to improving Canadians' overall health and wellbeing.

key words: health status indicators; health status index; health status disparities; population health; health equity

Introduction

The Gross Domestic Product (GDP) of a country is a high profile and often tracked measure that has emerged by default as a surrogate for wellbeing.(1) However, as the recent high-level Commission on alternative measures of social and economic progress noted, "it has long been clear that GDP is an inadequate metric to gauge well-being over time particularly in its economic, environmental, and social dimensions".(2, p.8) Historic reliance upon the GDP points to the need for a robust set of indicators able to measure other important dimensions of Canadians' social, economic and cultural lives. While measurement activity and indicator reporting are now common place across all sectors, Canada lacks a single, highly visible national instrument that monitors and publicly reports on improvements or setbacks to our collective wellbeing and its important influences. A well-designed, easily understandable, and technically sound tool that captures all of the factors contributing to our wellbeing would offer important information for all Canadians, and be useful as a guide to public policy discourse and decision-making.

The Canadian Index of Wellbeing (CIW), the result of almost eight years of preparatory work, has emerged as a tool for this purpose. Bringing together a diversity of indicators across eight domains – Arts, Culture and Recreation; Civic Engagement; Community Vitality; Education; Environment; Healthy Populations; Living Standards; and Time Use –a primary aim of the CIW is to monitor trends within each domain and to emphasize interconnections between them. *Healthy Populations* is the CIW domain that measures health outcomes and other risk (or protective) factors. This article describes the Healthy Populations framework, indicator selection process, and data sources, and a few of the key findings from the domain report.

Methods

Healthy Populations Framework

Composed of 16 “core” and “secondary” health indicators, the Healthy Populations framework covers eight subdomains (see figure 1 below). Subdomains identify core aspects of health status (physical, functional, emotional, and psychological) and proximal health determinants such as lifestyle and behaviour, and health care. Since our framework is part of the larger CIW set, it does not incorporate important social determinants of health which are the foci of other CIW domains. Some key determinants of health that relate to equity (e.g. income, education, place and ethno-cultural status) and the essential biological factors (notably age and sex) are considered in the Healthy Populations indicator analysis. Each subdomain is measured by at least one core indicator, and several are measured by additional secondary indicators. Age and sex differences as well as national and provincial/territorial trends are reviewed for each indicator. All core indicators were stratified by income and education to describe differences in health indicators and to identify instances of health inequity.

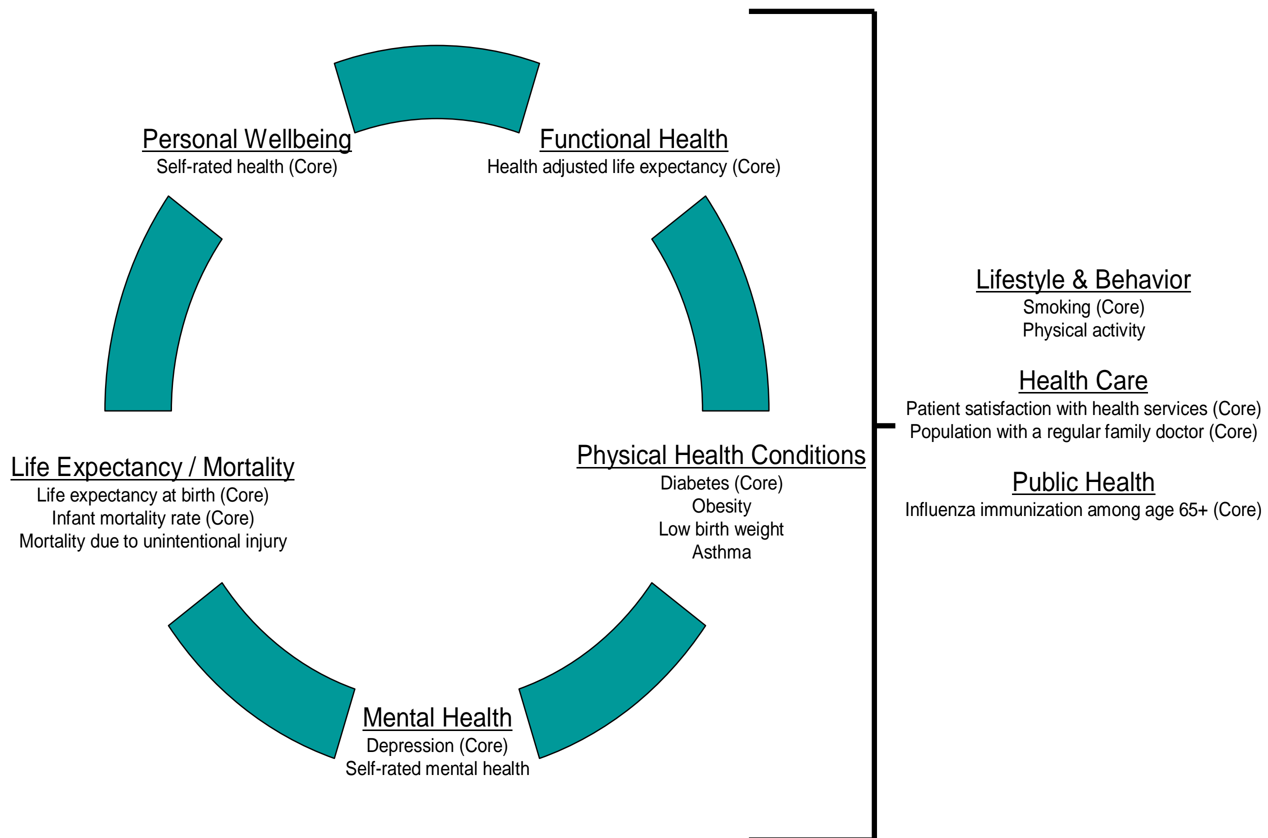

Figure 1. Subdomains of the Health Populations Domain and associated core and secondary indicators.

Indicator Selection

The indicators included in each Healthy Populations subdomain were selected based on the following criteria:

- Quality of data: indicators are clearly defined, measurable, transparent and verifiable.
- Adequacy of data: indicators support benchmarking and monitoring over time; that is, longitudinal or repeated data are available for at least three points in time, allowing trend analyses.
- Relevance of data: indicators are commonly used, understandable, credible, meaningful, and policy relevant (that is, can change as a result of policy interventions).

- Variety of data: indicators capture both subjective and objective aspects of health outcomes, and represent both positive (desired) and negative (undesired) outcomes.
- Spatial sensitivity of data: indicators are available at national, provincial and municipal or lower levels of aggregation, allowing comparisons by geographic scale.
- Sociodemographic sensitivity of data: indicators allow for analyses by socio-economic and demographic differences; that is, data can be stratified by important socioeconomic and demographic variables (gender, age group, income, cultural identity, geographic place).

Based on these criteria and a review of the international literature for comparable national indicator projects, the authors first compiled a comprehensive list of candidate indicators. A number of external experts, within Canada and internationally, were then consulted in a validation process which resulted in the selection of the final "core" and "secondary" indicators for each subdomain.

As a form of face validation, our final indicator selection was "mapped" against the Health Indicators Framework (HIF) used by Statistics Canada and the Canadian Institute for Health Information.(3) Our indicators overlap fully with the "health status" category and partially with other categories of the HIF, which include categories relevant to other CIW domains and so are not part of the Healthy Populations Domain. The independent coherence and comparability of the Healthy Populations Domain with existing health categories of public policy and data-gathering frameworks such as HIF affirms the usefulness of the Domain's indicators within the larger CIW project.

Data Sources

Data was primarily obtained from Statistics Canada's data products and included the Canadian Community Health Survey (CCHS) (cycles 1.1, 2.1, 3.1, 4.1) and the National Population Health Survey (1994, 1996, and 1998), the CCHS Mental Health and Wellbeing (cycle 1.2), CCHS Health Services Access Survey, Canadian Vital Statistics Database, and the Canadian Institute for Health Information, Hospital Morbidity Database.

Findings

A summary of the key findings is presented below; for a more detailed discussion please refer to the full report.(4)

Canadians live longer, but not necessarily healthier, lives

The relatively high standard of living enjoyed by Canadians is matched by life expectancy rates that are among the best in the world. A closer look at health indicators, however, reveals a more mixed picture. Although Canadians are living longer, these additional gains in years of life are not necessarily lived in the fullest health possible. When taking into account functional limitations brought on by disease and disability, the number of years lived in full health for Canadian women is not substantially different in 2005 compared to 1991 (data not shown); Canadian men, however, made slightly more gains during this period. As has been the case historically, women are still outliving men, but the gap is shrinking. A rich-poor gap in Canadian life expectancy was observed and can be largely explained by higher rates of death in childhood through to middle age, not in old age. Such preventable deaths early in life also negatively impact Aboriginal life expectancy, which continues to lag behind that of non-Aboriginal Canadians (data not shown).

For more than a decade, a majority of Canadians have declared that their overall health is very good or excellent (figure 2). However the proportion of Canadians who considered themselves as having optimal health peaked in 1998/99 at 65.2% and decreased dramatically in 2003 to 58.4%. Self-rated health began to rebound in 2005, but is still considerably lower that it was ten years previously.

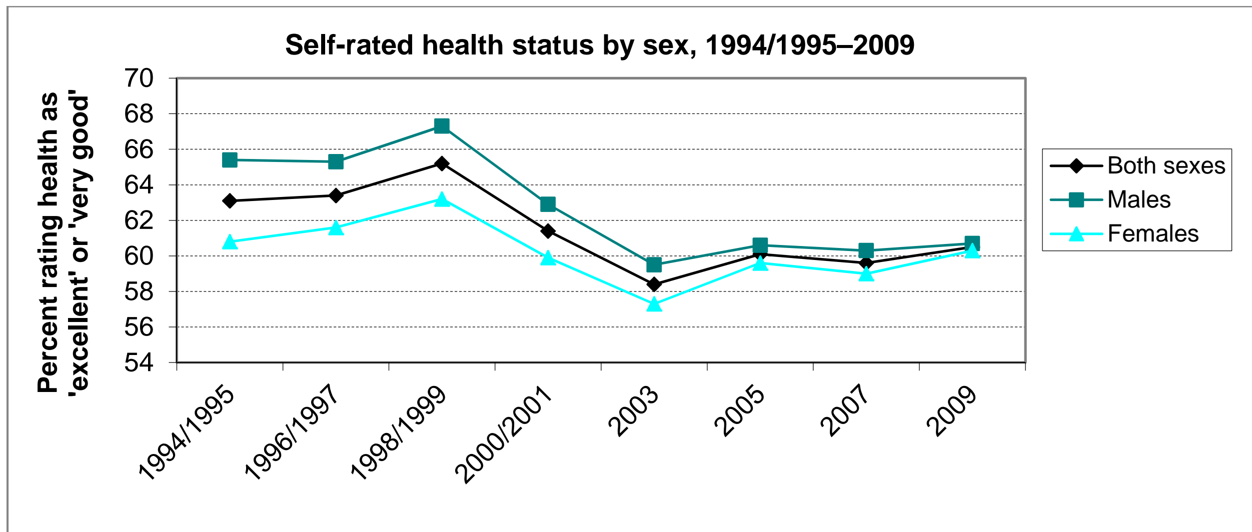

Figure 2. Self-rated health status by sex, Canada, 1994/95-2009.

The decline in the share of the population that considers itself in excellent or very good health has been most marked among Canadian teenagers, a drop of 12.5 percentage points from its 1998/99 peak . This is matched by a steadily increasing share of teenagers who report problems with everyday functions, an increase of 8.8 percentage points from 1994/95 to 2005, and increasing obesity rates — a trend that augurs poorly for their health as this generation advances in age.

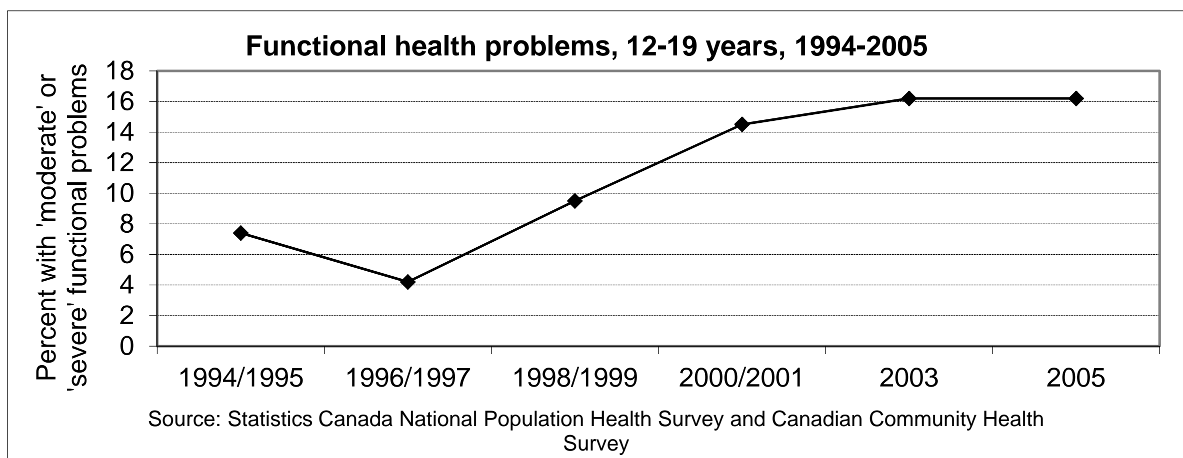

Figure 3. Functional health problems, 12-19 years, Canada, 1994-2005

After peaking at the start of the new millennium, depression rates gradually declined. However, the 2007/08 estimate represented a slight increase. Throughout this period, the prevalence of depression has been consistently higher among women than in men. At their peak in 2000/2001, depression rates in women were nearly doubled that of men (9.4% and 5% respectively). While this difference has diminished slightly in recent years, more women report depression than men. A notable income gradient in depression was also observed for both sexes, with males being most impacted by lower income levels.

Healthy living trends catching on

Two encouraging findings were that the number of Canadians who smoke dropped markedly from 1996/97 to 2009, particularly among youth (figure 4), and more Canadians are reporting that they get physical activity now than a decade ago. A steep household income gradient was observed for both. In 2007/08, smoking rates were more than double in the lowest income households when compared to the highest.

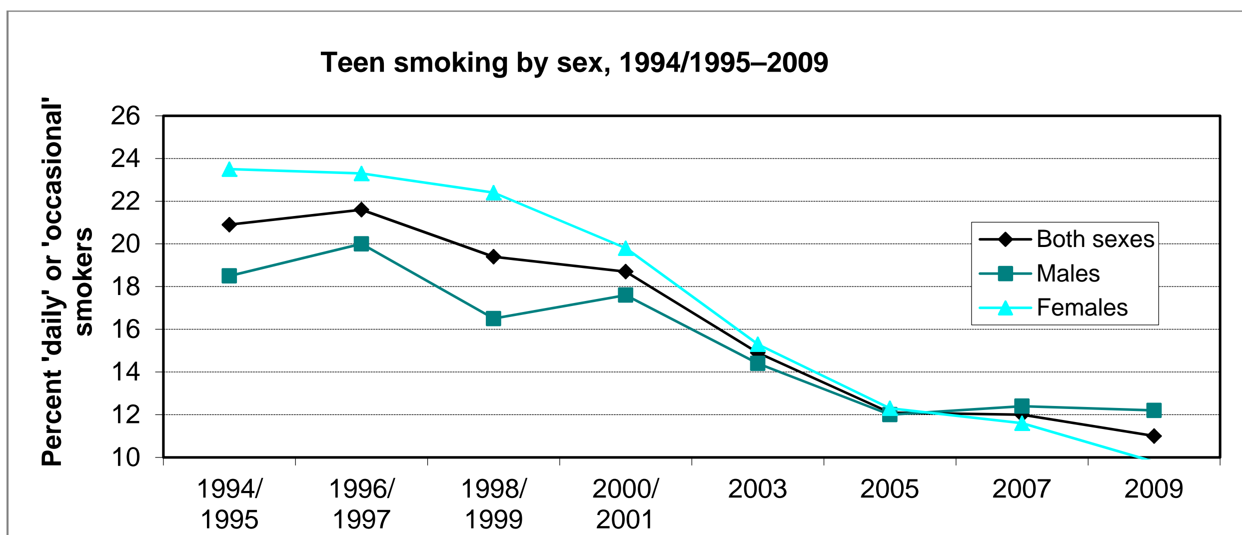

Figure 4. Teen smoking rates by sex, Canada, 1994/1995-2009

Obesity continues to rise, despite more physical activity

Despite the overall and sustained rise in physical activity, the number of Canadians who are obese continues to increase (from 11.9% in 1997 to 17.9% in 2009). At the same time, more Canadians are now living with chronic diseases such as diabetes, the prevalence of which has doubled over fifteen years (3% in 1994/95 to 6% in 2009). Diabetes rates are highest in the oldest age group, with nearly one in five people aged 65 and over affected in 2009. Income and education, even at relatively low levels, have a marked protective effect for diabetes. While this is true for both sexes, the effect is greater for women (data not shown).

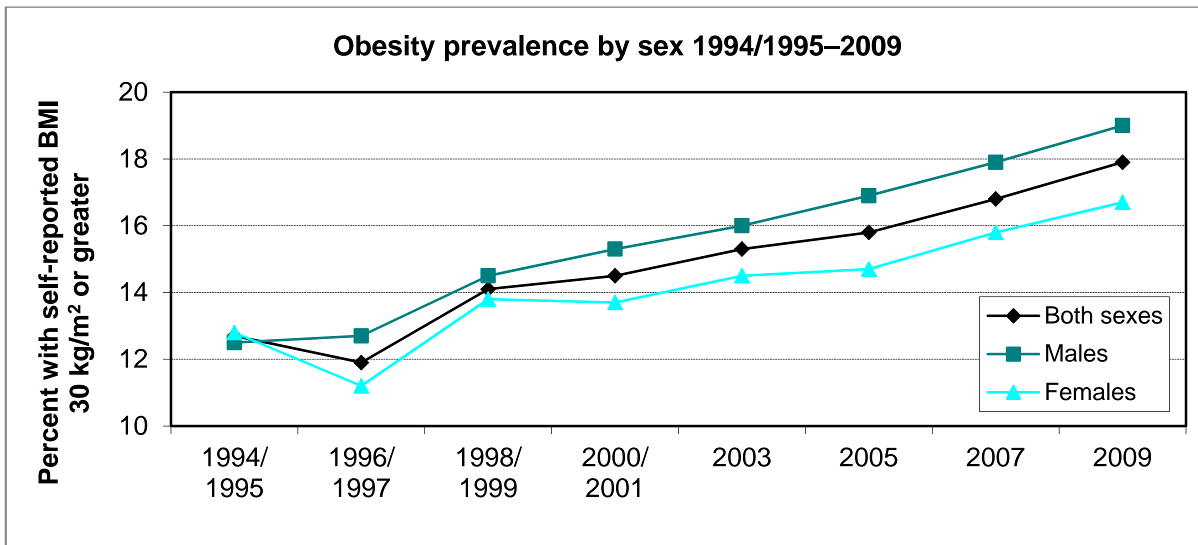

Figure 5. Obesity prevalence by sex, Canada, 1994/1995-2009

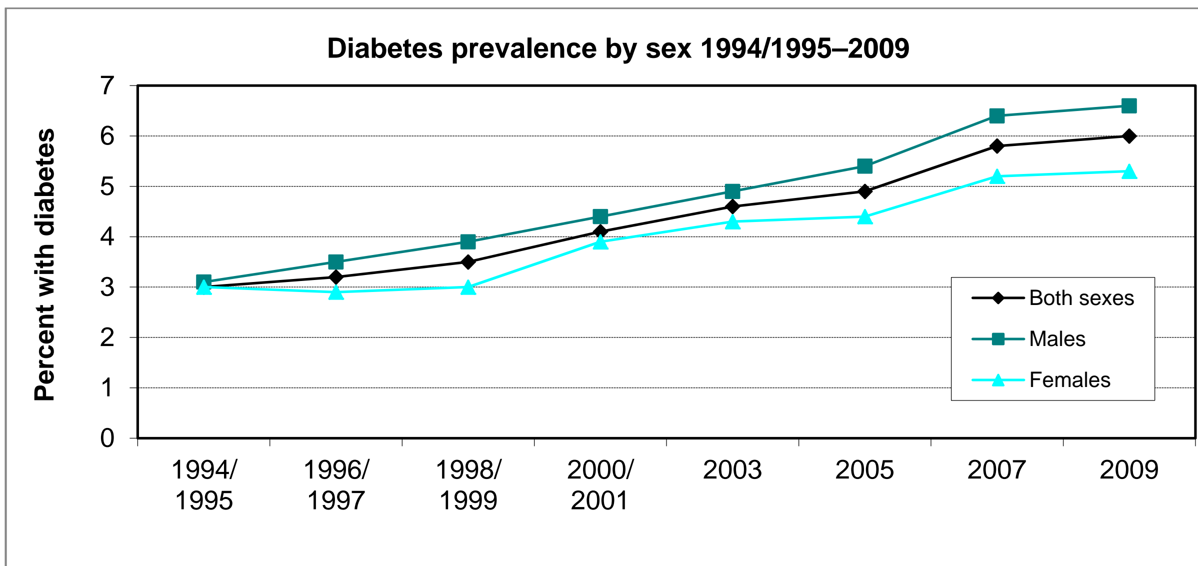

Figure 6. Diabetes prevalence by sex, Canada, 1994/1995-2009

Higher income adds both quantity and quality to life

Higher incomes and higher levels of education are associated with longer life expectancy and better self-reported health. Interestingly the positive impact of income and education on self-rated health is most marked among women. At higher levels of income they are more likely than men to consider themselves in very good or excellent health. Income and education effects were observed, with

varying patterns, for most of the indicators analyzed. Income increases in the lower income brackets have the greatest impact in reducing the prevalence of diabetes, depression, and teen smoking.

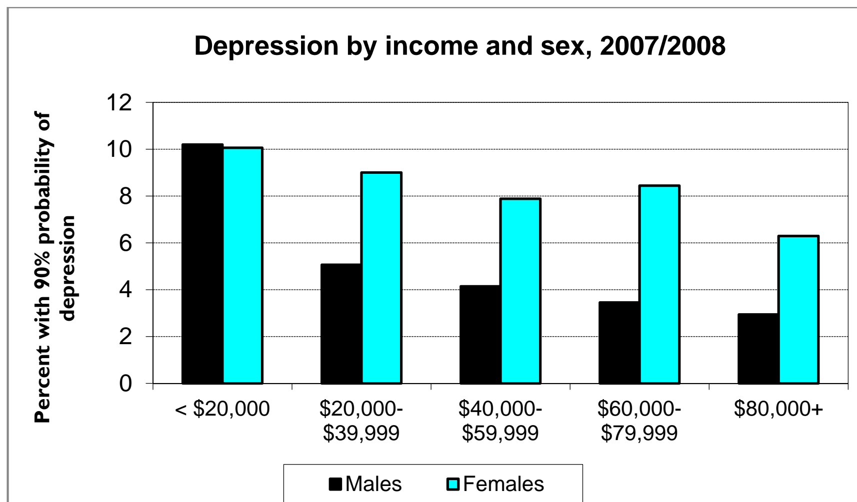

Figure 7. Depression by income and sex, Canada, 2007/2008

Geography matters

On a number of indicators there were interesting differences between physical and mental health at the provincial and territorial level. For instance, Newfoundlanders have lower life expectancies and generally higher rates of diabetes and other adverse health conditions; however, they have among the lowest levels of depression and are most likely to consider themselves as having excellent or very good health. On the other hand, British Columbians and Albertans enjoy among the longest life expectancies and lowest levels of obesity and diabetes; but they are also more likely than Newfoundlanders to report high levels of depression and less likely to say they are satisfied with the quality of their health services. These intriguing geographic differences may point towards cultural differences in self-evaluations, and should be the subject of further inquiry.

Pervasive gaps loom for Aboriginal health

Considerable progress has been made in terms of Aboriginal health and wellbeing in Canada, but challenges remain.(5) In recent years Aboriginal people have experienced longer life expectancies and reduced mortality rates, although the gap in these rates between Aboriginal and non-Aboriginal Canadians remain unacceptably high. Life expectancy at birth in 2000 for the Registered Indian population was 68.9 for males and 76.6 for females—a full 7.4 years lower than the comparable figures for Canadian men and 5.2 years for Canadian women. The infant mortality rate for First Nations has fallen dramatically, from 27.6 deaths per 1,000 live births in 1979 to 6.4 death per 1,000 live births in 2000. Still, it was 16% higher than the comparable Canadian rate for that same year. First Nations living on-reserve also rate their health in poorer terms. In 2002-03, 79.7% said their health was "excellent" or "very good" compared to 88% of the general Canadian population.(6) One potential explanation for this discrepancy could be the much higher rate of diabetes on-reserve, a condition with which one in five adults had been diagnosed (19.7% vs. 5.2%). The difference between diabetes rates on-and-off reserve were highest for young and middle-aged adults, with implications for future generation of seniors. Unintentional injury and suicide remain key challenges for First Nations people, as does infectious disease. Potential years of life lost from injury were almost 3.5 times higher than the national rate, with motor vehicle accidents being a primary cause of death for all age groups. The Healthy Populations report highlights a small portion of the long-known health disparities between Aboriginal and non-Aboriginal Canadians, a health gap that in recent years has narrowed somewhat but still remains unacceptably large.

Equity: the driving value

Equity is the core value that drives the CIW project. Health equity similarly informs the work undertaken in the *Healthy Populations Domain*. Health equity refers to the absence of unfair and

avoidable or remediable differences in health among populations or groups defined socially, economically, demographically or geographically.(7) Various analyses of health indicators and comparisons to other nations suggest the potential for our collective capacity to improve the health of all Canadians. Income and other socioeconomic conditions that influence health are shaped by both private economic practices ("the market") and public policies (regulation, taxes, transfers and social protection spending). Income-related negative health effects are caused by both material conditions (inadequate access to resources for health) and psychosocial dynamics.(8,9) These conditions can be mitigated by government regulation, programs and services.

Despite the availability of universal health care services, with which a large majority of Canadians are satisfied when they encounter it as patients, the persistence of significant health gaps suggests both the need for health interventions tailored to socially excluded groups and the potential health benefits of initiatives outside the health field. This latter point was emphasized most strongly in the August 2008 Report of the World Health Organization Commission on Social Determinants of Health, *Closing the gap in a generation: Health equity through action on the social determinants of health*, to which many Canadian public health researchers and policy analysts made substantial contributions.(10)

Conclusion: Pulling it together, what does it all mean?

The Canadian Index of Wellbeing is a multifaceted measurement and monitoring tool that hopes to engage Canadians in conversations about their health and wellbeing that go beyond health care or the economy, and acting on changes that matter in their lives. The Healthy Population domain of the CIW stands as one important component in measuring wellbeing; however a greater value of the

domain is to understand the contributions it makes and receives from other domains of the CIW that, collectively, contribute to overall wellbeing. Understanding the interactions between the indicators comprising CIW domains, currently and over the years past, is the next challenge facing CIW researchers.

For now a key deliverable for the CIW project is the calculation of a single, overall measure, or index, of Canadians' wellbeing. Such indices were also calculated for each individual CIW domain.[2] The Healthy Population domain index is presented below (figure 8) and shows an average increasing trend beginning in 2003 that leveled out and held from 2005 onward. Lower teen smoking rates and increasing influenza immunizations in seniors were two of the key drivers behind the recent improvement in the Healthy Population index, while diabetes, depression, and stagnant self-rated health in recent years suppressed further gains in the overall score.

The gains made in health trends in recent years, however, are surprisingly modest and hide vast discrepancies in the health of Canadians. Without proper policy intervention, Canada will continue to see a health divide along income lines. Inaction will lead to increased pressures on the health care system in the long-run. With the current rates of growth in obesity and diabetes, we might experience diminishing life expectancy, particularly among the younger generation of Canadians. The relationship between income and health calls for a multipronged approach that does not simply address health policies, but social policies in order to advance our collective wellbeing. By implementing greater intergovernmental efforts in benchmarking, streamlining, and coordinating health programming and targets, we will enhance equity and effectiveness across regions and populations.

[2] Refer to the *Composite Index Report* for a full discussion on the methodology and individual results for each Healthy Populations domain indicator and the other CIW domains.(11)

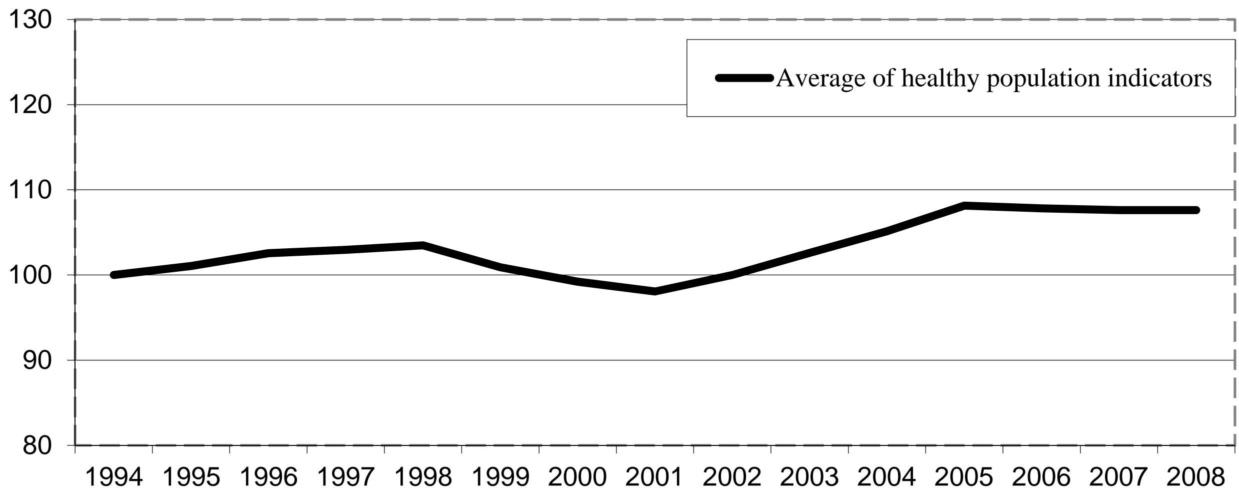

Figure 8. Health Population domain index for Canada, 1994-2008

References

1. Stiglitz J E, Sen A, Fitoussi J. Report by the Commission on the Measurement of Economic Performance and Social Progress. Available at: http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf Last accessed on: Sept 13, 2011.
2. Osberg L, Sharpe A. Centre for the Study of Living Standards. Beyond GDP: Measuring economic well-being in Canada and the provinces, 1981-2010. Available at: http://www.csls.ca/reports/csls2011-11.pdf Last Accessed on: Sept 13, 2011.
3. Statistics Canada. Health Indicator Framework. Available at: http://www.statcan.gc.ca/pub/82-221-x/2011002/hifw-eng.htm Last Accessed on: Sept 13, 2011.
4. Labonte R, Muhajarine N, Winquist B, Quail J. Healthy Populations: A report of the Canadian Index of Wellbeing. Available at: http://ciw.ca/en/CanadianIndexOfWellbeing/DomainsOfWellbeing/HealthyPopulations.html Last Accessed on: October 18, 2011.
5. First Nations & Inuit Health Branch, Health Canada. *A Statistical Profile on the Health of First Nations in Canada for the Year 2000. 2005.* Available at: http://www.hc-sc.gc.ca/fniah-spnia/pubs/aborig-autoch/2009-stats-profil/index-eng.php Last Accessed on: Sept 13, 2011.
6. Health Canada. A Statistical Profile on the Health of First Nations in Canada: Self-rated Health and Selected Conditions, 2002 to 2005. Available at: http://www.hc-sc.gc.ca/fniah-spnia/pubs/aborig-autoch/index-eng.php Last Accessed on: October 17, 2011.
7. Solar O, Irwin A. 2007. *Towards a conceptual framework for analysis and action on the social determinants of health: Discussion paper for the Commission on Social Determinants of Health*. Geneva: World Health Organization. Available at: http://www.who.int/social_determinants/resources/csdh_framework_action_05_07 Last Accessed on: Sept 13, 2011.
8. Lynch JW, Smith GD, Kaplan GA, et al (2000). Income inequality and mortality: importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 320:1220-4.
9. Marmot M, Wilkinson RG (2001). Psychosocial and material pathways in the relation between income and health: a response to Lynch et al. *BMJ* 322:1233-6.
10. Commission on Social Determinants Health. 2008. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva: World Health Organization. Available at: http://www.who.int/social_determinants/final_report/csdh_finalreport_2008.pdf Last Accessed on: Sept 13, 2011.

11. Michalos AC, Smale B, Labonté R, Muhajarine N, Scott K, Moore K, Swystun L, Holden B, Bernardin H, Dunning B, Graham P, Guhn M, Gadermann AM, Zumbo BD, Morgan A, Brooker A-S, Hyman I. *The Canadian Index of Wellbeing.* Technical Report 1.0. Waterloo, ON: Canadian Index of Wellbeing and University of Waterloo, 2011.