The Chief Public Health Officer's

Report on the State of Public Health in Canada

2008

Addressing Health Inequalities

Canada

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A Message from Canada's Chief Public Health Officer

Dr. David Butler-Jones
Canada's Chief Public Health Officer

This is the first annual report of the Chief Public Health Officer and, as such, it represents a significant moment in public health in Canada. The intention of this report, and those in future, is to speak to aspects of health in the population, as well as to a specific issue or theme. It will serve to define some key public health issues of the day and consider how they can be approached. It is intended to inform Canadians and stimulate dialogue on the many factors that contribute to good health and what can be done individually and collectively to advance public health in Canada.

Public health has been defined many ways, but I find it best described as "the organized efforts of society to improve health and well-being and to reduce inequalities in health." In simple terms, this involves different segments of society working together for the good of all. Public health is that collection of programs, services, regulations and policies, delivered by governments, the private sector and the not-for-profit sector, that together focus on keeping the whole of the population healthy. It is also a way of thinking about, and an approach to, how we tackle the health issues we face. Fundamentally, it is focused on understanding and addressing the factors that underlie illness or good health and asks questions like "what are the causes of poor health?" and "how do we address those causes before they become problems?" Health care, in turn, focuses on our needs as individuals and what we can do to restore or improve health. Health care and public health are complementary and both are necessary in the pursuit of good health.

The position of Canada's Chief Public Health Officer was created in 2004, along with the Public Health Agency of Canada. These actions were taken, in part, in response to the SARS outbreak of 2003. The Chief Public Health Officer has a dual role, something that is unique in governments. One is to serve at the Deputy Minister level in the federal public service, heading the Public Health Agency and advising the Minister of Health on matters of public health and the function of the Agency. At the same time, the CPHO communicates directly with Canadians on important public health matters. One means of achieving this is through the requirement that the Chief Public Health Officer report annually on the state of public health in Canada.

This is the first of those annual reports. A separate report by the Agency later this year will address the progress we've made since the outbreak of SARS.

Among the good news found in this report is the fact that the majority of Canadians enjoy good to excellent

physical and mental health. We are living longer lives and, over the past century or more, we have made significant strides in improving our collective health.

The bad news is that not all health trends are improving, and not all Canadians are benefiting to the same degree from these improvements over time. For example, there is a growing prevalence of obesity and diabetes in Canada that – if unchecked – may open the door to the possibility that this generation of children may be the first in Canada to have a shorter life expectancy than their parents.

Our goal is to be healthy as long as possible. Although it is important to focus on the number of extra months or years we might gain, it is even more critical to reduce the number of those years that we are ill or disabled. Most understand this concern from a quality-of-life perspective, but there is another issue to consider. People who are less healthy put pressures on the health and welfare systems. This leads to longer wait times for those seeking medical treatment and increases costs for Canadian taxpayers as a whole. There are also other costs to society, such as high rates of absenteeism and lower productivity in workplaces, not to mention the toll that ill health takes on affected individuals and their families as they suffer the physical and emotional, as well as economic and social fall-out of poor health. Healthy people contribute to healthy economies.

As we strive to achieve good health for as long as possible, it is important to note that while some health challenges can be related to our genetic make-up, evidence shows that Canadians with adequate shelter, a safe and secure food supply, access to education, employment and sufficient income for basic needs adopt healthier behaviours and have better health.

Beyond these basics are two very important underlying factors: having a sense of control or influence over our own lives and future; and loving, being loved and having family, friends and other social connections that give us a sense of being part of something larger than ourselves. These things matter because health is more than physical – if people care about you, and you, in return, care about others, if you have work you enjoy, if you can read, write and can function well in society – it makes you a healthier person. It is no coincidence that those who volunteer, who give of themselves and who take an active part in their community end up, on average, healthier and happier.

The choices we make, the work we do, the friends we keep and the lifestyle we live all matter to our health. Although they are a personal responsibility, these choices are often shaped and limited by our environment and circumstances. These factors along with others have come to be known as social determinants of health and they are vital to helping us understand and improve the health of Canadians.

How these determinants contribute to the differences in our health matters because some groups of Canadians experience lower life expectancy than others. Some have higher rates of infant mortality, injury, disease and addiction. Some are more obese and overweight. These differences in health status are referred to as health inequalities.

It seemed appropriate that the theme of this first report would focus on the determinants of health and how they contribute to health inequalities. In some ways what I am reporting is not new, and should not come as a surprise. Unfortunately it will be a surprise to many, given the magnitude of the inequalities that still exist despite our being among the richest countries with one of the most sophisticated health and social systems in the world. Why is it that – although we are, on average, the healthiest we have ever been – many in Canada have not shared in that health and well-being?

I have chosen to focus this report on gaining a better understanding of these inequalities, and on how we might reduce them. The reason for this choice is simple: I would argue that a society is only as healthy as the least healthy among us. We cannot rate our collective health and well-being by looking only at those who are healthiest. Nor can we focus only on averages, as these mask important differences between the least and most healthy. We must also consider those left behind: those who are less healthy, illiterate, on the streets, or have little or no income.

In fact, this report highlights a variety of projects and programs in operation throughout the country and on an international level that are already making

progress. Simple examples include: an initiative to support the needs of at-risk pregnant women; a tri-partite agreement to improve an inner-city community; an organization that works to break the cycle of poverty by providing low-income families with affordable housing; programs that help children prepare for school and reach their full potential; and a city where at-risk and economically challenged youth are being given academic, social and financial support, and where a mobile health unit operates to assist immigrant women. It is not as if we have no answers or that they need be overwhelming, as many communities are already engaged and solutions are being delivered.

In short, health inequalities are fundamentally societal inequalities that we can overcome through public policy, and individual and collective action.

Just as there is no sector of society that is untouched by health inequalities, there is no person or organization that cannot make a positive contribution to their resolution.

Because we determine our health by the type of society we choose to create, each of us has a part to play in creating a healthier Canada. Now that's an intriguing challenge!

Dr. David Butler-Jones

Dr. David Butler-Jones is Canada's first and current Chief Public Health Officer. A medical doctor, David Butler-Jones has worked throughout Canada and consulted internationally in public health and clinical medicine. He is a professor in the Faculty of Medicine at the University of Manitoba and a clinical professor with the Department of Community Health and Epidemiology at the University of Saskatchewan. He is also a former Chief Medical Health Officer for Saskatchewan, and has served in a number of public health organizations, including as President of the Canadian Public Health Association and Vice President of the American Public Health Association. In 2007, in recognition of his years of service in public health, Dr. Butler-Jones received an honorary Doctor of Laws degree from York University's Faculty of Health.

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I would like to express my appreciation to the consultants who provided invaluable advice, strategic guidance and expertise:

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I would also like to acknowledge the external reviewers and individuals who contributed:

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- Erin Wolski, Health Program Coordinator, Congress of Aboriginal Peoples.

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- Statistics Canada.

As well as to the writer/editors: Heather Marshall and Rhoda Boyd.

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Errata

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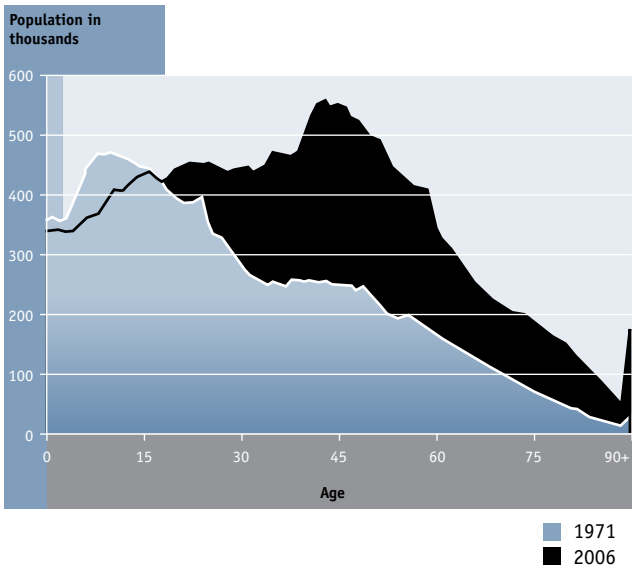
Please note: revisions to report are current as of October 29, 2008

Chapter 3: Our Population, Our Health and the Distribution of Our Health

Who we are

Page 19, Figure 3.1 — The data for 1971 should overlay the data for 2006. Figure 3.1 should appear as follows:

Figure 3.1 Population distribution by age, Canada, 1971 and 2006



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistic Canada. CANSIM Table 051-0001.

Our health

Life expectancy

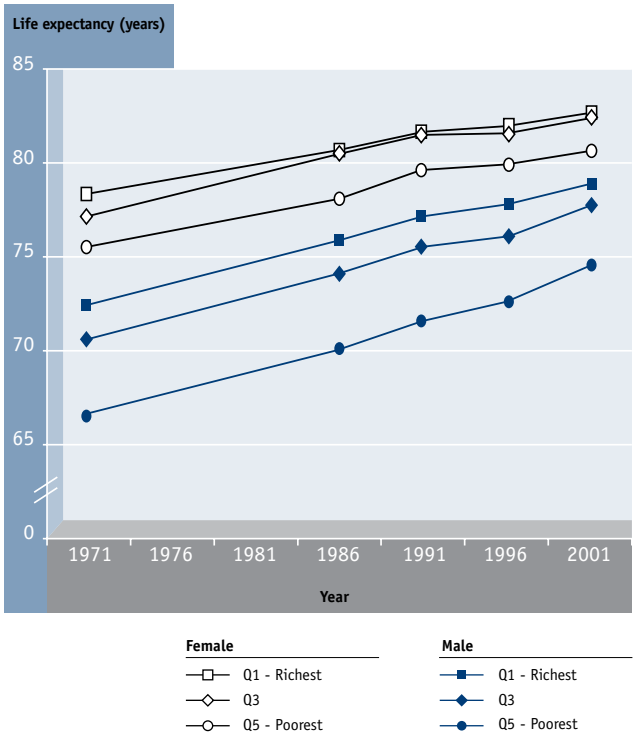
Page 21, first column, last paragraph — The number of OECD countries referred to in the text was incorrect. The text should read as follows:
Canadians' life expectancy at birth in 2004 was one of the highest in the world at just over 80 years – about 2.5 years more than the U.S. and 2 years less than Japan (the highest at 82 years). Figure 3.2 shows the steady increase in life expectancy for six OECD countries, including Canada, over the last 25 years. It also shows that Canadian life expectancy is improving, but it is not doing so at the same rate as some other top health-ranked countries such as Japan and Australia.

Page 21, Figure 3.2 — A typographical error existed in the source for Figure 3.2. The source should read as follows:
Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Organisation for Economic Co-operation and Development (OECD) Health Data, 2007.

Errata

Page 22, Figure 3.4 — The symbols in the graph for Q3 and Q5 female values have been switched for years 1986, 1991, 1996 and 2001. Figure 3.4 should appear as follows:

Figure 3.4 Life expectancy at birth by neighbourhood income and sex, urban Canada, 1971-2001



Q - population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Infant mortality

Page 23, Figure 3.6 — A typographical error existed in the source for Figure 3.6. The source should read as follows:
Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Organisation for Economic Co-operation and Development (OECD) Health Data, 2007.

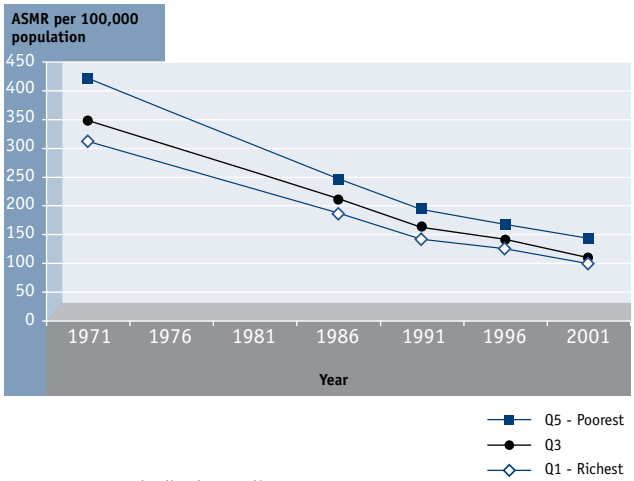
Self-reported health

Page 24, second column, first paragraph — Ambiguity existed around the age associated with the survey results. The text should read as follows:
Although measured indicators are important, how people feel about their own health is an important indication of overall health status. Despite the inherent limitations of survey data, such as the subjectivity of individual responses, self-reported data can provide useful information otherwise not available. When Canadians are asked about their health, most indicate that they consider themselves to be healthy. The 2005 Canadian Community Health Survey found that the majority of Canadians age 12 and over, about 16 million (60%) report their health as either excellent (22%) or very good (38%). Even more (73%) report their mental health as excellent (37%) or very good (36%).

Causes of death

Page 27, Figure 3.11 — The outline for Q1 values is missing. Figure 3.11 should appear as follows:

Figure 3.11 Age-standardized mortality rates for ischemic heart disease by neighbourhood income, male, urban Canada, 1971-2001



ASMR – Age-standardized mortality rate.
Q - population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

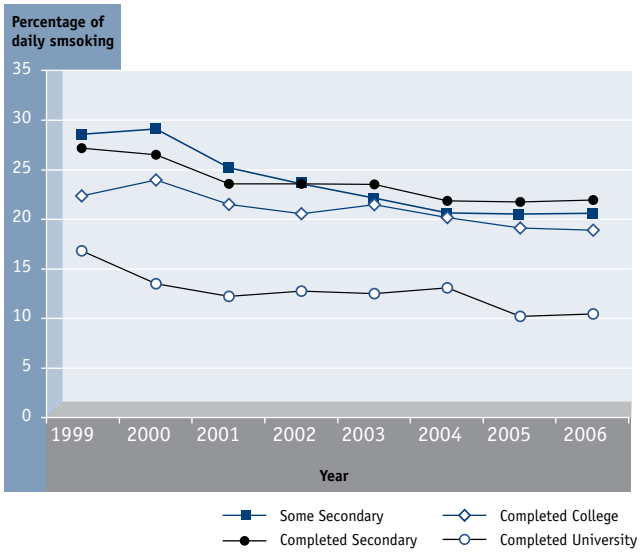
Chapter 4: Social and Economic Factors that Influence Our Health and Contribute to Health Inequalities

What makes - and keeps - us healthy

Health behaviours

Page 54, Figure 4.6 — The outline for Completed College and Completed University and Y-axis legend are missing. Figure 4.6 should appear as follows:

Figure 4.6 Smoking and education, aged 15+ years, Canada, 1999-2006



Source: Public Health Agency of Canada using Health Canada, Canadian Tobacco Use Monitoring System 1999-2006.

References

Page 87, reference 9 — Reference was missing the associated organization. The reference should read as follows:
Dahlgreen, G. & Whitehead, M. (2006). *European strategies for tackling social inequities in health: Levelling up Part 2*. World Health Organization.

Page 94, reference 223 — A typographical error existed in the author's name. The reference should read as follows:
Government of Saskatchewan. *(2007). 2006-2007 Annual Report: Saskatchewan Community Resources*.

Page 94, reference 231 — A typographical error existed in the author's name. The reference should read as follows:
Wilkins, K. & Mackenzie, SG. (August 2007). Work Injuries. *Health Reports,* 18(3), 1-18. (Statistics Canada Catalogue no. 82-003).

Page 96, reference 300 — A typographical error existed in the author's name. The reference should read as follows:
Hertzman, C., McLean, S., Kohen, D., Dunn, J. & Evans, T. (August 2002). *Early development in Vancouver: Report of the Community Asset Mapping Project*. (CAMP).

Executive Summary

This report is the Chief Public Health Officer of Canada's first annual report to Canadians on the state of public health in Canada. It explores the public health approach, the health of the Canadian population, variances in health status among the population and factors that contribute to health inequalities. Efforts to reduce these inequalities can be found across the country and at many levels. They include successful interventions that – through better understanding, collaboration and collective action – may serve to reduce Canada's health inequalities and improve quality of life for all Canadians.

The report covers the following areas, with main findings summarized below.

Public Health in Canada

To understand the population approach to health covered in this report, an overview of public health, its definition, mandate and the key players involved in this area of responsibility are outlined. This includes a brief history of public health in Canada – spanning the earliest efforts to quarantine new immigrants in the 19th century and the introduction of vaccines, pasteurized milk, food safety, sanitation and clean drinking water, to the introduction of Medicare as a major advance in helping all Canadians to access health care.

The success of the public health approach is underlined by an examination of public campaigns that have made a positive impact on the health of Canadians: the introduction of mass immunization; reducing tobacco use; and increasing seatbelt use. These achievements, along with new and enduring health challenges, serve as a benchmark for the continuous improvements in public health to maintain Canada's global standing as one of the healthiest nations in the world.

Our Population, Our Health and the Distribution of Our Health

When asked to rate their own health, most Canadians consider themselves to have either excellent or very good health. Life expectancy has increased substantially over the last century and is currently one of the highest in the world at just over 80 years. The infant mortality rate has also improved, decreasing by 80% from 27 deaths per 1,000 live births in 1960 to 5 per 1,000 live births in 2004.

The main causes of death in Canada are circulatory diseases, cancer and respiratory diseases. Premature deaths are most often due to cancers, circulatory diseases, injuries (both unintentional and intentional) and chronic respiratory disease. Other illnesses and conditions also impact the health of the population – and some, like diabetes and obesity – are on the rise. Although the number of Canadians who die prematurely and suffer from poor health is low in comparison to other countries, those who do so tend to belong to specific sub-populations – Aboriginal Peoples, residents of northern and remote communities, and those with low income and education.

Social and Economic Factors that Influence Our Health and Contribute to Health Inequalities

Why do some people enjoy good health while others do not? These inequalities in health status are partially due to social and economic factors that influence health behaviours and health outcomes.

Executive Summary

Socio-economic and personal factors profiled within this report include:

- income;
- employment and working conditions;
- food security;
- environment and housing;
- early childhood development;
- education and literacy;
- social support systems;
- health behaviours; and
- access to health care.

This list does not cover all factors that influence health, but represents areas that are currently understood and where action has been proven to influence outcomes. For example, while genetics play an important role in health and illness, and geneticists have made great strides in understanding what impacts can be made, this factor currently has less of an ability to bring about change in population health than other factors.

In general, health status follows a gradient where people in less advantageous socio-economic circumstances are not as healthy as those at each subsequently higher socio-economic level. In other words, those with the lowest incomes and education, inadequate housing, poor working conditions, detrimental health behaviours, limited access to health care and who lack early childhood support and/or social supports are more likely to develop poorer physical and mental health outcomes than those living in better circumstances. This is true for each level (or rise) along the gradient. However, improvement to one or more of these factors can result in an improvement in overall health. Many programs and services targeted at reducing social and health inequalities through improvements to, or by mitigating, socio-economic factors have been undertaken in Canada at all levels. Successful, promising and/or unique responses are profiled for each factor.

Despite these efforts, however, certain trends continue to raise concerns. For example, the gap between those with the highest and lowest incomes in Canada continues to grow and poverty rates for some children, Aboriginal Peoples, recent immigrants and persons with disabilities are significantly higher than for the general population. As well, Canada's child poverty rate is higher than many similarly developed countries. Food security is also a critical issue, with the prevalence of school food programs and food banks on the rise. Inadequate housing and homelessness continue to plague Aboriginal Peoples, immigrants, low-income earners and marginalized youth; while urban sprawl and other environmental conditions are a growing concern for many.

Unemployment rates are at a 30-year low, but remain higher among certain populations such as recent immigrants. For those who are employed, rates of injury in the workplace continue to be higher among blue collar workers and men, while work-related stress is more prevalent among women. Although Canada ranks among the top five Organisation for Economic Co-operation and Development (OECD) countries for high school completion rates, some young Canadians remain at risk of leaving school prematurely. For those who seek higher educations, women are now outnumbering men. If this trend continues, a difference in health outcomes between genders attributable to differences in education levels may emerge.

Social connectedness also plays an important role in health. Urban dwellers are less likely than rural dwellers to report feeling a part of their community and seniors are more likely to report feeling lonely and isolated. These populations represent two of the fastest growing populations in Canada. Aboriginal Peoples continue to struggle with social exclusion, lower workforce participation and disconnection from their traditions and culture. As a result, they more often experience poorer health outcomes than the national average. Research suggests, however, that Aboriginal communities with some level of self-government and cultural continuity have better health outcomes.

Individual health behaviours – both positive and negative – are influenced by an individual's social and economic environments. Among the general population, rates of smoking and death related to alcohol dependence have declined, but poor eating habits and unsafe sexual practices are on the rise with related increases to incidences of diabetes and some sexually transmitted diseases, respectively. In addition, although rates of physical activity are increasing, the incidence of obesity continues to rise

indicating that improvement in this area needs to continue. Compared to the national average, these negative behaviours are more often reported among certain populations.

While Canadians have universally insured health care, some experience difficulty accessing it. While it may seem obvious that residents of northern and remote communities have geographical accessibility issues, Aboriginal Peoples, immigrants and others can face additional challenges ranging from cultural insensitivities to language barriers. Among the marginalized, infant mortality rates can be much higher than the general population even though many live in close proximity to some of the most sophisticated hospitals in the world.

Addressing Inequalities – Where are we in Canada?

Social policies and programs that improve health outcomes have been in place in Canada for decades, with new and promising interventions and approaches continually at the ready. Efforts are widespread and include action on the part of governments, the private sector, not-for-profit organizations, communities and individuals. Despite this, health inequalities persist and – in some cases – are growing. One reason is an incomplete understanding of what works and what doesn't, which makes focusing these efforts challenging. Unfortunately, Canada's ability, as a country, to measure and report on the health impacts of many of these efforts is not strong and can be developed further. What is clear is that actions targeting individual health choices and behaviours must also consider the social and environmental conditions that shape these choices. Among such a diverse population, no single approach or solution is optimal. Ideally, a balance between targeted interventions for some and universal programs for all is best but the appropriate mix requires further study.

Although clarification and better understanding is needed in many areas, waiting for all the answers is not an acceptable option given what is already known, what can be done and the consequences of neglect while waiting.

Attention should be given to the following priority areas for addressing health inequalities:

- **social investments**, particularly investments in families with children living in poverty and in early child development programs;
- **community capacity** through direct involvement in solutions, enhanced cross-sectoral co-operation, better defined stakeholder roles and increased measuring of outcomes;
- **inter-sectoral action** through integrated, coherent policies and joint actions among parties within and outside of the formal health sector at all levels;
- **knowledge infrastructure** through a better understanding of sub-populations, the pathways through which socio-economic factors interact to create health inequalities, how best practices from other jurisdictions can be adapted to improve Canadian efforts and through more advanced measurement of the outcomes of the various interventions undertaken; and
- **leadership** at the public health, health and cross-sectoral levels.

Moving Forward

Canada has the capacity to address the full range of issues that can adversely affect the health of Canadians. An impressive past record of improving quality of life and health provides a strong foundation from which to act on becoming the healthiest nation with the smallest gap in health. It is a goal that is well within reach if the collective will to do so can be harnessed and directed through strong leadership and a firm commitment by individuals, community members and decision-makers to effect change.

Introduction

CHAPTER 1

The Public Health Agency of Canada was established in September 2004 to strengthen Canada's capacity to protect and improve the health of Canadians and to help reduce pressures on the health care system. In 2006, the *Public Health Agency of Canada Act* confirmed the Agency as a legal entity and the appointment of a Chief Public Health Officer of Canada to speak to Canadians about important public health matters. It also established the legal requirement for the Chief Public Health Officer of Canada to report on the state of public health through an annual report.[1]

Goals of the report

The theme of this first report is health inequalities. It is intended to shed light on public health in Canada, the state of Canadians' health, as well as the country's successes and ongoing challenges in reducing health inequalities. It is intended to inform Canadians of the many factors that contribute to good health and what can be done individually and collectively to advance public health in Canada. Most of all, this document is designed to stimulate national discussion about what could be done. Ideally, it will encourage a broad dialogue on how health is viewed in society and how Canada, as a society, can achieve a balance between an effective health care system that meets society's need for healing and broader public health activities that keep us from becoming sick or getting sicker. These are not competing ideas, but complementary ones.

As much as this report is a mechanism to increase awareness, it is also meant to inspire action to help create opportunities for all Canadians to be as healthy as they can be – mentally, physically and socially. It is hoped that this report will spur increased collaboration among Canada's leaders, public health practitioners, employers, educators, researchers, community groups, the media and individuals to improve Canadians' health and overall well-being.

Who this report is about

This report is about all Canadians, regardless of their age, sex, income or heritage. Throughout the report the term 'Canadian' is used to speak to all people who reside within the geographic boundaries of the country. In some instances, special terms are used to identify particular groups. The term 'Aboriginal' is used to refer collectively to all three constitutionally recognized groups – Indian, Inuit and Métis. Although not constitutionally recognized, the newer term 'First Nation' is used to describe Status Indians recognized under the federal *Indian Act*. When data exists to support discussion about these distinct population groups, specific details are provided for clarity.

Health Inequalities

Health inequalities are differences in health status experienced by various individuals or groups in society. These can be the result of genetic and biological factors, choices made or by chance, but often they are because of unequal access to key factors that influence health like income, education, employment and social supports.

Health inequities refer to inequalities in health that are a result of socially influenceable factors (e.g. poverty, barriers to education or health care). These types of inequalities are deemed to be unfair or unjust.

This report generally uses the term health inequalities, recognizing that the equal distribution of health is an ideal, and that some health inequalities are also health inequities.[2]

What the report covers

What is public health? Chapter 2 provides an overview of the public health approach and the public health system, as well as the role they play in the health of Canadians. This chapter also offers examples of public health success stories and challenges to show the potential for improving the lives of Canadians.

Are Canadians Healthy? Chapter 3 discusses the health of Canadians, including leading causes of death, the prevalence of diseases and the impact of

injuries. It also considers worrying trends that might impact Canadians' future health and well-being. This includes a discussion of health inequalities that clearly underlines the fact that health outcomes and issues are not the same for everyone.

What factors influence our health and what is being done to address inequalities? Chapter 4 highlights how economic, social and personal factors, including income, education, early childhood development, health behaviours, health care and social support influence health. Differences in these factors that are most problematic and that can be influenced through social interventions are discussed. It also offers snapshots of various actions that have been undertaken across Canada to reduce social, economic and behavioural inequalities in order to improve health. These examples provide insight into who is affected, how effective Canada has been at addressing health inequalities as well as where the country may want to concentrate future efforts in this area.

What has been learned? And what are the challenges ahead? In Chapters 5 and 6, the lessons learned from previously discussed public health research, interventions and international and community level practices are discussed. Common elements that are important to addressing health inequalities are outlined. Within these common threads, gaps are identified where more work needs to be done. The report concludes with an invitation from Canada's Chief Public Health Officer to move forward collaboratively, proactively and inter-sectorally to realize common goals for a healthy Canadian population.

As you read the report please take time to consider how you might answer some key questions:

Do these examples resonate and/or reflect actions that could be taken in your community (as individuals, politicians, business leaders, etc.)?

How can you participate in reducing health/social inequalities?

Where we have not achieved the best results possible, what are the barriers that remain? What have we, as Canadians, not done?

Who else could you work with to better address the challenges that remain?

Public Health in Canada

CHAPTER 2

What is public health?

In Canada, there is a tendency to equate health with health care. That is understandable, given that Medicare is not only a source of national pride but also an important contributor to Canadians' health. Yet, there is certainly more to health than hospitals and medical services.[3, 4]

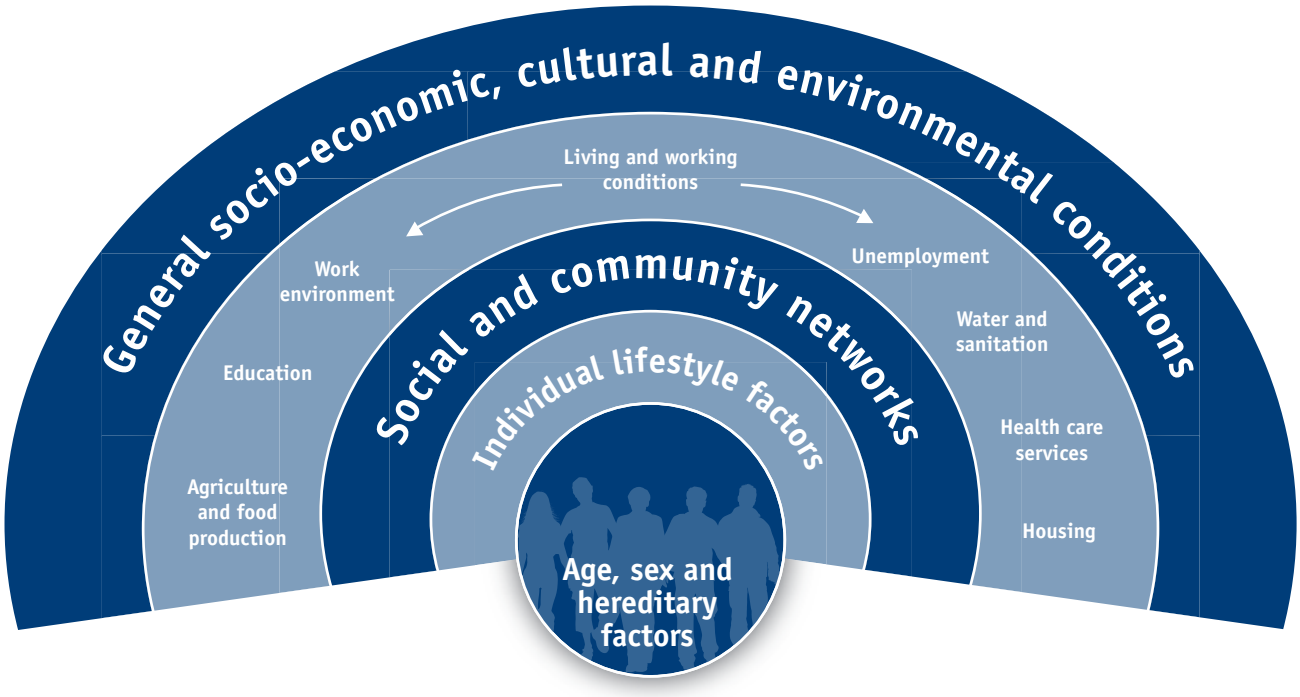
Public health is defined as the organized efforts of society to keep people healthy and prevent injury, illness and premature death. It is a combination of programs, services and policies that protect and promote the health of all Canadians.[5]

While health care focuses on treating individuals who are not well, public health works to keep people from becoming sick or getting sicker. Both work to limit the impact of disease and disability.[3] While individuals receive and benefit from services of the public health system, public health programs target entire populations – not just individuals – by identifying and reducing health threats through collaborative action involving many sectors of society.[2, 6]

Public health challenges Canadians to recognize that physical and mental health are intricately connected to the environment and society.[7] The way Canada, as a country, deals with issues such as poverty, housing, sanitation and environmental protection directly and indirectly influences the health of the population. The presence or lack of family support and social networks, access to education and jobs, workplace safety, and community cohesion and development also influence health.[8]

Those involved in public health are often invisible to Canadians until serious health events such as SARS, Avian Influenza or West Nile Virus occur. Emergency preparedness and response, in the face of infectious disease outbreaks or other health-related emergencies, is certainly one of the primary functions of public health. However, disease and injury prevention, and the promotion of healthy lifestyles and environments are also central responsibilities of public health.[6] Unhealthy eating habits, too little

Figure 2.1 Factors that influence our health[9]



physical activity, smoking, alcohol and drug abuse are major contributors to many chronic diseases, as are environmental factors and social conditions that do not support healthy lifestyles or that directly impair health. For this reason, disease prevention and health promotion efforts are applied to a range of largely avoidable or deferrable conditions such as heart disease, diabetes, cancer and Human Immunodeficiency Virus-Acquired Immune Deficiency Syndrome (HIV-AIDS).

Although Canadians are among the healthiest people in the world, public health data and research reveal that some groups are more likely to experience poorer health and earlier death than others.[2] Understanding the causes of these inequalities through health surveillance and population health assessment activities, and developing interventions that reach these groups are also essential elements of public health action.[10]

Public health is a responsibility shared by many actors including federal, provincial and territorial governments, municipalities as well as Aboriginal Peoples' organizations and their governments.[3] Governments enact laws and regulations to protect the public from health hazards posed by such things as contaminated water, second-hand smoke or working conditions that endanger employee health and safety. Health professionals, in a variety of settings, work under or in concert with these laws and regulations at the community level.[6] Among other things, they monitor and assess health conditions and chronic diseases, investigate infectious disease outbreaks, inspect restaurant kitchens and water supplies, provide vaccinations, and offer advice and support/counselling on issues including nutrition, physical activity, tobacco and alcohol control, injury prevention and sexual health.

While governments enact laws, develop policies and provide resources to fund public health organizations, it takes the combined effort of networks both within and outside the public health system to address population-wide health challenges. These health networks include professionals such as physicians, nurses, public health inspectors, health promoters, dental workers and nutritionists.[6] They may also include community agencies, volunteer organizations, the academic community and international bodies that work toward common goals. Equally vital are indirect players, including media outlets that report health-related news in Canada and provide healthy living information, social marketers, fitness instructors, adults who set good examples for children by taking care of their own health, and employers who provide time or flexible work arrangements for employees to be physically active and to care for children or older or sick relatives. So too, are engineers and transportation workers who make Canada's highways safer, food producers who follow regulations to ensure that what we eat is safe, and not-for-profit groups that fight poverty and encourage Canadians to get active, recycle and reduce energy consumption.

While there are many ways to describe public health activities, within Canada and in the legislation for the Public Health Agency, the below six activities are generally referenced.

Health protection – Actions to ensure water, air and food are safe, a regulatory framework to control infectious diseases, protection from environmental threats, and expert advice to food and drug safety regulators.

Health surveillance – The ongoing, systematic use of routinely collected health data for the purpose of tracking and forecasting health events or health determinants. Surveillance includes: collection and storage of relevant data; integration, analysis and interpretation of this data; production of tracking and forecasting products with the interpreted data, and publication/dissemination of those products; and provision of expertise to those developing and/or contributing to surveillance systems, including risk surveillance.

Disease and injury prevention – Investigation, contact tracing, preventive measures to reduce the risk of infectious disease emergence and outbreaks, and activities to promote safe, healthy lifestyles to reduce preventable illness and injuries.

Population health assessment – Understanding the health of communities or specific populations, as well as the factors that underlie good health

or pose potential risks, to produce better policies and services.

Health promotion – Preventing disease, encouraging safe behaviours and improving health through public policy, community-based interventions, active public participation, and advocacy or action on environmental and socio-economic determinants of health.

Emergency Preparedness and Response – Planning for both natural disasters (e.g. floods, earthquakes, fires, dangerous infectious diseases) and man-made disasters (e.g. those involving explosives, chemicals, radioactive substances or biological threats) to minimize serious illness, overall deaths and social disruption.[6, 11]

The population approach to improving health is not really new; it has played out in various forms over the history of humankind. As it has evolved, it has not been without serious challenges and failures. Many health problems that have plagued the developed world in the past – such as previously common infectious diseases, unsafe water and sewage, and workplace hazards – may no longer seem important, but their absence should not be taken for granted. It is important to remember that public health advances often involved great struggles to overcome major obstacles and sometimes fierce opposition. As well, societies' solutions may not have always been appropriate and, in some cases, may even have worsened the problems or helped some people but not others.

Obesity – An Illustration of the Public Health Approach

In Canada, 65% of men and 53% of women are either overweight or obese.[12] Among children and youth (aged 2 to 17 years), rates of obesity have almost tripled – from 3% in 1978 to 8% in 2004, and another 18% are considered overweight.[13] Obesity is a key risk factor for heart disease, joint problems and Type 2 diabetes, so it is critical that Canada find a way to reverse this trend.[14]

How is this done? The public health approach first requires an understanding of the causes of obesity in the population and then of the ways to influence or mitigate these causes. On the surface, the cause of obesity may seem simple: individuals consume more energy, or calories, than they burn. But why do some people consume more calories than others and/or lead less active lives? Is it simply that people do not realize the impact of their choices? Or is it that behaviours are part of a broader situation determined by life experience: early childhood development; education; the stress and pace of life; the cost, availability and accessibility of nutritious food; super-sizing; and lack of opportunities for physical activity?

To address obesity, then, there needs to be an understanding of these broader influences, how to help people make healthy choices the easy choices and how to create conditions for better health. This will, in turn, involve an examination of the factors that affect access to healthy food, food choices, consumption, recreation and physical activity. These include, for example, agriculture practices, food processing, advertising, education, income, time pressures, urban planning, transportation systems, urban green spaces and recreation facilities.

The more the causes and effects of obesity are examined, the clearer it becomes that solutions must address a complex and inter-connected network of underlying issues. It requires the right mix of interventions, followed by an evaluation of those interventions. This is a difficult, but worthwhile, endeavour. When this type of effort is made and the root causes of obesity are examined and tackled, other positive impacts on health and quality of life result.

CHAPTER 2

Public Health in Canada

Canada's public health history

Prior to Europeans arriving and settling in North America, Canada was inhabited by millions of Indigenous peoples.[15] The origins of public health in this country can be traced back to traditional Aboriginal teachings that highlight the importance of maintaining and restoring balanced health through social and environmental sensitivity.[16, 17] These long-standing traditions were jeopardized following the arrival of European settlers who brought new diseases and a way of life that led to a serious deterioration in the lives of Canada's Indigenous Peoples.[16]

The threat of infectious diseases began to impact Indigenous peoples in North America in the early seventeenth century, with the first historically recorded outbreaks occurring between 1734 and 1741. The arrival of settlers not only meant illness and death for Aboriginal Peoples, but also a loss of traditional lands, resources and livelihoods – creating a new lifestyle involving competition, exploitation and a loss of long-standing norms, values, and societal and spiritual practices. These factors, along with others, allowed for an all too easy transition from a state of good health to ill health.[16]

1830-1900

Early settlers were not spared from infectious diseases.[15] In 1832, an estimated 20,000 lives were lost in Upper and Lower Canada from a cholera epidemic. In an attempt to contain the disease, the Lower Canada Board of Health created a quarantine station for new arrivals on Grosse Île in the St. Lawrence River. Quarantine measures were enforced by the military to prevent the spread of the disease through Upper and Lower Canada.[18]

In 1847, the next wave of infectious disease, typhus, killed 6,000 of the estimated 100,000 Irish settlers fleeing the potato famine in their home country.[19] Again, quarantines of new immigrants were instituted. Unfortunately, this may have actually fuelled the spread of typhus since people in quarantine were more likely to contract the disease.

The Aboriginal population was exceptionally susceptible to these disease outbreaks because they lacked immunity to the new infections and their resistance to disease was further jeopardized through exposure to less healthy ways of life. Countless Aboriginal people succumbed to epidemics of smallpox, tuberculosis, diphtheria, typhus, measles and syphilis. In some cases, whole communities all but disappeared.[15]

While Canada battled these waves of disease, research was underway in Europe to identify the sources of, and potential solutions to, these challenges. In 1842, a British report, *The Sanitary Conditions of the Labouring Population of Great Britain*, concluded that clean water, sewers and adequate housing were essential to prevent the spread of infectious disease.[20] The report led directly to the first *Public Health Act* in the United Kingdom in 1848, which established a central Board of Health with local boards.[21] The Board of Health often felt opposition from those who considered the Act to be a threat to "property rights and personal freedom" and the British government refused to renew the Act after the first five years.[22]

In 1867, Britain established the *British North America Act* (became the *Constitution Act* in 1982). The Act was used to create the Canadian Confederation and enforced the division of power between the provinces and the federal government. Within Sections 91 and 92, the newly created Dominion of Canada was responsible for the creation of quarantine and marine hospitals and the provinces were responsible for the establishment, maintenance and management of hospitals and asylums.[23]

Few public health initiatives were developed and activities were haphazard during the remainder of the 19th century, varying from city to city and from province to province. This may have been because, by the turn of the century, there was "a very remarkable decrease in the communicable diseases with which we are familiar" (*1900 Annual Report of the Provincial Board of Health for Ontario*), thanks in large part to improvements in water and sanitation and public infrastructure.[24]

Water, Sanitation and Health in Canada

The link between water, sanitation and health has been known for centuries – tainted water supplies and deficient sanitation practices can cause illness and death among those exposed to these conditions.[25, 26] Although Canada has an abundance of fresh water, disease outbreaks related to water and sewage practices were commonplace among early settlers. It wasn't until the beginning of the last century that officials embraced the water/waste/health connection and began to actively pursue adequate sanitation and clean water systems with an eye to improving and maintaining public health.

There is no doubt that advances in sanitation, water treatment and distribution directly contributed to a reduction in mortality rates in Canada and the elimination of water-borne diseases such as cholera and typhoid.[27, 28, 29]

Today, standards and policies supporting legislation exist at all levels of government to deal with water quality and sanitation.[30] The majority of citizens have the benefit of high-quality water treatment systems, although some Canadian communities – particularly those that are small, rural and remote – may face boil water advisories. These are issued to reduce the risk of waterborne diseases when conditions suggest possible increases of microbiological contamination.[31]

Canada is continuing its work on developing and employing innovative technologies while maintaining a careful watch on water and sanitation systems across the country.[32] At the same time, it is shifting its focus toward a more sustainable use of fresh water that favours reduced water demand over increased supply.[33]

While waterborne diseases came mostly under control, other contagious diseases remained the leading causes of death in Canada.[34] Diseases including scarlet fever, diphtheria, measles, whooping cough, and tuberculosis continued to put the public's health at risk.[15] In Ontario alone, 36,000 children died from diphtheria between 1880 and 1929.[35] In the mid-1880s smallpox remained a threat, with Montréal experiencing the last major epidemic in a North American city.[36]

1900-1950

In the early part of the 20th century, public health activities continued to be largely uncoordinated and mostly in response to infectious disease outbreaks. Aboriginal Peoples' health and social conditions reached a low point, as traditional ways of life (e.g. consuming whole foods, maintaining high activity levels, practicing natural medicine) continued to be significantly weakened and suppressed.[16]

However, some significant public health developments did emerge during this period. For example, immunization against smallpox and diphtheria had begun in Ontario schools.[37, 38] About the same time, cities such as Toronto and Montréal began to pasteurize milk against bovine tuberculosis and towns, such as Peterborough, began using chlorination to disinfect drinking water.[39, 40, 41]

Public health activities accelerated when Canadian soldiers returned home from the First World War, bringing with them the Spanish influenza of 1918-1919.[42] An estimated 40 to 50 million people were killed worldwide by the pandemic, including approximately 50,000 Canadians.[42, 43] Once on Canada's shores, the virus spread quickly across the country, even to remote communities.[43]

Conscious of the need to manage federal health functions, the Canadian Public Health Association played a key role in advocating for the creation of a Department of Health in 1919.[44, 45] The department retained functions of quarantine and ensuring food and drug standards, but also acquired new responsibilities to implement campaigns against sexually transmitted infections (STIs) and tuberculosis, as well as to promote child welfare.[45]

Public Health in Canada

The next two decades were periods of major contrasts. Most Canadians' standard of living was on the rise as employment and incomes increased and education and housing improved, resulting in better living conditions and enhanced nutrition. Childhood immunization against infectious diseases was becoming commonplace, life-altering scientific discoveries – such as insulin and penicillin – led to treatments for diabetes and infection, and new techniques were introduced to treat injuries, all of which helped to improve the health of Canadians.

However, the Canadian economy and society were dealt a serious blow during the Great Depression of the 1930s. As farmers went bankrupt and industries in towns and cities collapsed, people lost their homes and livelihoods. The uprooted and unemployed became migrants and, in some cases, vagrants – homeless, hungry and frequently ill. The Depression was quickly followed by the Second World War (1939-1945), which again took a toll on the health of individuals and the well-being of society. As well, the prevalence of polio, another highly contagious, frequently disabling and sometimes fatal disease, during this era reinforced that infectious diseases remained a serious threat to public health.[46]

These events laid the groundwork for contemporary concepts of public health as Canada recognized its obligation to look after returning soldiers and the population at large. A range of initiatives were launched to strengthen the social fabric of the country, from the construction of new housing to the provision of education for returning soldiers and their families.[47, 48, 49]

The Case for Immunization

Before the benefit of mass immunization, generations of Canadians lived with the threat of a range of debilitating diseases that frequently swept through their communities.

Polio, for example, left many people paralyzed or otherwise disabled. At its peak in 1953, it caused nearly 500 deaths in Canada. Two years later, an injectable polio vaccine was introduced and incidence of the disease dropped dramatically.[46] By 1994, all of the Americas were certified polio free.[50] Today, it has been eliminated from most parts of the world.

Measles is another contagious disease that has afflicted millions worldwide. According to the WHO (2002), it is the leading global cause of vaccine-preventable death in children under the age of five.[51] Before the introduction of a measles vaccine in the early 1960s, Canada averaged 300,000 to 400,000 annual cases.[52] By 1995, that number had dropped to 2,362 and adopting an improved two-dose program in 1996 has resulted in a further decline.[53]

Canada's success in reducing and eliminating vaccine-preventable diseases can be largely attributed to high vaccine coverage rates. However, work in this area is ongoing as certain populations continue to exhibit lower coverage rates.[54, 55] This may be the result of barriers to awareness and access, or because of differing cultural norms.[56]

Today, Canada maintains various surveillance systems to assure Canadians that vaccines continue to be safe and effective and to allow early interventions and control measures to be implemented in the event of a disease outbreak.[54, 56]

Canada's first food guide was introduced in 1942 to reduce nutritional deficiencies resulting from wartime food rationing.[57] This development was followed by the 1944 family allowance, a universal program to help families raise healthier children.[58] In 1947, Saskatchewan introduced the first hospital insurance program to ensure that personal finances would not be a barrier to receiving health treatment.[59]

During this same period, a broader understanding of health was emerging at the international level by global bodies like the World Health Organization (WHO). In 1948, the WHO defined health as: "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[60] The newly formed organization set standards and agreed on regulations to promote health among member countries and began providing assistance to promote disease surveillance.[61]

1950-present

Following the Second World War, the country prospered and the health of the population improved. By 1950, mortality rates were reduced by one quarter compared to those of 1921 (9 per 1,000 compared with 12 per 1,000) and the number of deaths attributable to infectious diseases was significantly reduced.[34, 62]

The post-war economic boom resulted in new jobs and rising affluence. More people were completing higher levels of education and more women participated in the workforce.[63, 64] While women of the previous generation had advocated for the right to vote, women of the post-war era fought for better educational and job opportunities, equal wages, and paid maternity leave, resulting in an improvement to the factors (or determinants) that impact health.[63, 65] In addition, broad social programs such as the Canada Pension Plan (CPP) and Old Age Security (OAS) were introduced.[66] Access to acute hospital services was guaranteed through the 1957 *Hospital Insurance and Diagnostic Services Act*, while the 1966 *Medical Care Act* afforded access to insured medical services.[59] In 1962, the Medical Services Branch of the Department of National Health and Welfare was established with a primary mandate of supporting Indian and Inuit Health.[67]

Trimming Tobacco Use in Canada

A hundred years ago, it was believed that tobacco was beneficial and its use was encouraged. By 1965, half the Canadian population over 15 years old smoked.[78] As smoking rates continued to rise, research uncovered the truth – tobacco use is an addiction that harms the health of the smoker and those exposed to second-hand smoke.[79] Once these dangers were understood, Canada began to take action through tobacco control strategies involving concerted effort across all levels of government, including: education and promotion, taxation, introduction of smoking by-laws and cessation support.

The most recent data from the 2006 Canadian Tobacco Use Monitoring Survey (CTUMS) show that these efforts have paid off. Only 19% of the Canadian population now smokes.[80] In addition:

- more than half of Canadians who have ever smoked have quit;
- every region in the country is experiencing success in decreasing smoking rates among all age groups; and
- Canada is one of the first countries in the world to see a decrease in youth smoking.

Today, Canada is universally recognized as a leader in tobacco control and shares its experience with other nations under the WHO *Framework Convention on Tobacco Control*.[81]

Despite these achievements, Canada needs to continue pursuing tobacco reduction efforts – especially among populations with higher rates of smoking and where children are still regularly exposed to second-hand smoke.

This period also presented new challenges, however, as people were living longer and chronic diseases and injuries increasingly became the more common cause of disability and death.[68] Other trends emerged, such as widespread smoking, increased social drinking, the recreational use of drugs, a resurgence of STIs and the introduction of new infections like HIV-AIDS. Meanwhile, the proliferation of cars led to a reduction in physical activity as well as an increase in smog, air pollution, and injury and death related to motor vehicle crashes.[69, 70, 71]

The discipline of epidemiology began to explore the causes of these trends with a view to their prevention.[5] Many studies identified associations between smoking and lung cancer; diet, physical activity and heart disease; seatbelt use and road traffic injuries; and air pollution and worsening of asthmatic conditions.[72, 73, 74, 75, 76, 77]

Globally, Canada was at the forefront of the public health approach with the 1974 Federal publication of *New Perspectives on the Health of Canadians* by then Minister of Health Marc Lalonde. The report helped Canadians to understand that achieving good health requires more than just a good health care system and it emphasized the importance of human biology, environment, lifestyle, health care organization and the need to "understand what contributes to sickness and death, and to facilitate the identification of courses of action that might be taken to improve health." It also highlighted the impacts of social influences on health and underscored that social inequalities can lead to health inequalities. And the report emphasized the need for greater inter-sectoral collaboration in research, community development, social marketing and public policy to adequately address the various factors that determine health.[82]

The Lalonde Report had a profound impact on public health practice around the globe, highlighting the benefits of investment in promoting health and preventing illness and injury to reduce pressure on the health care system.[83] It led to renewed efforts to develop new approaches in health promotion, community advocacy and the use of legislation.

The Proven Benefits of Buckling Up

Between 1975 and 2003, traffic fatalities decreased by over 50% in Canada even though the number of drivers and cars on the road increased substantially.[84] Part of the reduction may be credited to an increase in seatbelt use with 90% of Canadians now buckling up when riding in or driving a motorized vehicle.[85]

Achieving this improvement was not easy. Seatbelts did not become standard equipment in Canadian vehicles until the late 1960s.[86] Use was voluntary and very limited until the next decade when medical professionals linked the use of seatbelts in traffic crashes with lower incidences of serious injury and death.[87]

Public awareness campaigns followed, as did legislation making seatbelt use mandatory. The first law was passed in Ontario in 1976. By the late 1980s, all provinces and territories had adopted similar legislation.[88]

Although rates of traffic deaths and injuries have greatly improved, more can be done – especially with respect to child safety. Roadside checks have shown that just 51% of children are buckled up and more than 80% of car seats are improperly installed.[89]

As a result, new public awareness campaigns have been launched and legislation for mandatory vehicle booster-seat use has been passed by seven provinces to ensure the safety of children too big for a car seat but too small for an adult seatbelt.[90]

In the early 1980s, the *Canada Health Act* was passed, updating the preceding *Hospital Insurance and Diagnostics Services Act* and the *Medical Care Act*. It ensured comprehensive, universal and accessible insured health care services to all Canadians without cost or discrimination based on age, health status or financial situation.[91] During this decade, Canada further developed the concept of health promotion with the publication of *Achieving Health for All: A Framework for Health Promotion* as tabled by then Minister of Health Jake Epp in 1986.[92] The Epp Report placed greater focus on the determinants of health – specifically identifying income-related health inequalities as an area for priority action and recognizing that health behaviours are not just a by-product of personal choice, but also of the surrounding environment.[93] In the same year, Canada responded to the growing international public health movement by hosting the first *International Conference on Health Promotion*. The Ottawa Charter for Health Promotion, presented at the conference, called on countries to establish strategies and programs for health promotion through building healthy public policy, creating supportive environments, strengthening community actions, developing personal skills and reorienting health services.[94]

In keeping with the Ottawa Charter, the decade that followed was a productive one for Canada in the health and health promotion fields. Early in the 1990s, the creation of a Breastfeeding Committee for Canada sought to establish breastfeeding as the cultural norm across the country and a new Canadian Institute for Health Information provided an independent means of amassing essential data and imparting analysis on Canada's health system and the health of Canadians.[95, 96] Several key reports were also released, including the *Report of the Royal Commission on Aboriginal Peoples* (1996) and the first and second reports on the *Health of Canadians* (1996 and 1999).[97, 98] The *Tobacco Act*, passed in 1997, provided new regulations on the manufacture, sale, labelling and promotion of tobacco products.[99] And at the end of the decade, efforts to improve the nation's understanding of population health culminated in the creation of a Canadian Population Health Initiative (CPHI).[100] The growing burden of HIV infections and outbreaks of invasive meningococcal disease that affected school and college-aged youths served once again as reminders that infectious diseases remained a challenge.[101, 102, 103, 104]

Another reminder came in 2003 with the arrival of Severe Acute Respiratory Syndrome (SARS) in Canada. Caused by a virus that originated in Asia, SARS claimed the lives of 30 Canadians and significantly damaged segments of the Canadian economy.[105] In the aftermath of SARS, it became clear that the next infectious disease emergency may now be just a plane ride away. Canadians also realized that, for all the strengths of Canada's health care system, exceptional care alone is not enough to protect them from the full range of threats to their health and safety.

The lessons of SARS, including recommendations from Dr. David Naylor's report, *Learning from SARS: Renewal of Public Health in Canada*, were the primary drivers behind the creation of the Public Health Agency of Canada in 2004.[2, 6] The Agency has essential responsibilities related to preventing diseases and injuries, promoting good health, preparing for emergencies and strengthening the public health infrastructure in Canada. Additionally, it strives to understand and address the basic factors that determine individual and population health in Canada.[107]

Public Health Agency of Canada

Mission

To promote and protect the health of Canadians through leadership, partnership, innovation and action in public health.

Vision

Healthy Canadians and communities in a healthier world.[106]

Also in 2004, Canada's First Ministers committed to the development of "goals and targets for improving the health status of Canadians through a collaborative process".[108] The following year, the Public Health Agency of Canada led the broad consultation and validation process that culminated in a set of goals (the Health Goals for Canada) that were agreed on by the Federal, Provincial and Territorial Ministers of Health (see Appendix C).

Most recently, Canada hosted the 19th International Union for Health Promotion and Education World Conference – *Health Promotion Comes of Age: Research, Policy & Practice for the 21st Century*. The event, held in 2007, provided an opportunity to reaffirm the commitment and vision of the Ottawa Charter, as well as the chance to look to the future and enhance partnerships and inter-sectoral collaborations for health promotion.[109]

A work in progress

Canada has made great strides in implementing public health initiatives to maintain and improve the health of Canadians. Considerable challenges remain however, as recent decades have seen the rise of new diseases as well as the continuation of old problems that still threaten the health of the population.

For example, 2,923 Canadians lost their lives on Canada's roads in 2005 despite safety improvements over the years.[110] Although this number is in decline due to better roads and safer cars, speeding, and dangerous and impaired driving are still serious risks.

Physical environments can also result in adverse health effects. Conditions associated with climate change – such as rising temperatures and extreme weather events – and migrating species/diseases, such as West Nile Virus, can lead to illness and death among vulnerable populations.[111] Air quality is of great concern as the number of 'smog days' is increasing in Canadian cities and the impact on health for children, seniors and those suffering from pre-existing illness such as cardiovascular and respiratory diseases, is significant.[112]

The necessity of clean water and reliable infrastructure was reinforced with the *E.coli* contamination of the community water supply in Walkerton, Ontario in 2000 where the water-borne infection claimed seven lives and left almost half the town's population ill.[113] The following year, the community water supply in North Battleford, Saskatchewan was contaminated with cryptosporidia which caused between 5,800 and 7,100 people to become ill.[114]

Sedentary lifestyles and escalating obesity rates are risk factors for preventable conditions, such as Type 2 diabetes, which reduce Canadians' quality of life and put their lives at risk.[12, 14] Each year in Canada, about three quarters of all deaths result from circulatory diseases, cancers, diabetes and respiratory illnesses.[115] Moreover, 51% of all years lost to premature death were caused by cancer, circulatory diseases and respiratory diseases in 2001.[116]

Serious health challenges such as stress, mental illnesses and suicide also continue to be major problems. One in five participants in the 2002 Mental Health and Well-being Survey indicated that they had experienced a mental illness (such as anxiety disorders, depression and substance dependence) at some point during their lifetime. Mental illnesses affect people in all occupations, education levels, socio-economic conditions and cultures. And, despite the fact that most Canadians will be affected by mental illness themselves, or through a family member, friend or colleague, reducing the stigma associated with mental illness continues to be the greatest challenge to treatment and care.[117, 118]

There is also an unequal distribution of health in Canada. Poverty, which is often linked to low education and employment levels, is also linked to people being less healthy on average. Research has shown repeatedly that persons with low incomes are more likely to experience illness and use the health care system, and those who are ill are often more likely to become economically disadvantaged.[119, 120, 121] Studies also show that other factors like education, early childhood development and social support can compound or mitigate these inequalities.[7, 122] Poverty then is not simply an issue of lack of money, but a cluster of disadvantages of which economic poverty is a key driver. This will be explored further in Chapters 3 and 4.

For all the progress that has been achieved to date, it is clear that considerable work remains to be done. However, these ongoing challenges do not diminish the extraordinary strides in Canada's public health history. In the past century, life expectancy for women has soared from 50 to 83 years and from 47 to 78 years for men.[123, 124] Improved sanitation, living conditions, community development measures, and innovations such as immunization have dramatically demonstrated effectiveness in preventing premature death and improving Canadians' health and quality of life. Continuous improvement in public health action will be required throughout the 21st century to sustain this impressive record.

Our Population, Our Health and the Distribution of Our Health

CHAPTER 3

The 2007-2008 United Nations Human Development Index – which considers life expectancy, education and standard of living – ranks Canada fourth overall out of 177 countries.[125] Despite this ranking, some negative health trends in Canada are worsening and there continues to be an uneven distribution of health across the population. This chapter gives an overview of the Canadian population and the overall health of the nation, including the main causes of disease, death and disability, and how Canada compares with others health-wise on an international level. The factors influencing these health trends are explored in Chapter 4.

Who we are

According to the 2006 Census, there are over 31.6 million people in Canada.[126] A diverse population, Canada's inhabitants can trace their ethnic roots to the four corners of the world and claim more than 200 languages as their mother tongue.[127] Canada is so big it spans six time zones yet, even though it is the second largest country in the world in terms of land area, it ranks only 36th in terms of population.[128]

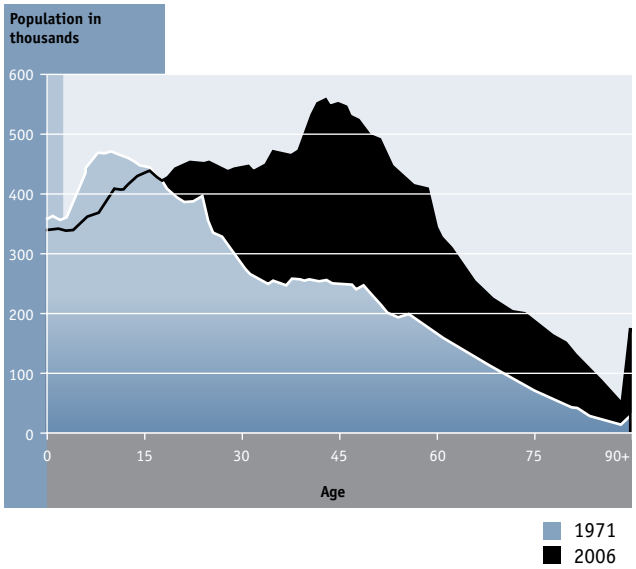
Aboriginal Peoples account for close to 4% of the population. About 60% identified themselves as First Nations, 33% as Métis, 4% as Inuit and 3% as Other or a combination of Aboriginal identities in the last Census.[129]

In the nine-year period between 1997 and 2005 there were approximately 3 million births and 2 million deaths in Canada.[130, 131] During the same period, more than 2 million new immigrants arrived.[132]

Most Canadians live in urban settings with over 80% of the population residing in towns and cities.[133] It is a growing trend. Since 2001, nearly 90% of the country's population growth has been concentrated in Canada's large census metropolitan areas.[134]

The population is also aging. The number of Canadians aged 65 years and older has more than doubled since 1970 and their share of the population has increased from 8 to 14% in the same period.[135] Children under 10 years of age (11%) and youth between the ages of 10 and 19 years (13%) account for less than one quarter of the population, while young- and middle-aged adults aged 20 to 64 years make up 62% of the population.[126] Figure 3.1 highlights how the age distribution of Canada's population has changed since the early 1970s when a larger portion of the population was found in the younger age groups compared to today when most of the population falls within the middle and older age groups.[135] An exception to this trend can be found among Aboriginal Peoples who have a much younger population.[136]

Figure 3.1 Population distribution by age, Canada, 1971 and 2006



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistic Canada. CANSIM Table 051-0001.

Our health

Given the diversity of the Canadian population, how is it possible to determine the state of Canadians' health or the factors that influence it? The answers lie in the use of statistics, known as health indicators, that measure and monitor trends in the health of Canadians. The indicators shown in Table 3.1 highlight how long people can expect to live on average, what percentage of the population experiences particular health challenges, or how frequently Canadians acquire and live with specific diseases and

Table 3.1 Our health

	Value	Description	Year
Who we are			
Population	31.6	million people	2006
Aboriginal	1.17	million people	2006
First Nations	0.70	million people	2006
Métis	0.39	million people	2006
Inuit	0.05	million people	2006
Immigrant	6.2	million people	2006
By birth place			
Africa	0.37	million people	2006
Asia and the Middle East	2.53	million people	2006
Caribbean and Bermuda	0.32	million people	2006
Central America	0.13	million people	2006
Europe	2.28	million people	2006
Oceania and other	0.06	million people	2006
South America	0.25	million people	2006
United States of America	0.25	million people	2006
By years since immigration			
Recent (<=10 years)	2.0	million people	2006
Long-term (>10 years)	4.2	million people	2006
Urban population	80.2	percent of the population	2006
Our health status			
Life expectancy and reported health			
Life expectancy at birth	80.4	years of expected life	2005
Health-adjusted life expectancy at birth	69.6	years of expected healthy life	2001
Infant mortality rate	5.4	deaths per one thousand live births	2005
Excellent or very good health *	60.1	percent of the population aged 12+ years	2005
Excellent or very good mental health *	72.9	percent of the population aged 12+ years	2005
Leading causes of mortality			
Circulatory diseases	227.5	deaths per 100,000 population per year	2004
Malignant cancers	209.4	deaths per 100,000 population per year	2004
Respiratory diseases	61.3	deaths per 100,000 population per year	2004
Causes of premature mortality (ages 0 to 74)			
Malignant cancers	1,574	potential years of life lost per 100,000 population per year	2001
Circulatory diseases	854	potential years of life lost per 100,000 population per year	2001
Unintentional injuries	640	potential years of life lost per 100,000 population per year	2001
Suicide and self-inflicted injuries	394	potential years of life lost per 100,000 population per year	2001
Respiratory diseases	162	potential years of life lost per 100,000 population per year	2001
Human Immunodeficiency Virus (HIV)	46	potential years of life lost per 100,000 population per year	2001
Causes of ill-health and disability			
Living with chronic diseases			
Malignant cancers	2.6	percent of the population	2003
Diabetes	5.5	percent of the population aged 1+ years	2004-2005
Obesity	24.3	percent of the population aged 18+ years	2005
Arthritis/rheumatism *	16.4	percent of the population aged 12+ years	2005
Asthma *	8.3	percent of the population aged 12+ years	2005
Heart disease *	4.8	percent of the population aged 12+ years	2005
High blood pressure *	18.3	percent of the population aged 20+ years	2005
Chronic obstructive pulmonary disease *	4.4	percent of the population aged 35+ years	2005
Living with mental Illness			
Schizophrenia	0.3	percent of the population aged 12+ years	2002
Major depression	4.8	percent of the population aged 15+ years during a 12-month period	2002
Alcohol dependence	2.6	percent of the population aged 15+ years during a 12-month period	2002
Anxiety disorders	4.8	percent of the population aged 15+ years during a 12-month period	2002
Alzheimer's and other dementias *	6.0-10.0	percent of the population aged 65+ years in North America	2003
Acquiring infectious diseases			
HIV	2,300-4,500	estimated number of new cases	2005
Chlamydia	202.2	new cases per 100,000 population	2006
Gonorrhea	33.1	new cases per 100,000 population	2006
Infectious Syphilis	4.6	new cases per 100,000 population	2006

** Denotes self-reported data*

Note: Some data may not be comparable. More detailed information can be found in Appendix D: Definitions and Data Sources for Indicators.

Sources: Public Health Agency of Canada using data from Statistics Canada and National Diabetes Surveillance System.

disabilities. These indicators are widely accepted as a meaningful gauge of overall population health and can be used to provide an indication of how healthy Canadians are over time and in comparison to other countries.[137, 138]

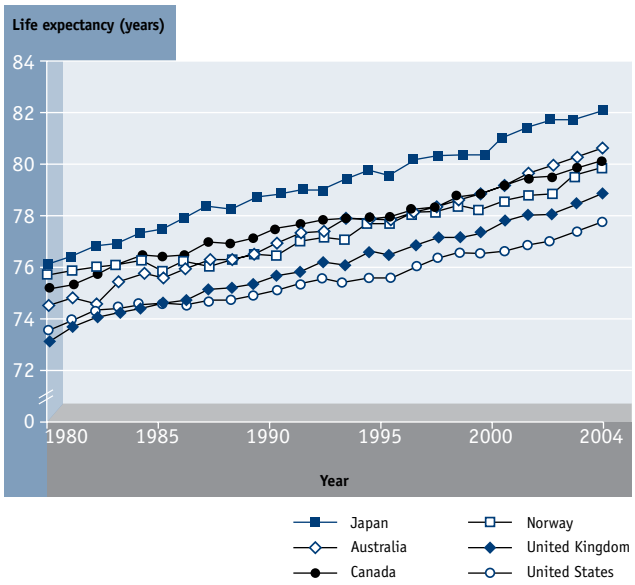
Two types of health indicators are presented in Table 3.1; those that originate from official information and data sources such as the census, death records, hospitalization records, disease registries or direct measurement; and those that are self-reported from population-representative surveys where respondents identify having experienced, being diagnosed with or living with a variety of diseases and injuries as well as rating their quality and state of general and mental health. Most of these indicators are presented as rates or proportions of the overall Canadian population.

Life expectancy

Life expectancy in Canada has increased dramatically over the past century to the point where a person born here today can expect to live for about 80 years, based on current death rates in all age groups.[139] Over a lifetime, some periods may be spent in less than full health, but it is estimated that Canadians can expect to live the equivalent of 70 of those 80 years in full health.[140] This number is arrived at using a health-adjusted life expectancy, which is a measure of overall population health that takes into account the effects of illness and disability on peoples' quality of life. Consequently, Canadians can expect to live a long life, with the expectation that a good health-related quality of life will be enjoyed for most of those years.

Canadians' life expectancy at birth in 2004 was one of the highest in the world at just over 80 years – about 2.5 years more than the U.S. and 2 years less than Japan (the highest at 82 years).[141] Figure 3.2 shows the steady increase in life expectancy for seven OECD countries, including Canada, over the last 25 years. It also shows that Canadian life expectancy is improving, but it is not doing so at the same rate as some other top health-ranked countries such as Japan and Australia.

Figure 3.2 Life expectancy at birth, select OECD countries, 1980-2004

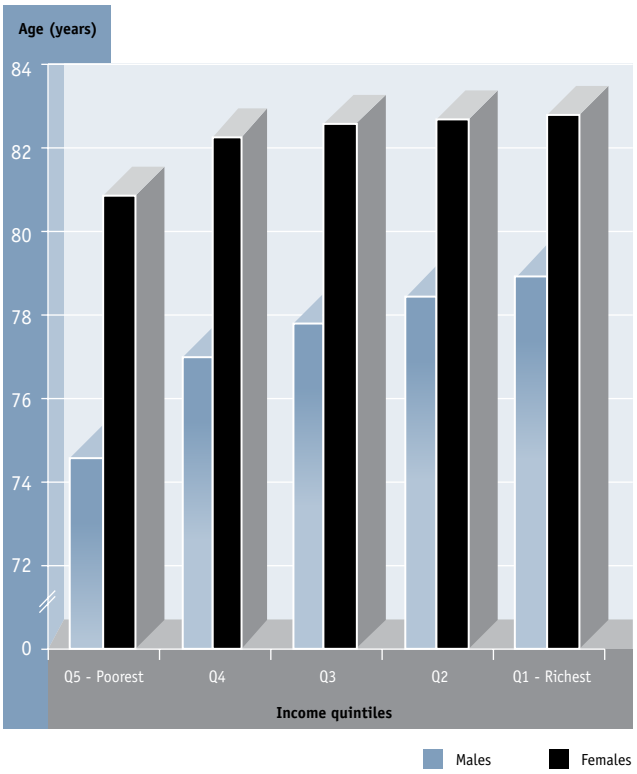


Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Organisation for Economic Co-opertation and Development (OECD) Health Data, 2007.

Socio-economic health gradient describes the enduring pattern of the rise of health status with each level of socio-economic status.[142]

Although Canada does well overall in terms of life expectancy, certain populations within Canada do not fare as well. In urban Canada, Canadians with lower levels of education have lower life expectancy, as do those living in lower-income neighbourhoods.[143] In Figure 3.3, the urban population is divided into quintiles (Q), or fifths, based on the percentage of the population in their neighbourhoods below the low-income cut-offs.[144] The 20% of the population in the neighbourhoods with the highest incomes (Q1) have a higher life expectancy than those in each of the neighbourhoods with lower incomes (Q2 to Q5). The effect of health outcomes improving with each increase in income level is known as a social gradient in health.[145, 146] Figure 3.3 also shows that the gradient is different for men and women, with a much steeper gradient for men.

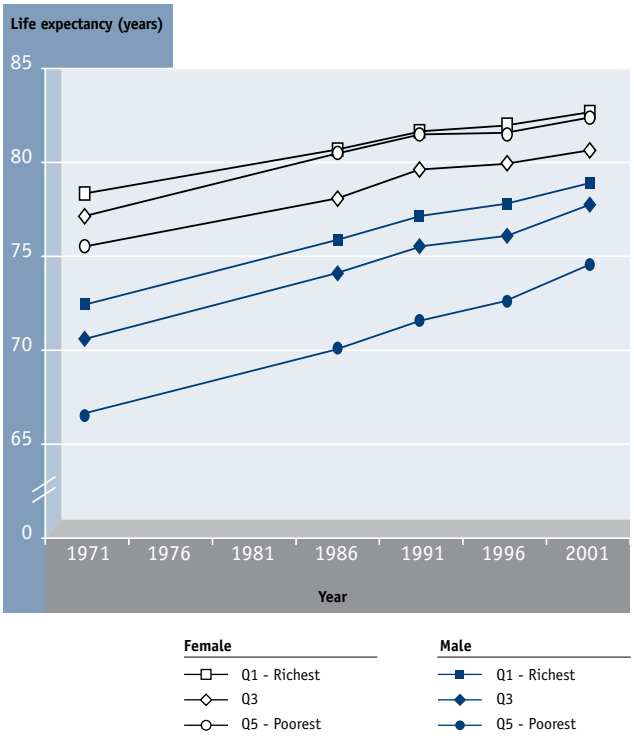
Figure 3.3 Life expectancy at birth by neighbourhood income and sex, urban Canada, 2001



Q - population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Figure 3.4 Life expectancy at birth by neighbourhood income and sex, urban Canada, 1971-2001



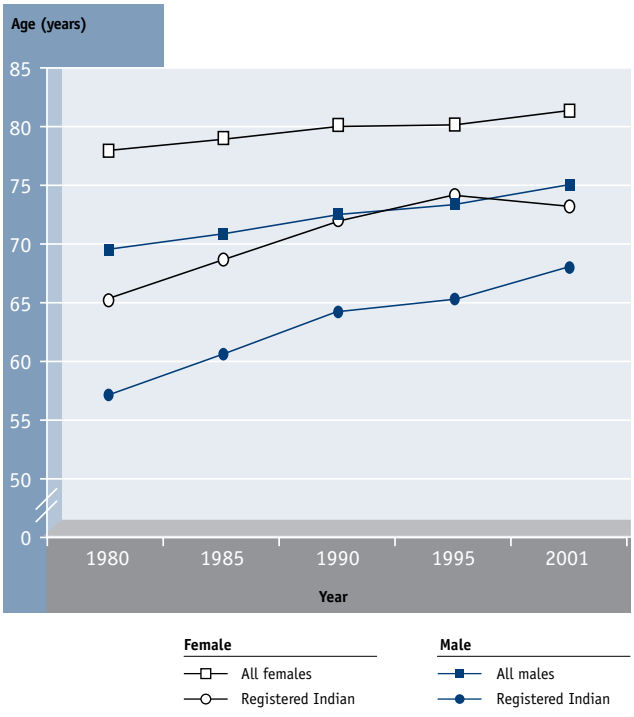
Q - population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Figure 3.4 illustrates that over time, life expectancy has increased steadily at all income levels.[144] The figure also shows, however, that while the gaps between inhabitants in neighbourhoods with the highest and lowest incomes and between men and women are narrowing, they have persisted since the early 1970s with even the lowest-income women having a longer life expectancy than men with the highest income. The size of these gaps is not insignificant – they are in fact equivalent to the increase in many countries' life expectancies which took more than two decades to achieve (see Figure 3.2).[141]

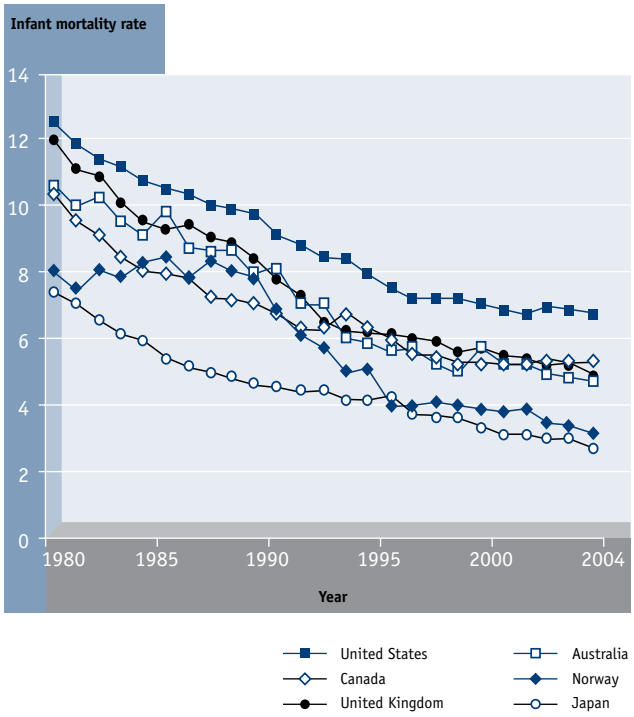
First Nations people listed in the Indian Register, according to requirements set out in the *Indian Act,* also have lower life expectancy.[147, 148] Figure 3.5 shows that while the life expectancy for Registered Indians has increased since 1980, it has remained below that of the general population for both male and female populations.[149] Although the gap is narrowing, a persistent difference remains between First Nations people and other Canadians.

Figure 3.5 Life expectancy at birth by sex, Registered Indian and general population, Canada, 1980-2001



Source: Indian and Northern Affairs Canada, *Basic Departmental Data, 2004*.

Figure 3.6 Infant mortality rate, select OECD countries, 1980-2004



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Organisation for Economic Co-opertation and Development (OECD) Health Data, 2007.

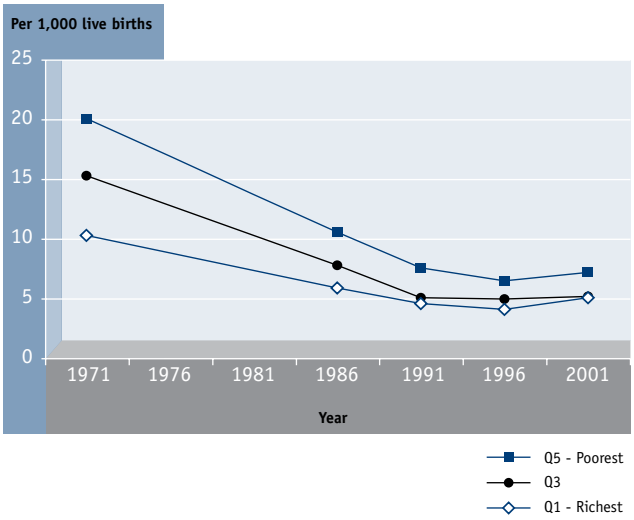
Infant mortality

The infant mortality rate is a particularly sensitive indicator that, internationally, well reflects the overall human development, health and education status of women and the strength of the public health environment of a nation.[150, 151] Canada's infant mortality rate has improved over the past four decades, dropping by 80% from more than 27 deaths per 1,000 live births in 1960 to 5 per 1,000 live births in 2004.[152, 153] Figure 3.6 illustrates the steady decrease in infant mortality rates for seven OECD countries, including Canada, over the last 25 years.[141]

Some differences may exist in the way various countries record infant births and deaths, so that infant mortality rates are not necessarily directly comparable. However, for countries similarly developed in comparison to Canada, such differences do not negate the fact that infant mortality rate is still considered a reliable indicator of a country's overall health and is often used as an international comparison tool.[151] Canada's infant mortality rate is slightly higher than some countries (Japan and Norway have the lowest infant mortality rate at around 3 deaths per 1,000 live births), but it is comparable to Australia and the United Kingdom, and lower than the U.S. (7 infant deaths per 1,000 live births).

Despite the fact that Canada's infant mortality rate is in line with other OECD countries, some populations within Canada experience higher rates of infant death. Figure 3.7 shows the infant mortality rate over time for low-, middle- and high-income urban neighbourhoods.[144] While the rate is decreasing in all quintiles (despite a moderate increase after 1996), and the gap between the rate in the various quintiles has also been decreasing over time, a significant difference in infant mortality rates still exists between neighbourhoods with the highest and lowest incomes.

Figure 3.7 Infant mortality rate by neighbourhood income, urban Canada, 1971-2001



Q - population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Infant mortality rates among Aboriginal Peoples and those living in Canada's northern communities are estimated to be higher than the general population. The infant mortality rate among First Nations people living on reserve is estimated at 7 deaths per 1,000 live births.[148] This rate may be an underestimate because of current limitations associated with data coverage and quality related to Aboriginal infant births and deaths in Canada.[154] Recent research related to First Nations in British Columbia puts the estimate as high as 7.5 deaths per 1,000 live births for First Nations living in rural areas.[155] The estimated rate in Nunavut (where approximately 85% of the population is Inuit) is more than three times the national rate at 16 deaths per 1,000 live births.[156, 148]

Self-reported health

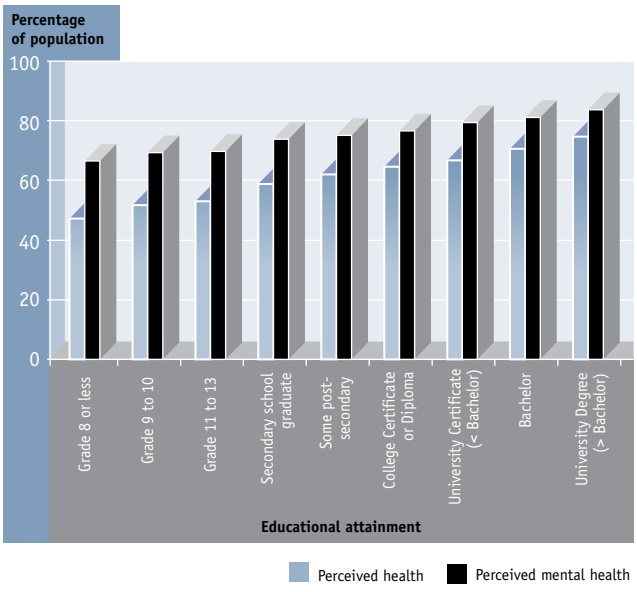
Although measured indicators are important, how people feel about their own health is an important indication of overall health status. Despite the inherent limitations of survey data, such as the subjectivity of individual responses, self-reported data can provide useful information otherwise not available. When Canadians are asked about their health, most indicate that they consider themselves to be healthy. The 2005 Canadian Community Health Survey found that the majority of Canadians over 12 years of age, about 16 million (60%) report their health as either excellent (22%) or very good (38%).[157] Even more (73%) report their mental health as excellent (37%) or very good (36%).[158]

As with other health indicators, however, some Canadians fare less well. Individuals living in households with the lowest levels of education are less likely to report having excellent or very good general or mental health.[159] Figure 3.8 shows that only 47% of individuals living in households with the lowest levels of education (Grade 8 or less) report excellent or very good health. Each additional level of education is associated with an increase in the proportion of those reporting excellent or very good health.

The Aboriginal Peoples Survey 2001 found that slightly lower proportions (56%) of the Aboriginal population aged 15 years and older living off reserve reported their health as either excellent or very good

(North American Indian 55%, Métis 58% and Inuit 56%).[160] For those living on reserve, the 2002-2003 First Nations Regional Longitudinal Health Survey found that the proportion reporting excellent or very good health was even lower at 40%.[161]

Figure 3.8 Proportion of Canadians* with excellent or very good perceived health by highest household level of education, Canada, 2005



* Population aged 12+ years.

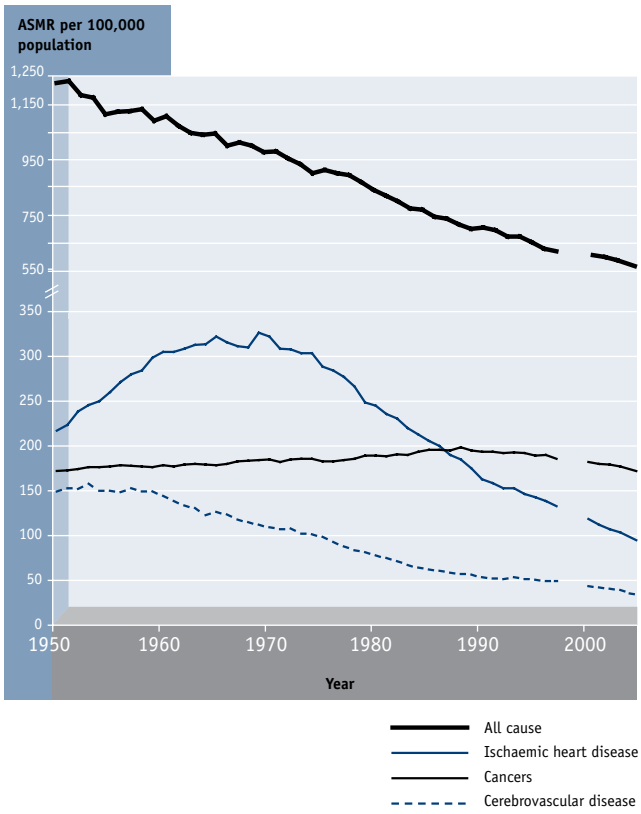
Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, Canadian Community Health Survey (CCHS-SHR) 2005.

Causes of death

If recent trends continue, six out of ten Canadian deaths in 2008 will be attributable to either circulatory diseases (largely heart attack, heart failure or stroke) or cancers. While the absolute numbers are high, the rate at which people are dying prematurely of these diseases is lower today than in the past considering the increase in population size.[162]

Over the last half century, taking into account changes in the age distribution of the population from year to year (by age-standardization), the overall mortality rate for all causes combined has declined steadily (see Figure 3.9).[163] In other words, Canadians are living longer. The overall age-standardized mortality rate for all ages and sexes combined has declined from 1,219 deaths per 100,000 population in 1950 to 572 per 100,000 in 2004.[164, 165, 166]

Figure 3.9 Age-standardized mortality rates for select causes, Canada, 1950-2004



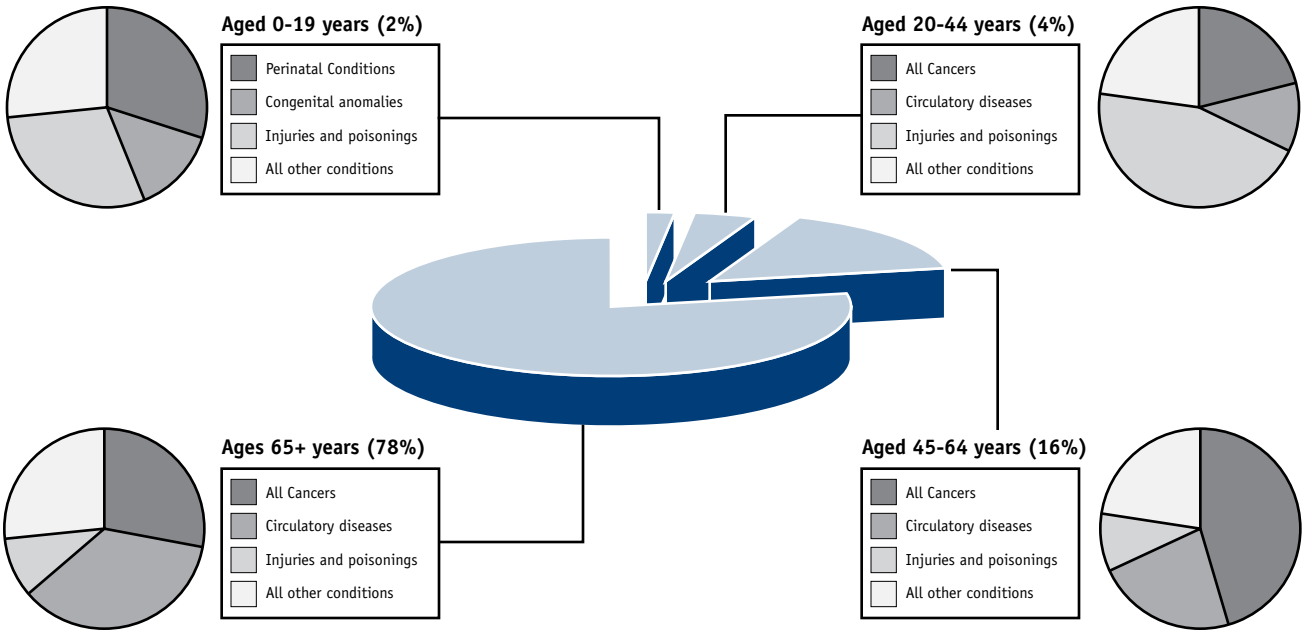
ASMR – Age-standardized mortality rate.

Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, CANSIM Tables.

Much of the decline in overall mortality rates is attributable to the more than 70% decline in death rates related to circulatory diseases – most notably ischemic heart disease and cerebrovascular disease (including stroke). Age-adjusted mortality rates across all cancer sites have not changed significantly since the 1950s.[164, 165, 166]

Patterns, rates and causes of mortality vary within the population according to different factors such as age, sex and income.[167] The pattern of mortality by

Figure 3.10 Mortality by select causes and age groups, Canada, 2004



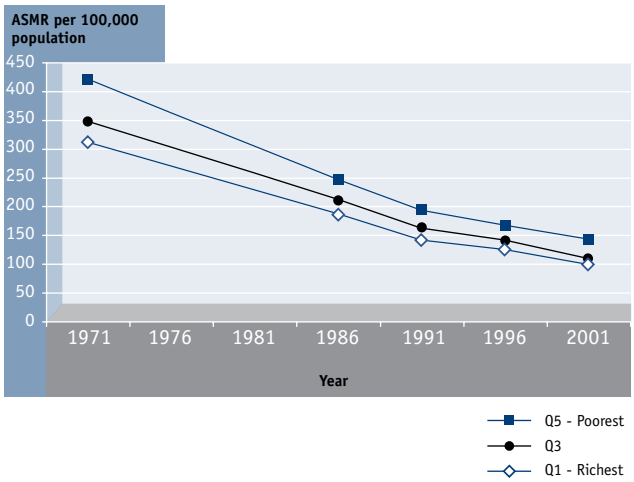
Source: Public Health Agency of Canada using Statistics Canada, CANSIM Tables.

age group is presented in Figure 3.10 and shows both the different causes of death and their proportion of all deaths for Canadians of different ages. For example, although deaths due to injuries and poisonings represent a substantial proportion of all deaths in children and youth aged 0 to 19 years, in relation to the entire population the actual number of those deaths is small given that deaths in that age group account for less than 2% of all deaths.[168] In contrast, beginning around age 45, the majority of deaths are due to circulatory diseases and cancers and represent the majority of all deaths in Canada.[169] As would be expected, most deaths (for all causes) occur in the older age groups (78%), regardless of their relative importance in younger age groups.

Mortality rates also vary by neighbourhood income.[144] Death rates due to ischemic heart disease are decreasing for men (as shown in Figure 3.11), and the gap between those living in the highest- and lowest-income neighbourhoods is narrowing.[144] Most of this 'gap narrowing', however, occurred between 1971 and 1991, with almost no further narrowing in the subsequent decade.

In other cases the opposite is true. Death rates for lung cancer in women are increasing for all income levels and the mortality gap between highest- and lowest-income neighbourhoods is widening (see Figure 3.12).[144] Much of this pattern is a reflection of past smoking practices among Canadian women.[170, 171, 172]

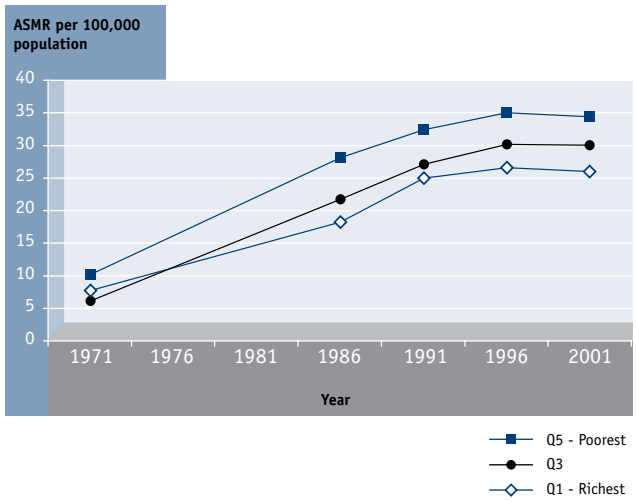
Figure 3.11 Age-standardized mortality rates for ischemic heart disease by neighbourhood income, male, urban Canada, 1971-2001



ASMR – Age-standardized mortality rate.
Q – population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Figure 3.12 Age-standardized mortality rates for lung cancer by neighbourhood income, female, urban Canada, 1971-2001



ASMR – Age-standardized mortality rate.
Q – population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

Causes of premature death

While the number of deaths due to a particular disease is important to understanding the health of the Canadian population, so too is the age at which these deaths occurred. For example, if a Canadian dies of cancer at age 45, he or she has potentially lost 30 years of life (conservatively assuming a life expectancy of 75 years at birth, as is commonly done in these calculations). Measuring the number of potential years of life lost (PYLL) to premature death provides a better sense of the impact a given disease or condition has on the health of the population.

In Canada, the overall PYLL rate has been decreasing over time. However, cancers, circulatory diseases, injuries (both unintentional and intentional) and chronic respiratory disease continue to be the most significant early killers of Canadians. In 2001, these four causes accounted for more than 70% of the total 5,102 PYLLs per 100,000 population in Canada for all causes combined. In general, infectious diseases are not responsible for large numbers of premature deaths in Canada with the greatest contributor, HIV, adding only 46 PYLLs per 100,000 population in 2001 – less than 1% of the total years of life lost prematurely that year.[116]

Research indicates that where you live can have an impact on years of life lost to early death. Canadians living in more northern regions have a PYLL rate higher than the national average (e.g. the PYLL rate for residents of Nunavut is 2.5 times higher than average). This is due mainly to unintentional injuries, suicides and self-inflicted injuries. Those in the central and west coast areas of the country have PYLL rates lower than the average.[116]

There is also a PYLL difference between low- and high-income neighbourhoods. In 2001, more total years were lost to premature death in lower-income urban neighbourhoods than in the 20% of neighbourhoods with the highest incomes. If the age- and sex-specific mortality rates in the highest-income quintile had applied to the entire population, the total PYLL for all urban neighbourhoods would have been reduced by approximately 20% – the equivalent of eliminating all premature deaths due to injuries in those neighbourhoods.[144, 173]

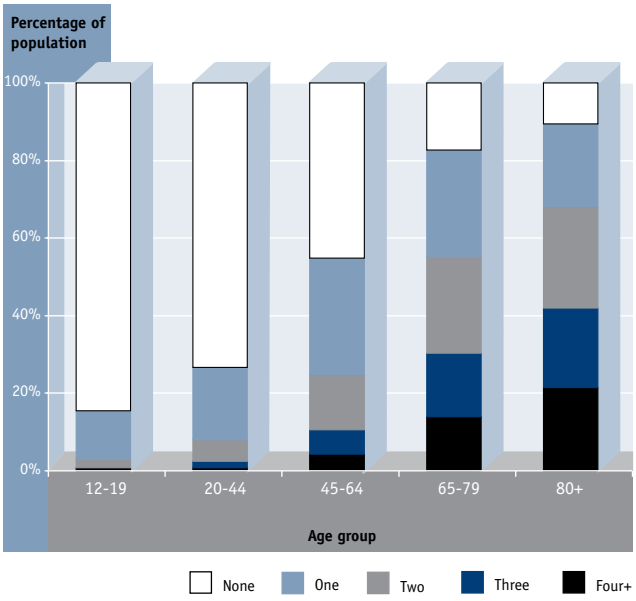
Patterns of ill health and disability

The diseases which cause the majority of premature deaths in Canada also cause ill health and disability across the population. In 2003, close to 3% of Canadians were living with some form of cancer and in 2005 roughly 5% reported having heart disease.[174, 175]

The proportion of Canadians living with specific diseases and health conditions varies throughout the population. The burden of disease, injury or disability also varies; some diseases are cause for concern not because they affect large proportions of the population, but because the burden on individual health and quality of life is substantial.

Although chronic diseases are most often experienced by, and associated with, older members of the population, 42% of all Canadians over the age of 11 report living with at least one of a number of diverse chronic diseases (see Figure 3.13).[176, 177]

Figure 3.13 Proportion of Canadians reporting one or more chronic diseases* by age group, Canada, 2005



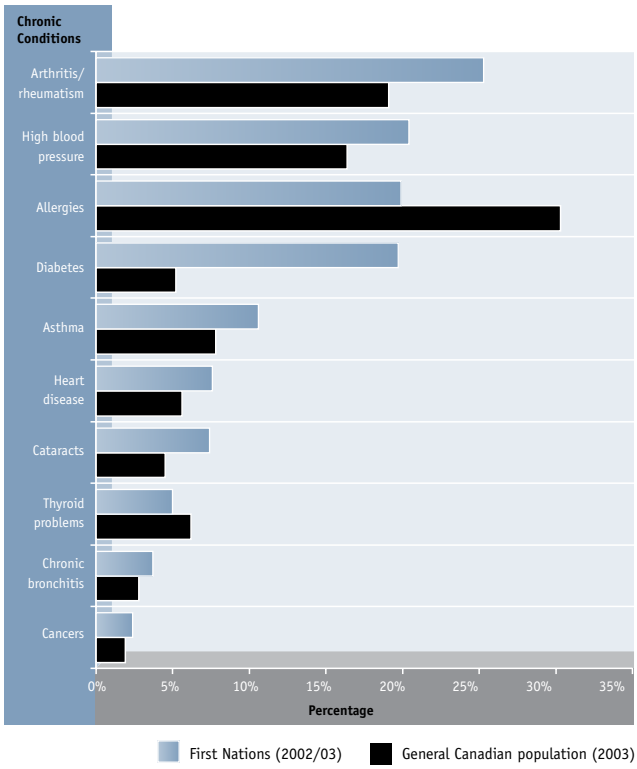
*Diseases include asthma, arthritis or rheumatism, high blood pressure, bronchitis, emphysema, chronic obstructive pulmonary disease (COPD), diabetes, epilepsy, heart disease, cancer, effects of a stroke, Crohn's disease, colitis, Alzheimers, cataracts, glaucoma, thyroid condition, schizophrenia, mood disorders, anxiety disorder, and eating disorder for persons aged 12+ years.

Source: Public Health Agency of Canada using Statistics Canada, Canadian Community Health Survey, 2005.

In many cases, certain segments of the population are affected at different rates. For example, persons born in Canada are more likely to have any one of a number of diagnosed chronic diseases or conditions compared to those who have immigrated to Canada. This is true even after accounting for differences in age, education, and income between the two populations. Canadian-born women are three times more likely to experience a chronic disease or condition than women who have immigrated to Canada within the last four years. It is only those immigrants, men and women alike, who have lived in Canada for thirty years or more who have the same odds of experiencing a chronic disease or condition as their Canadian-born counterparts.[178]

Aboriginal Peoples, on the other hand, have higher rates of many chronic diseases than the Canadian average.[8, 179] Figure 3.14 shows that, with few exceptions, the proportion of First Nations adults living on a reserve who report being diagnosed with some chronic conditions is higher than that of the overall population.[180]

Figure 3.14 Age-adjusted prevalence of chronic conditions among First Nations adults compared to the general Canadian adult population

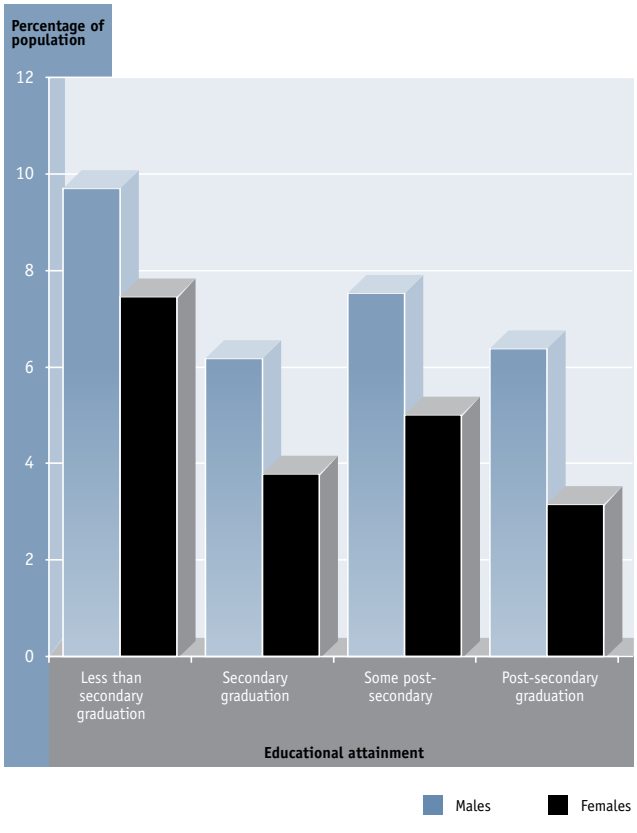


Source: *First Nations Regional Longitudinal Health Survey* (RHS).

And as with life expectancy, infant mortality rates and PYLL, the proportion of the population living with many specific causes of ill-health and disability also differs according to factors such as income and education. For example, Figure 3.15 shows a social gradient in the prevalence of heart disease for Canadians aged 45 to 64 years by level of education.[181]

Other diseases and health conditions which are not necessarily the most common causes of premature death are, however, prevalent in the population and contribute significantly to the ill health of Canadians.

Figure 3.15 Self-reported heart disease by educational attainment and sex, household population aged 45-64 years, Canada, 2005



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, Canadian Community Health Survey (CCHS) 2005.

Diabetes

Approximately one in twenty Canadians has diabetes.[182] The vast majority of Canadians with diabetes (about 90%) have Type 2 diabetes, which is strongly related to overweight and obesity, as well as genetics. This type of diabetes can often be prevented through exercise, healthy eating and maintaining a healthy body weight.[183] A smaller proportion of diabetics with the Type 1 form, which usually begins in early life, owe their condition to a much stronger genetic component.[184]

As with other diseases and health conditions, certain populations experience higher than average rates of diabetes. Among First Nations adults living on reserve or in First Nations communities, the diabetes prevalence is approximately 20% – four times the rate of the general population.[180]

Hypertension

Hypertension, or high blood pressure as it is better known, is a major contributor to some of the top causes of death in Canada, such as heart disease and stroke.[185] About 18% of Canadians aged 20 years or older report being diagnosed with high blood pressure. For those over the age of 44, the proportion climbs to 31%.[186, 187] The risk of developing high blood pressure increases with age and varies by ethnicity and gender.

Increasing levels of exercise, quitting smoking and improving eating habits can all reduce the risk of developing hypertension. For example, the number of Canadians with high blood pressure would be reduced by a third if everyone consumed a diet with healthy levels of sodium (i.e. levels that are significantly lower than the current average dietary intake).[188, 189]

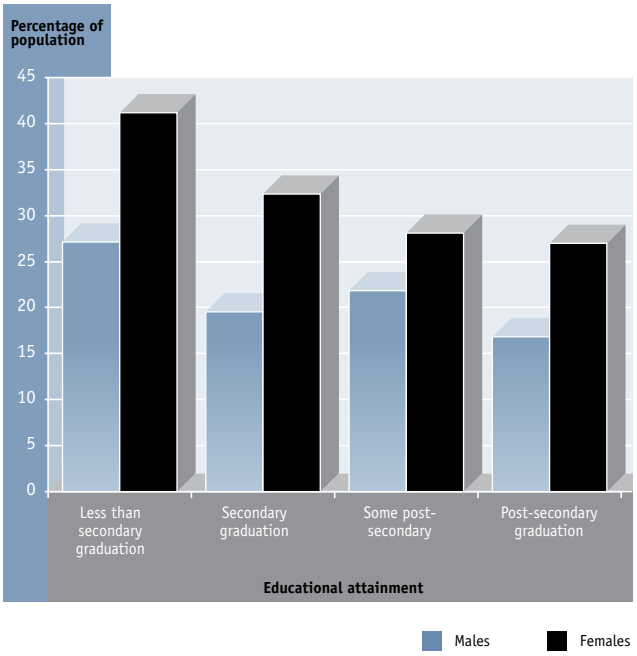
Arthritis/Rheumatism

Approximately 16% of Canadians aged 12 years and older report having arthritis or rheumatism and it is the most prevalent chronic condition among First Nations adults (see Figure 3.14).[177, 180] Figure 3.16 shows a social gradient for this condition, where the proportion of those reporting arthritis or rheumatism generally decreases with an increase in household level of education for those aged 45 to 64 years.[187] Arthritis is not a single disease, but rather a collective term for more than 100 related rheumatic diseases – each with its own risk factors. Risk factors for the major types of arthritis and rheumatism include age, genetics, obesity, injury and autoimmune disorders.[190, 191, 192] Although arthritis is most often associated with the joints, rheumatic diseases can also affect the internal organs and skin. People living with this illness often endure years living with pain, and attempts to manage it can also lead to depression and anxiety.[191, 192] In some cases, it becomes necessary for the individual to undergo joint replacement therapy. The Canadian Joint Replacement Registry reported that degenerative osteoarthritis, the most common form of arthritis from middle age onward, was responsible for 81% of primary hip replacements and 93% of primary knee replacements in 2004-2005.[193]

Obesity

Obesity currently presents a considerable health challenge in Canada (see the Chapter 2 text box "Obesity: A Public Health Approach"). It can lead to serious ill health due to its link with heart disease, cancer, Type 2 diabetes, osteoarthritis and other health outcomes.[14, 195] In 2005, 24% of Canadians 18 years and older were considered to be 'obese' (i.e. with a body mass index equal to or above 30.0) and an additional 35% were considered 'overweight' (i.e. with a body mass index of 25.0 to 29.9) based on their measured height and weight.[196] This is a substantial increase from the 14% reported as obese in 1978-1979.[12] Obesity is not only a problem for adult Canadians; measured heights and weights of Canadian children in 2004 showed 8% of those aged 2 to 17 years as being obese and 18% as overweight.[13]

Figure 3.16 Self-reported arthritis/rheumatism by educational attainment and sex, household population aged 45-64 years, Canada, 2005



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, Canadian Community Health Survey (CCHS) 2005.

Given current levels of physical inactivity and poor nutritional practices (see Chapter 4), obesity rates in Canada are expected to continue to climb. Recent research has reported that obesity rates for Canadian men are among the highest in the world.[197] As these rates increase, so will the frequency of ill health outcomes associated with being overweight and obese, resulting in more disability and disease and many premature deaths. It has been estimated that more than 8,000 deaths in 2004 could be attributed to obesity among Canadians aged 25 years and older.[14]

Differences in income and education, as well as whether an individual was born in Canada, have been linked to differences in obesity rates.[178, 198] For Canadians aged 19 to 45 years, those who did not

Body Mass Index, Obesity and Health Risks

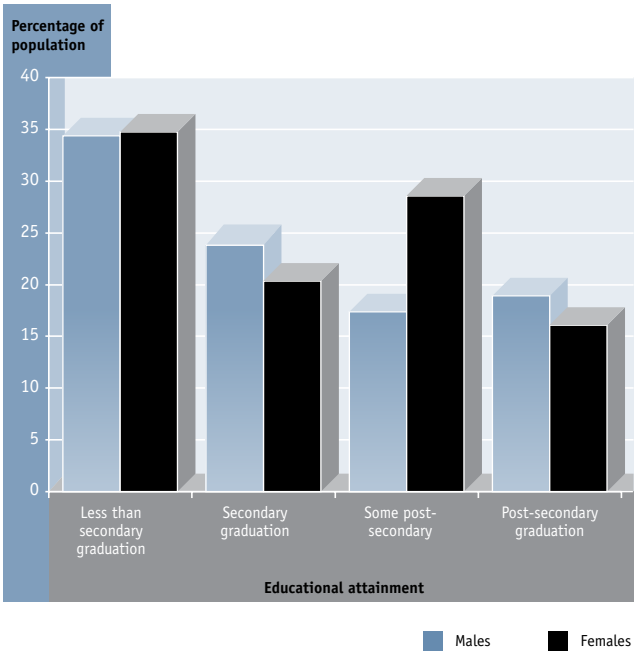
The body mass index (BMI) is a ratio of weight-to-height calculated as:
BMI = weight (kg)/height $(m)^2$.

Research studies in large groups of people have shown that the BMI can be classified into ranges associated with health risk. There are six categories of BMI ranges in the weight classification system. These are:

Classification	BMI Category (kg/m^2)	Risk of developing health problems
Underweight	<18.5	Increased
Normal weight	18.5-24.9	Least
Overweight	25.0-29.9	Increased
Obese class I	30.0-34.9	High
Obese class II	35.0-39.9	Very high
Obese class III	>=40.0	Extremely high

The risk of developing weight-related health problems increases the further one's BMI falls outside the 'normal weight' category.[194, 195]

Figure 3.17 Measured obesity by educational attainment and sex, household population aged 19-45 years, Canada (excluding territories), 2004



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, Canadian Community Health Survey (CCHS) 2004.

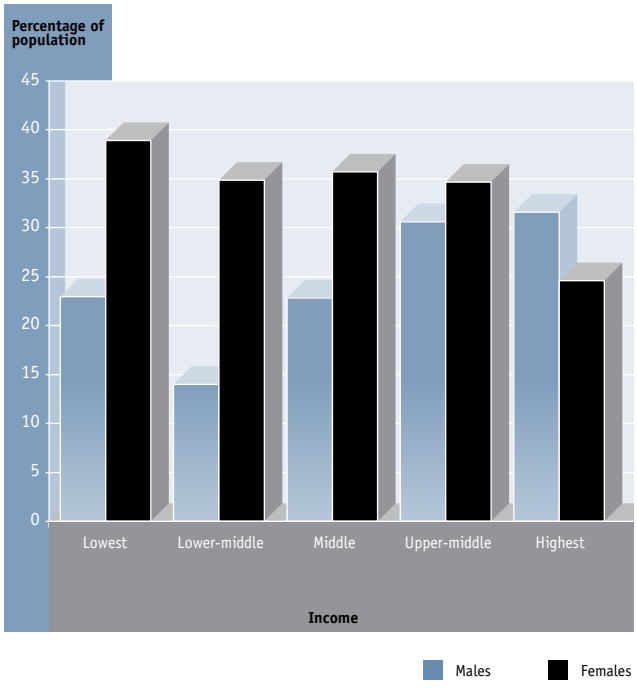
complete high school are much more likely to be obese compared to those who did complete high school or had any level of post-secondary education (see Figure 3.17).[198]

In terms of income levels, men and women seem to be affected differently. As shown in Figure 3.18, among those aged 46 to 65 years, obesity rates for women tend to increase as income decreases for the three groups with the highest incomes whereas, for men, obesity rates tend to increase as income increases.[198] While it is not entirely clear why this relationship is reversed for men, some experts suggest that higher smoking rates and physically demanding jobs may contribute to lower rates of obesity in men with lower levels of income.

Among Aboriginal Peoples living off reserve 38% of adults and 20% of children are obese (based on measured height and weight).[12, 13] For First Nations living on reserve or in First Nations communities, 36% of both adults and children are considered to be obese based on self-reported height and weight measurements.[161]

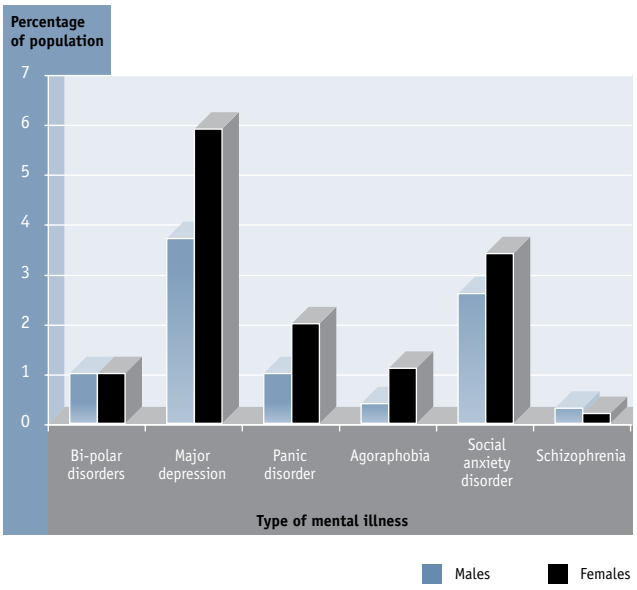
Self-reported data from 2005 suggest that recent immigrants to Canada have a much lower prevalence of obesity (less than 7% of that population). Immigrants who have lived in Canada for some time are more likely to be obese (roughly 13%), although their actual prevalence of obesity is still lower than the overall national rate.[200] Also of note, more rural Canadians are obese than those living in urban areas (29% and 20% respectively).[201]

Figure 3.18 Measured obesity by income and sex, household population aged 46-65 years, Canada (excluding territories), 2004



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Statistics Canada, Canadian Community Health Survey (CCHS) 2004.

Figure 3.19 Population aged 12+ years reporting select mental illnesses within a 12-month period, Canada, 2002



Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators - Chronic Disease Prevalences*.

Mental illness

In 2002, almost 5% of Canadians reported having experienced symptoms consistent with a major depressive episode over the previous 12 months and 20% reported having experienced symptoms of depression, bipolar and/or a major anxiety disorder at some point in their lifetime.[117, 177] The WHO estimated unipolar depression (depression without manic episodes) to be the number one single disease cause of overall 'burden of disease' (i.e. the impact of premature death and disability combined) in Canada in 2002.[202] With the exception of bipolar disorders (i.e. depression with manic episodes), more women than men report symptoms consistent with depression and anxiety disorder in Canada (see Figure 3.19).[177]

An additional concern related to mental illness is suicide, which accounted for the fourth largest number of potential years of life lost to premature mortality in 2001.[116] In 2004, the suicide rate in Canada was roughly 11 suicide deaths per 100,000 population with the rate for men (17 per 100,000) more than triple the rate for women (5 per 100,000). Men aged 85 to 89 years old experience the highest rates of suicide compared to other age groups, while suicide rates for women peak between the ages of 50 to 54 years.[117, 203]

Infectious diseases

Rates of officially reported STIs have been on the rise in Canada in recent years, particularly chlamydia, infectious syphilis and gonorrhea. Between 1997 and 2006, reported chlamydia rates increased 78% (114 to 202/100,000), gonorrhea rates increased 122% (15 to 33/100,000) and infectious syphilis rates increased 1,050% (<1 to 5/100,000).[204, 205] There is likely a

combination of factors which may explain this rise. In the case of gonorrhea and chlamydia, screening rates have increased – especially among men – because of new less invasive testing. Other factors, such as increases in risky sexual behaviour, lack of knowledge regarding STI transmission and a more relaxed attitude toward safe sex practices, are also likely contributors and require further investigation. Although genital herpes and human papillomavirus (HPV) are not nationally reportable, they are also common in Canada.[204] While many STIs often produce no symptoms initially, they can cause serious health consequences if left untreated, including pelvic inflammatory disease, ectopic pregnancy and infertility.[206, 207] It is now known that certain types of HPV infections are responsible for almost all cases of cervical cancer.[208]

Some infectious diseases are more prevalent among Aboriginal Peoples than the general population. In 2006, there were 27.4 reported new active and relapsed tuberculosis cases per 100,000 in the Aboriginal population, compared to just 5 per 100,000 in the total Canadian population.[209] Aboriginal Peoples also accounted for more than 27% of all reported positive HIV tests in 2006 in the 11 provinces/territories that report ethnicity with their tests, although they are estimated to make up only 6% of the population in those provinces/territories.[210]

Summary

Although the health of Canada's population is considered very good – especially in comparison to many other countries – a closer inspection of differing rates of death, disease and disability among various groups show that some Canadians are experiencing worse health and a lower quality of life than others. Several forces in society influence these rates, including: the aging of the population; better medical interventions that improve survival rates for potentially fatal conditions; and a change in people's personal choices about eating, physical activity and the use of substances such as tobacco and alcohol. These are not the only factors at play as there is good evidence that issues such as poverty, early childhood development, education, employment and working conditions, and aspects of the design and structure of communities have a profound effect on people's individual health behaviours and health outcomes. Chapter 4 explores some of the factors that influence health and its distribution in this country.

Social and Economic Factors that Influence Our Health and Contribute to Health Inequalities

CHAPTER 4

What makes – and keeps – us healthy

If good health is not shared equally by Canadians, then understanding the many factors – or determinants – that contribute to health and differences in health status is essential to identifying and implementing solutions to this challenge.

Health inequalities are differences in health status experienced by various individuals or groups in society. These can be the result of genetic and biological factors, choices made or by chance, but often they are because of unequal access to key factors that influence health like income, education, employment and social supports.[2]

Age, sex and heredity are key factors that determine health. The choices we make also matter, but these choices are influenced by environments, experiences, cultures and other factors (the determinants of health). And for some, even when the best choices known are made, their health outcomes are limited by these other factors.

Economic and social drivers such as income, education and social connectedness have a direct bearing on health.[145, 167] These socio-economic determinants strongly interact to influence health and, in general, an improvement in any of these can produce an improvement in both health behaviours and outcomes among individuals and/or groups.

Those with very low incomes, for example, often lack resources and access to nutritious food, adequate housing, safe walking paths and working conditions, which can impact negatively on their health.[7] As well, they may face financial and life stress, which – over time – can have health consequences such as high blood pressure, or immune and circulatory complications.[145] On the other hand, those who have adequate income and employment are likely to experience health outcomes that are less dependent on material needs but are nonetheless affected by the demands they face at home and at work and the degree to which they have control and decision-making influence in those settings. Generally, the degree to which people feel they have control over their circumstances is related to how healthy they are. Increased exposure to stress, as well as a lack of resources, skills, social support and connection to the community can contribute to less healthy coping skills and poorer health behaviours such as smoking, over-consumption of alcohol and less healthy eating habits.[7, 122]

The structure of society also influences health through the distribution of public goods and resources. In fact, the extent to which these are equally shared across the population has been shown to influence the health of the population.[2] Social support, social networking and connection to culture can protect against the health affects of living in disadvantaged circumstances. As well, having a good start in life can help set the trajectory for a healthier life. Research now shows that many challenges for adults (e.g. mental health issues, obesity, heart disease, criminality, low literacy) have roots in early childhood. Providing children with environments that are stimulating, supportive and include positive parental involvement – particularly during the first six years of life – can influence health (e.g. by mitigating poor health outcomes in later life).[212]

The following socio-economic determinants of health will be discussed in further detail in this chapter. The order of this discussion reflects the importance of the broader economic and social context for health behaviours, access to health care and ultimately the health of the population.

The determinants include:

- income;
- employment and working conditions;
- food security;
- environment and housing;
- early childhood development;
- education and literacy;
- social support and connectedness;
- health behaviours; and
- access to health care.

Table 4.1 Factors influencing our health

	Value	Description	Year
Income			
Persons living in low income (after-tax)	10.8	percent of the population based on 1992 low-income cut-off levels	2005
Employment and working conditions			
Unemployment rate	6.3	percent of the population aged 15+ years	2006
Food security			
People reporting food insecurity *	9.2	percent of the population aged 12+ years	2004
Environment and housing			
Ground-level ozone exposure	38.1	parts per billion (population weighted)	2005
Fine particulate matter ($PM_{2.5}$) exposure	9.5	micrograms per cubic metre (population weighted)	2005
Unable to access acceptable housing	13.7	percent of the population	2001
Education and literacy			
High school graduates	79.7	percent of the population aged 25+ years	2006
Some postsecondary education	60.1	percent of the population aged 25+ years	2006
Postsecondary education	54.2	percent of the population aged 25+ years	2006
Social support and connectedness			
Very or somewhat strong sense of community belonging *	62.3	percent of the population aged 12+ years	2005
Violent crimes committed	951	per 100,000 population	2006
Health behaviours			
Daily smoking *	18.6	percent of the population aged 15+ years	2006
Engaged in leisure time physical activity *	52.2	percent of the population aged 12+ years	2005
Fruit and vegetable consumption 5+ times a day *	41.2	percent of the population aged 12+ years	2005
Heavy drinking (5+ drinks on one occasion 12+ times in a year) *	21.8	percent of the population aged 12+ years	2005
Any illicit drug use *	12.6	percent of the population aged 12+ years	2002
Teen pregnancy	30.5	pregnancies per 1,000 female population aged 15 to 19 years	2004
Access to health care			
Regular family physician *	86.4	percent of the population aged 12+ years	2005
Contact with dental professional *	63.7	percent of the population aged 12+ years	2005

** Denotes self-reported data*

Note: Some data may not be comparable. More detailed information can be found in Appendix D: Definitions and Data Sources for Indicators.

Sources: Public Health Agency of Canada using data from Health Canada, Statistics Canada, Canada Mortgage and Housing Canada and Environment Canada.

Table 4.1 shows both measured statistics and self-reported indicators of key socio-economic factors that influence the health of the overall population. These statistics are collected from sources such as the census, filed income and tax records, scientific monitors (e.g. air quality instruments), and police/enforcement records for criminal and/or violent offences. The self-reported indicators in this table rely on information provided by individuals on health behaviours (e.g. daily smoking, sexual practices), access to health care (e.g. visiting a physician), food security and having a sense of community. What follows is a description of these key factors, how they affect different groups of Canadians and how they vary across the population.

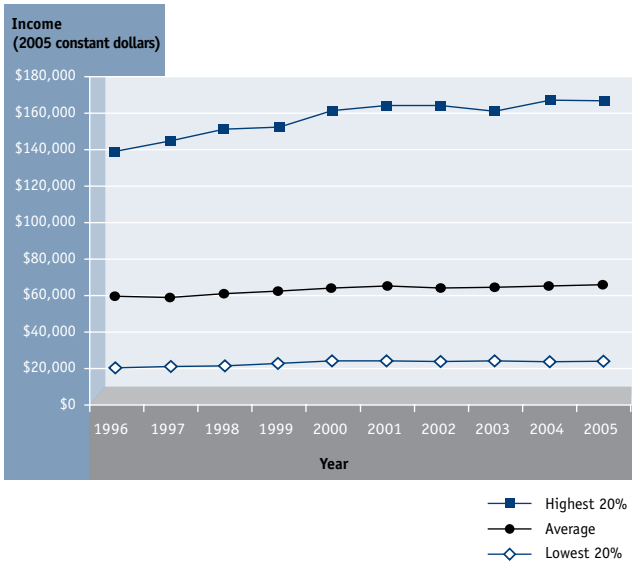
Also included in this chapter are interventions that show how these factors can be impacted through specific policies and programs. They have been developed and delivered by different sectors of Canadian society – including the public health sector – that have been working together, as well as independently, applying growing knowledge and experience of what affects health and quality of life to reduce inequalities. For some interventions, evidence exists regarding their demonstrated value. Others have been identified as 'promising' but have not been fully studied or evaluated to prove their effectiveness. An effort has been made to highlight activities across a range of age groups, populations and environments across Canada.

Income

Income – alone, or in concert with other factors – is a significant contributor to health and, consequently, health inequalities. Research indicates that there is a significant difference in disease prevalence and in years of life lost between the highest-income quintile and each income quintile lower than that of the highest. As noted in Chapter 3, if all neighbourhoods had the age- and sex-specific mortality rates of the highest-income quintile neighbourhoods, then the total potential years of life lost for all urban neighbourhoods would have been reduced by approximately 20%. This number is equivalent to more than the total years of life lost annually to injuries (19%) across all neighbourhoods (the second leading cause of premature death).[143, 173]

Canadians have seen an overall increase in personal income (adjusted for inflation) over time due to decreases in unemployment and increases in basic wages, but the poverty rate has not decreased proportionately. In fact, the gap between those with the highest and lowest incomes is widening (see Figure 4.1).[213]

Figure 4.1 Average incomes for economic families, two persons or more, in constant dollars, Canada, 1996-2005



Source: Statistics Canada, *Income in Canada, 2005*.

While there is some debate as to how to measure poverty, and in the absence of a consistent national definition, this report uses the after-tax low-income cut-off (LICO). LICO is a reference point for the income level at which an individual or families may find it difficult to meet their basic needs.[213] Poverty, however, is more complex than just lack of money (material poverty). It also includes social poverty (or the ability to be a part of society).[214] This is particularly relevant considering the long-term impacts on children growing up in poverty. The rates presented here may under-represent the extent of poverty – in terms of the numbers living in poverty and the persistent social impacts of poverty.

In 2005, the overall poverty rate in Canada (i.e. persons living in low-income after tax) was estimated at close to 11%.[213] Poverty rates are estimated to be significantly higher than average among certain

groups: lone parents (26%); work limited persons (21%); recent immigrants (19%); and off-reserve Aboriginal Peoples (17%). As well, they are higher in some neighbourhoods within Canadian cities.[215] Lower-income families and individuals at the lowest income levels tend to be concentrated in lower-income neighbourhoods.[216] As a result, they not only deal with individual poverty but with the impacts of living in the economically disadvantaged community around them. Concentration of poverty adds to the total impact of individual poverty on health when this results in neighbourhoods with fewer resources and services, more crime and less social support.[261]

Although Canada does not have a coordinated and integrated national strategy to combat poverty, some provinces and other bodies have introduced their own strategies to address poverty – particularly for children and families. Quebec and Newfoundland and Labrador have introduced poverty reduction strategies, and the Assembly of First Nations has recently launched a strategic plan to decrease poverty through creating opportunities, building on community assets and structural change for management of resources.[217, 218, 219]

Focus on Poverty

Quebec's Family Policy

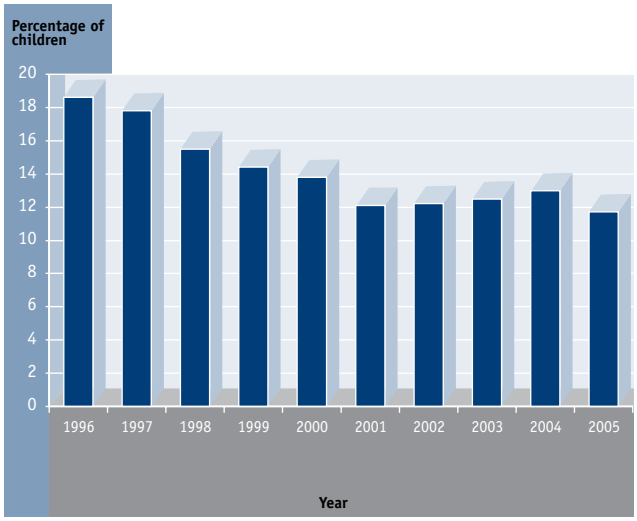
Quebec's Family Policy was put in place in 1997. It includes an integrated child allowance, enhanced maternity and parental leave, extended benefits for self-employed women, and subsidized early childhood education and child care services. Through this policy, the province has been able to establish a network of child care centres for children aged four years and younger from existing non-profit daycare centres and home agencies. The centres offer low-cost care and are no cost for parents on social assistance. Elementary schools in the public system also provide low-cost before- and after-school care and full-day kindergarten is provided to all five-year-olds.[220, 221] In addition, some school boards offer full-day kindergarten to four-year-olds from low-income families. Since 1997, Quebec's steady decline in poverty rates has resulted in the greatest overall decrease among provinces resulting in a 2005 child poverty rate lower than the national average.[213] While much of this decline is due to economic growth, government policies are also believed to have contributed to lower poverty rates.[217]

Saskatchewan's Initiative

Recognizing the health benefits of employment (such as social networks and self esteem), as well as the fact that some low-income working families experience financial difficulties paying employment-related expenses (e.g. income taxes and contributions, transportation, clothing and child care) in addition to meeting basic needs, Saskatchewan introduced an initiative in 1997, which supports a number of programs and services to help low-income people achieve financial security, including: the Saskatchewan Employment Supplement; the Saskatchewan Child Benefit; and Family Health Benefits (providing additional health coverage for children).[218, 223] Further assistance is available in the form of child care subsidies, discount bus passes, rental housing supplements and transitional employment allowances. Eligibility for benefits is based on an income threshold rather than welfare eligibility. By 2004, Saskatchewan had seen 41% fewer families dependent on social assistance (6,800 families and almost 15,000 children) and a substantial increase in after-tax disposable income among families working for minimum wage.[218]

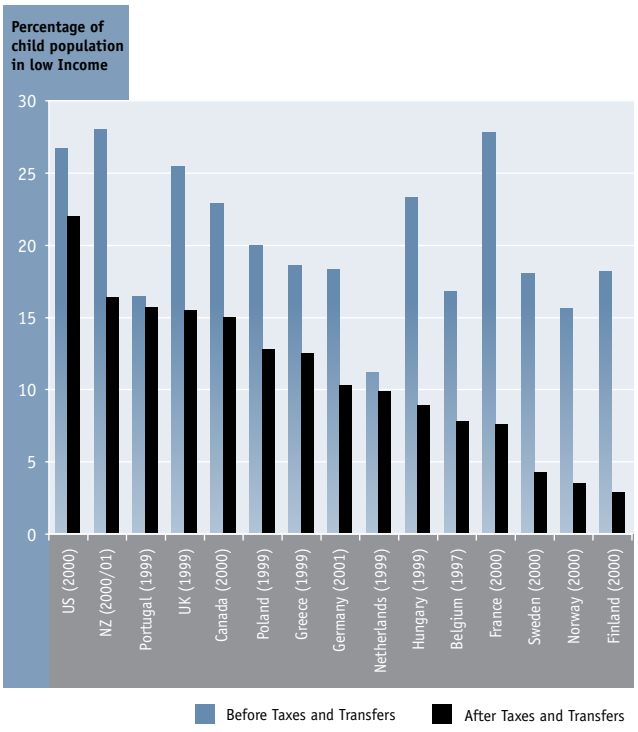
It is estimated that 788,000 children under the age of 18 currently live in poverty, representing a decrease over the last decade from a peak of 18.6% of all children in 1996 to 11.7% in 2005 (see Figure 4.2).[8, 213, 224]

Figure 4.2 Children aged 0-17 years living in low-income families (after tax), Canada, 1996-2005



Source: Public Health Agency of Canada using Statistics Canada, CANSIM Table 202-0802.

Figure 4.3 Child low-income rates in OECD countries based on market sources and disposable income: late 1990s and early 2000s



Source: Adapted from Corak, M. (provided by Canadian Population Health Initiative, 2007).

Figure 4.3 shows that while the number of Canadian children living in low-income families is lower than in the U.S., it is more than double that of Nordic countries such as Finland, Sweden and Norway.[8] This suggests that Canadian policies and programs have not been as effective as some other OECD countries. Generally, western and northern European countries with a history of providing universal benefits for families with children have the lowest rates of child poverty once taxes and transfers are taken into account.[8, 225]

While Canada has had limited success in addressing childhood poverty, the ability to reduce seniors' poverty has been much better demonstrated (see text box).[123] Although there are no specific studies that have traced the effect of an increase in overall health among seniors with a reduction in seniors' poverty, the evidence linking health and income suggests that the health of Canada's seniors has benefited overall as a result of these social investments.

Supporting Seniors Through Poverty Reduction

National Public Pensions

At the start of the last century, public pensions were non-existent. At that time, Canadian seniors were much more likely to be economically disadvantaged than the general population. Considering that income is an important health determinant, this meant that seniors were at greater risk of poor health because of their financial circumstances.[226] When Old Age Security (OAS) was introduced in 1952, it was Canada's first universal pension. It was followed in the mid-1960s by the employment-based Canada Pension Plan (CPP) and Quebec Pension Plan (QPP), and the income-tested Guaranteed Income Supplement (GIS). A Spouse's Allowance (SPA) and Widowed Spouse's Allowance – also income-tested – followed in 1975 and 1985, respectively.[227] Provincial/territorial income supplements for seniors were also added along the way. Today, over 95% of seniors receive income from OAS, GIS or SPA. As well, 96% of senior men and 86% of senior women receive CPP/QPP benefits. As Canada's public pension system matured, more seniors than ever became eligible for benefits and their after-tax income increased by 18% between 1980 and 2003.[123] This maturation has been cited as a key factor in the major shift of Canada's prevalence of low-income among seniors – from one of the highest among industrialized nations in the 1970s to one of the lowest today.[8, 228]

Employment and working conditions

Employment provides Canadians with economic opportunities which can influence individual and family health. However, the working environment can also significantly impact physical and mental health through type of work and working conditions.[2, 7]

In 2006, Canada's unemployment rate was at a 30-year low of 6.3%. Although most regions in Canada have seen a decline in the unemployment rate over time, regional differences range from 3.8% in the Prairies to 9.9% in Atlantic Canada.[229] Additionally, recent immigrants (within 5 years of immigration) have a higher rate of unemployment (11.5%), despite being more likely than their Canadian-born counterparts to hold a university degree.[230]

In Canada, regulations and policies such as labour codes, workers' compensation, leave and disability benefits, as well as job-site safety practices have worked to universally protect Canadian employees. However, workplace-related injury, disability and death still occur and some workers are more affected than others.

In 2003, 630,000 Canadians experienced at least one activity-limiting occupational injury. Blue collar workers (sales and service, transport, equipment operation, primary industry and manufacturing) experience over four times the injury rates experienced by white collar workers (business, administrative, management, and occupations in health, science, social science and arts). Men (5.2%) experience more work-related injuries than women (2.2%). Although the type of occupation is the key to determination of risk, higher-income men (over $60,000) and women (over $40,000) were less likely to experience injury compared to those men and women at lower income levels.[231]

Stress related to employment in the form of job strain (work demand and control), satisfaction, perception of physical risk and issues of job security is a significant health concern for many Canadians.[232] Overall, more women than men report feeling work-related stress. Perception of work stress also increases with levels of education and household income.[117] However, those in

the lowest income households also report experiencing high rates of stress coinciding with job insecurity and job dissatisfaction.[232, 117]

Over the last 20 years, the average workday for paid and unpaid work has steadily increased for Canadian adults aged 25 to 54 years, from 8.2 hours in 1986 to 8.8 hours in 2005. Like paid working hours, unpaid work can be a source of stress for some Canadians. Generally, women report feeling more time-stressed than men. While both women and men report participation in paid work has increased, women's time involved in unpaid work has decreased (from 4.8 to 4.3 hours per day) and men's has increased (from 2.1 to 2.5 hours per day) between 1986 and 2005.[233]

Longer hours and less predictable hours at work can also impact the home/family environment. An important aspect of healthy infant and child development is the role parents play in the lives of their children. In 2001, Canada's employment insurance program extended parental-leave benefits up to one year. As a result, both the numbers of parents taking leave and the length of leave have increased.[234] However, many mothers still do not take extended maternity leave – some mothers choose not to take leave, some are not eligible (e.g. self-employed) or some cannot afford to live on employment insurance benefits (55% of their salary) that are not supplemented by their employer.[235]

Food security

Healthy eating requires being 'food secure' (i.e. having physical and economic access to sufficient, safe and nutritious foods to meet the needs of a healthy and active life).[236] In 2004, 9% of all Canadian households reported being food insecure at some point in the previous year as a result of financial challenges.[237]

There is a large difference in reported food insecurity between households in the lowest and highest income levels (48.3% vs. 1.3%). And there is evidence that individuals with higher social and economic status more regularly consume nutritious foods (fruits and vegetables, dairy products, lean meats, whole grains) than individuals with lower social and economic status. Research shows that there is also an education gradient associated with food insecurity, as 13.8% of households with the lowest education attainment level (less than high school) reported some form of income-related food insecurity compared to 6.9% of households with the highest education attained (completion of post-secondary education).[237]

One in ten households with children, particularly young children, experience food insecurity.[237] When children go to school hungry or poorly nourished, their energy levels, memory, problem-solving skills, creativity, concentration and behaviour are all negatively impacted. Studies have shown that 31% of elementary students and 62% of secondary school students do not eat a nutritious breakfast before school.[238] Almost one quarter of Canadian children in Grade 4 do not eat breakfast daily and, by Grade 8, that number jumps to almost half of all girls.[239] The reasons for this vary – from a lack of available food or nutritious options in low-income homes, to poor eating choices made by children and/or their caregivers. As a result of being hungry at school, these children may not reach their full developmental potential – an outcome that can have a health impact throughout their entire lives.

The growth in the number of food banks and school breakfast programs in Canada reflects the fact that food insecurity is increasingly being recognized as a problem in Canada (see text box). The importance of these types of programs cannot be overstated. At the same time, however, it is crucial to address the underlying causes of food insecurity: lack of income; education; knowledge; employment and other barriers to accessing affordable and nutritious food. In 1996, Canada joined 186 other nations at the World Food Summit in endorsing its goal to reduce the number of undernourished people worldwide by half no later than 2015. Canada's Action Plan for Food Security, launched in 1998, is a response to this commitment and builds on a number of other existing international and domestic commitments affecting food security that Canada has made.[240]

As part of the plan, Canada agreed to report on these actions to Canadians every two years. To date, these reports demonstrate the extensive network of participants, both directly and indirectly, supporting food security issues and how – in many cases – gaps are being filled indirectly through general safety net activities with no specific mandate in regards to food security.[241] Activities and commitments within Canada include: meal programs for schools and shelters; food banks; subsidized air transportation of nutritious and perishable foods; food safety regulation and surveillance (i.e. contaminants); emergency requirements – safety and access; and research and reporting on nutrition, the extent of food security problems and the underlying socio-economic factors of these problems.

Environment and housing

Where a person lives matters since both natural and built environments influence health. It creates the context for determinants of health such as income, employment, social networks and personal behaviours.

Physical environment

Although health related to the environment is primarily outside the scope of this report, the physical environment can also contribute to health inequalities (e.g. adequacy of housing, indoor air quality and water supply). Environmental challenges associated with changing conditions, particularly climate, are expected to place increased health burdens on society and the infrastructure now and towards the foreseeable future.

Tackling Hunger

Breakfast for Learning

Since 1992, a non-profit organization called Breakfast for Learning has been providing funding, nutrition education and other resources to community-based student nutrition programs across the country with a goal to ensuring that every child in Canada attends school without hunger.[242] Since its inception, Breakfast for Learning has moved from initial funding for 20 programs to an investment in over 3,000 programs in every province and territory in the country. With a network of over 30,000 volunteers, it has served healthy breakfasts, lunches and snacks to over 1.5 million Canadian school children to date.[243, 244, 245] Although there is a lack of data on breakfast programs meeting goals, school staff have reported improvements in scholastic performance, improved behaviour and attentiveness among some students. Also, volunteers in this program report high satisfaction rates and a feeling of sense of community.[246] The success of Breakfast for Learning in terms of reaching so many school children is largely attributed to the community-level involvement and management of each program. The needs of each area are determined by the combined efforts of governments, private businesses, community agencies, volunteers, food banks, parents and educators.

Food Banks

In 2006, the Canadian Association of Food Banks (CAFB) moved over 8.5 million pounds of food-industry donations (worth $18 million) to its members through the National Food Sharing System.[247] In addition to food received from the CAFB, community-run food banks collect and distribute an estimated 150 million pounds of food per year.[248] Canada's first food bank opened in Edmonton, Alberta in 1981.[249] As of March 2007, there were 673 food banks and 2,867 affiliated agencies operating across the country in every province and territory. That same month, those food banks and agencies served over 2 million meals and provided groceries to more than 720,000 individuals. Over the last 18 years, reliance on food banks has increased 91% and, until food security is better addressed in Canada, those numbers will likely remain high.[250]

Outdoor air pollution causes health effects that include coughing, aggravation of asthma and other respiratory diseases, as well as the exacerbation of cardiovascular disease. This results in increases in emergency room visits, hospital admissions and premature death as air quality degrades. Research indicates even low concentrations of these pollutants can result in adverse health effects.[251] An increase in air pollutants contributes to an increase in morbidity and premature mortality. Health Canada estimates that, in eight Canadian cities, air pollution is responsible for 5,900 excess deaths per year.[252]

Particulate matter and ozone are two key components of smog. In southern Ontario and southern Quebec, an indicator of exposure to ground-level ozone concentration has increased by about 17% and 15% respectively between 1990 and 2005, while there has been no discernible change in the indicator for particulate matter over the same time period. No trends were discernible for either pollutant in other parts of the country.[251]

For the majority of Canadians, water quality is considered to be safe, with 85% of Canadians receiving their water supply from treated municipal water works.[253] Nevertheless, there are still challenges to be addressed, particularly in small and remote communities and on First Nations reserves.[254]

Built environment

The majority of Canadians (80%) live in urban areas.[133] These built environments can influence physical and mental health through factors such as community design, adequate housing, access to safe water, good sanitation, safe neighbourhoods, and adequate access to education, recreational services, public transit and child care.[7, 167, 261] In essence, the built structure provides the setting for many of the social determinants of health.[216]

In Canada, the built environment is undergoing significant change and one of the greatest challenges is urban sprawl. Urban growth now typically includes the creation of low-density, decentralized communities that include suburban residential, strip retail and employment development.

Building Healthier Urban Communities

The Vancouver Agreement

When a public health emergency was declared in Vancouver's Downtown Eastside neighbourhood, the governments of Canada, British Columbia and Vancouver came together to work toward an effective and sustainable solution. Crime, drug trafficking and drug use had contributed to epidemic rates of HIV infection and had created an unstable environment where residents felt threatened and defeated. Through a unique five-year tripartite initiative called the Vancouver Agreement, three levels of government were able to combine their services and expertise and work with residents, community groups and businesses toward the creation of a healthier community. Results have included: lower death rates due to alcohol and drug use (including overdoses), HIV-AIDS and suicide; greater access to health services through the opening of four new health clinics in the community, expanded addiction treatment services and an after-hours youth crisis response program; and initiatives that have made a difference to residents – from employment for street youth in the city's hotel industry to a mobile after-hours drop-in centre for sex workers who regularly face violence and abuse. The initial Agreement was created in 2000 and in 2005 it was renewed for an additional five-year period. It has been recognized through national and international awards and replicated by Western Economic Diversification Canada through similar arrangements in other western Canadian cities.[255, 256, 257]

While city centres (cores or central business districts) have traditionally provided the greatest source of employment, reliance on suburban employment has now grown as the growth of cities has increased outward. For example, although, the number of jobs in Canada's city centres has increased, the number of jobs in Canada's suburbs has increased four times as much.[258]

Decentralized residential and employment areas have also led to the development of extensive road networks and greater reliance on vehicle commuting. The number of Canadians who drive to work increases with distance away from the city centre: at 5 kilometres from the centre, 58% of the population drive; and at 20 kilometres away, 80% drive.[259] This increase in vehicle use and commuting has resulted in higher incidences of vehicular injury in suburban areas, as well as higher rates of heart and respiratory diseases and obesity, and elevated stress related to both commuting among congested traffic and increased noise levels.[260, 261]

Urban land uses can positively and negatively influence health behaviours. For example, 'walkability' measures the extent to which an urban environment supports residents moving between places using an active, safe and more environmentally friendly form of transit such as walking or biking. However, walkability is dependent on whether the community design includes recreational pathways and sidewalks, safe levels of lighting, and compatible land uses that ensure pleasant safe spaces for both recreational and transit activities.[261] In more 'walkable' neighbourhoods, people tend to have increased physical activity levels which may lead to lower rates of obesity.[262]

Similarly, the built environment can influence access to affordable and nutritious foods. There is evidence that compared to higher-income neighbourhoods, low-income neighbourhoods often have limited grocery stores (particularly those selling fresh produce), offer nutritious foods at a higher cost and have a greater concentration of fast food services – all of which may contribute to poorer eating habits among residents.

Designing Healthy and Sustainable Cities

Healthy Cities

The Healthy Cities initiative is an internationally led approach to building a stronger movement for public health at the urban level. Applying public health criteria to choices made in communities about land use and urban design can improve the health of the communities' populations.[268] Coinciding with a trend toward urbanization, the population in Canada and similarly developed countries is aging. To address the issues arising from these dual trends, the WHO launched an age-friendly cities project in 2005 with funding from the Government of Canada, the Government of British Columbia and Help the Aged UK.[269] The project aims to encourage communities to create age-friendly physical and social urban environments that will better support older citizens in making choices that enhance their health and well-being and that will allow them to participate in their communities, contributing their skills, knowledge and experience.[270] After consulting with older citizens and their caregivers/service providers in 33 cities representing 22 countries, the WHO created a "Global Age-Friendly Cities Guide" for any government, organization and/or individual interested in identifying and improving the age-friendly status of a city.[269, 271] Groups in various countries, including Canada, are already developing networks through use of the Guide to support each other and share best practices.[269] In September 2006, the Federal, Provincial and Territorial Ministers Responsible for Seniors endorsed participation in a second component of the project called the "Age-Friendly Rural and Remote Communities Initiative".[272]

The built environment can also provide opportunities for social interaction through an array of social networks and organizations. Generally, the larger the urban centre, the greater the number and complexity of social networks. Social engagement in the community builds trust, efficacy and a sense of belonging that is associated with improved mental and immunological health.[117] Urban centres tend to be less culturally and socially homogeneous and have diverse populations. Within these cities, communities comprised of close networks of people of similar cultural and social perspectives offer the benefits of community such as social support.[265] Research has shown, for example, that recent immigrants can better integrate into Canadian cities that have communities with strong social and cultural support networks.[266]

Although urban areas provide many opportunities for social contact with others, they can also create anonymity and isolation.[265] Regardless of neighbourhood density, many urban dwellers say that they do not know their neighbours, a number of elderly residents live alone, and those who are not connected with the greater community can experience isolation.[265, 267]

Housing

Housing, or lack thereof, is a critical component of an individual's environment. In Canada, 13.7% of Canadians report being unable to access acceptable housing. The term acceptable housing used here refers to housing that is affordable (costing less than 30% of before-tax income), does not require major repairs and is not overcrowded.[273] The Canada Mortgage and Housing Corporation reports that 'affordability' is the least frequently met of these criteria for acceptability.[274]

Health outcomes related to housing are complex, as housing can directly and indirectly impact health. Inadequate housing may produce direct effects in extreme climates. Respiratory disease/ poor lung function and allergies related to moulds from cold, damp or poorly ventilated houses may develop.[278] Other health conditions can arise related to exposure to specific toxic substances like lead and asbestos from substandard plumbing and insulation, environmental tobacco smoke and residential radon from contaminated soil.[279]

Addressing Affordable Housing

Habitat for Humanity Canada

Habitat for Humanity Canada, a member of the Habitat for Humanity International, is a national, non-profit organization that works to break the cycle of poverty for low-income Canadian families by providing them with safe, affordable housing and promoting homeownership. Habitat homeowners work alongside volunteers to build the homes, which are funded through donations of money, supplies, land and labour from community partners that range from individuals to corporations.[275] At completion, homes are sold to partner families at no profit. Mortgages are interest-free and capped at 30% of the homeowner's income, with all payments going to a revolving fund that finances the building of more houses.[276] Since 1985, when the first group in Winkler, Manitoba began its work, Habitat for Humanity Canada has built more than 1,200 homes across the country through its 72 affiliates located in all 10 provinces and two of the three territories.[275] Habitat homeowners are reported to benefit through improved finances, less reliance on social services and the chance to build equity in a home. About 40% of recipient parents report seeing an improvement in their children's school grades and 22% reported that it was attributable to their children being healthier and better able to concentrate since moving into Habitat housing. Over half of recipient parents reported seeing an improvement in their children's behaviour and 60% attributed this to their children being happier, more outgoing and feeling more confident.[277]

Overcrowding and poorly ventilated houses can also increase susceptibility to disease. The number of people per dwelling has been known to greatly impact the physical and mental health of inhabitants, including raising the risk of acquiring tuberculosis.[278] This is especially true for many Canadian Aboriginal populations and for immigrants from some countries where older generations infected with tuberculosis in childhood may experience disease reactivation later in life that can infect others in the home.[280] Both groups experience a higher rate of overcrowding than the general population and also account for the highest rates of new and relapsed cases of tuberculosis in Canada.[209, 281] Among Aboriginal populations in 2006, rates of new and relapsed cases of tuberculosis were at 27.4 per 100,000 compared to only 5 per 100,000 in the overall population. Among immigrants, rates of new and relapsed tuberculosis cases were 14.8 per 100,000.[209]

Homelessness is also a health issue. It is difficult to measure how many people in Canada are homeless as homelessness is a continuum with a variety of short and long term experiences.[282] The most recent number often cited – 150,000 people – is believed to be an underestimate.[283] Some of these people become homeless as a result of inadequate income, living in a community with inadequate housing, or having a mental illness, which may hinder opportunities for employment and income.[284] While homelessness can affect a broad range of people, approximately one third of the homeless are between the ages of 16 and 24 years.[285] A third of street youth report trading sex for shelter, money and substances, particularly cigarettes (80% of street youth smoke daily) and have higher rates of STIs and blood-borne infections than youth in the general population. A lack of housing contributes to a vicious circle influencing eligibility for income supports, community benefits, voter registration and employment options that could bring about changes in living conditions. As well, about half of youth living on the street have been involved with the child welfare system at some point during their lifetime. An equal share were abused as children and left home as a result. Many street youth dropped out or were expelled from school. In 2003, for both male and female street youth, the main source of income was social welfare.[286]

Early childhood development

The earliest years are pivotal to a child's growth and development. Nurturing caregivers, positive learning environments, good nutrition and social interaction with other children all contribute to early physical and social development in ways that can positively affect health and well-being over a lifetime.[8] A poor start to life often leads to problems that can impact health and long-term prospects.

There are three main areas critical to healthy child development:

- **adequate income** – family income should not be a barrier to positive childhood development, and support mechanisms should be in place for all children to have a good start in life;
- **effective parenting and family functioning** – effective parenting skills are fundamental to child development, however, parents may also require employer support for flexible work hours and maternity/parental leaves, as well as broader social support for family based opportunities and resources; and
- **supportive community environments** – all members of the community have a responsibility for the healthy development of children. Communities need to provide accessible health and social programs and resources for families with children.[8]

Overall, Canada's children are developing well in terms of physical, mental and emotional well-being. *The Well-Being of Canada's Children: Government of Canada Report 2008*, indicates that the majority of Canadian children show average or advanced levels of development in terms of motor and social development (83.6%), verbal (86.5%), number (83.7%) and cognitive (85.2%) development. As well, most Canadian children do not show signs of emotional anxiety (85.3%), physical aggression (85.8%), or behaviours associated with hyperactivity or inattention (93.4%).[294]

However, there is evidence that a health gradient in childhood development exists according to social and economic factors. Generally, children from families with lower income and lower levels of education have poorer overall health and higher rates of cognitive difficulties, behavioural issues, hyperactivity and obesity through childhood.[294, 295, 296, 297, 298]

Readiness to learn, a measure of children's early success in terms of abilities, attitudes and behaviours as children start school, is an indicator of the benefits of positive early experiences.[299] Vancouver's Community Asset Mapping Project found that children who lived in lower-income families scored lower on measured outcomes of school readiness such as knowledge, skills, maturity, language and cognitive development.[300] Figure 4.4 shows that a child's receptive vocabulary score increases as household income level increases. It also indicates that parental involvement in children's early learning is important to success across all incomes. In each income group, especially among families with the lowest incomes, children who were read to daily had better receptive vocabulary scores than children not read to daily.[299]

Examples of Community Level Support for Children

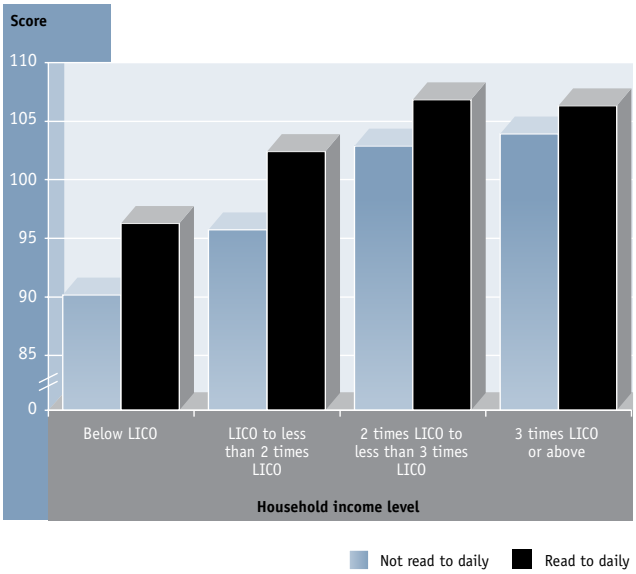
Community Action Program for Children

The Community Action Program for Children (CAPC) provides long-term funding to community groups and coalitions offering programs to address the health and development of children (aged 0 to 6 years) who are living in conditions of risk (e.g. low income, single parents, newcomers to Canada).[287] CAPC recognizes that communities have the ability to identify and respond to the needs of children and places a strong emphasis on partnerships and community capacity building. Approximately 450 CAPC projects operate in more than 3,000 communities throughout Canada and deliver approximately 1,800 programs that serve an estimated 110,000 participants (children and parents/caregivers) in a typical month.[288] CAPC projects involve partnerships which may include health organizations, educational institutions, community associations, early childhood or family resource centres and child protection services.[287] National and regional evaluations of CAPC have found numerous benefits for families participating in CAPC programs, including lower rates of maternal depression and sense of isolation, and less emotional and behavioural issues reported among children.[289]

Healthy Child Manitoba

In March 2000, the Manitoba government established Healthy Child Manitoba, a long-term, cross-departmental prevention strategy for putting children and families first.[290, 291] The Healthy Child Committee, comprised of eight ministries, develops and leads child-centred public policy across government and ensures inter-departmental co-ordination with respect to programs and services for children, adolescents and families.[290] A corresponding Deputy Ministers' committee and cross-departmental working groups, ensure that children's issues and well-being are a shared priority. Healthy Child Manitoba supports 26 province-wide parent-child coalitions to promote and support community-based programs that reflect each community's diversity and unique needs.[292] Priorities include: prenatal benefits and community programs: FASD prevention and support; healthy schools; healthy adolescent development and the recent introduction, province-wide, of the Triple P Positive Parenting Program.[291] Results from program specific evaluations have ranged from improved parenting skills and a better sense of community connectedness for families involved in home visiting programs, to an 80% enrolment rate in an alcohol and drug treatment program for participants in the Stop FAS mentoring program for women who have used alcohol or drugs during current or previous pregnancies.[291, 293]

Figure 4.4 Receptive vocabulary scores* of children, age 5, by household income levels, who were or were not read to daily, Canada, 2002-2003



LICO – Low-income cut-off.
*A score of 75 corresponds to the lower 5th percentile of the receptive vocabulary score distribution.

Source: Public Health Agency of Canada using Statistics Canada, National Longitudinal Survey of Children and Youth, 2002/2003.

The inability to access early childhood programs as a result of distance, availability or affordability is a significant barrier. Aboriginal and immigrant children may experience additional barriers if local child programming is not culturally relevant or delivered in a familiar language (see text box). The consequences of these disadvantages include children growing into adults with lower educational attainment, weaker literacy and communication skills, fewer employment opportunities and poorer overall physical and mental health.[301, 302]

There is clearly recognition in Canada of the importance of early childhood development. As noted in a recent report issued by the federal Minister of Health's Advisor on Healthy Children and Youth, the nation's growth is dependent on investing in children's health. This report also states, however, that Canada can and should do better in terms of the health and wellbeing of its children and youth.[307] As previously noted, rates of childhood poverty in this country continue to be higher than other similarly

Culturally Relevant Programming for Children

Aboriginal Head Start Program

Canada's Aboriginal Head Start in Urban and Northern Communities (1995) and Aboriginal Head Start On Reserve (1998) programs were established to address the unique challenges facing First Nations, Inuit and Métis children and their families. The programs are designed to prepare Aboriginal children (up to the age of six) for their school years by helping to meet their emotional, social, health, nutritional and psychological needs. They provide an opportunity for preschoolers to learn traditional languages, culture and values – along with school readiness skills – while acquiring healthy living habits.[303] At the same time, their parents and caregivers learn about healthy child development, practical child safety tips, and available community resources and services. Due to the role of each community in the establishment of the program for their children, the spiritual and cultural dimensions of Aboriginal life are included in the activities. A recent evaluation of Aboriginal Head Start in Urban and Northern Communities has shown:

- significant gains for children in the areas of physical, personal and social development and health;
- positive changes in family nutrition and health practices;
- demonstrated school readiness with strong skills among graduates; and
- increased practice of cultural traditions and use of native languages.[304]

Today more than 13,600 children and their families in urban and northern communities and on reserve across Canada are benefiting from the Aboriginal Head Start programs.[305, 306]

developed nations. Although caution must be used when comparing international health and development indicators, it is also of concern that among 21 similarly developed nations Canada ranks 12th on average across six dimensions of child well-being.[307, 308] In addition, while the *United Nations Report Card on Child Well-being in Rich Countries* ranks Canada high on the dimensions of educational and material well-being (2nd and 6th), we fair much worse in terms of family and peer relationships (18th) and behaviours and risks (17th).[308]

Education and literacy

Generally, being well-educated equates to a better job, higher income, greater health literacy, a wider understanding of the implications of unhealthy behaviour and an increased ability to navigate the health care system – all of which lead to better health. The data in Chapter 3 indicate that Canadians with lower levels of education often experience poorer health outcomes, including reduced life expectancy and higher rates of infant mortality. Similarly, a recent U.S. study found much higher early mortality rates among lower-educated populations compared to more educated populations. This study estimated that if all adults had the same mortality rate as those with the highest education, then the potential reduction in premature mortality (or early death) would be equivalent to eight times the number of deaths averted by medical advances over the same period.[309]

Completing high school can help improve quality of life for young people by providing them with the tools and confidence they need to lead healthier, more productive and prosperous lives that benefit them as individuals and, in turn, benefit their communities. Across the country, over 17 million Canadians are high school graduates – about 80% of Canadian adults over the age of 25.[310] This puts Canada among the top five OECD countries in terms of high school completion rates.[311] There are, however, regional differences: British Columbia residents have high school completion rates that are higher than the Canadian average, while those in Quebec and the Atlantic regions fall below the average.[310] First Nation populations also have lower levels of education than the Canadian average, with just under half having graduated from high school.[161]

In Canada, the high school dropout rate has decreased since the 1990s to 10% among 20- to 24-year-olds.[312] Despite this improvement some young Canadians continue to remain at risk of quitting school prematurely, especially disadvantaged youth who lack the supports they need to reach their full potential. Compared to Canadians who complete high school, those who drop out are: more likely to receive social assistance and unemployment payments; more likely to become jailed; more prone to illness and injuries; and more likely to have poor knowledge about health behaviours.[313] They are also less aware of and less apt to use preventive health services and less likely to participate (e.g. volunteer) in community activities.[314]

Differences are found between men and women and their participation in post-secondary education. The number of women who hold a university degree has risen sharply (21% in 1991 to 34% in 2001), whereas the number of men who hold a university degree has increased at a lesser rate (16% in 1991 to 21% in 2001).[318] It is also notable that the gap between the proportion of men and women enrolling in post-secondary education is increasing. Women, who have been traditionally under-represented at post-secondary institutions, now account for six out of ten undergraduates at Canadian universities.[319] Considering the influence of education on health, a health gap related to lower education levels among men may emerge if males continue to be under-represented in higher education.

Social and Economic Influences

Education and income are often inter-related in terms of their impacts on health. Median earnings by education level attained indicate that the higher the education obtained, the higher the average earnings (2001). In fact, those with a university-level diploma/certificate earn, on average, more than twice the income ($48,648) of those who have not completed high school ($21,230).[320] Although more women are now pursuing a post-secondary education in comparison to men, their average full-time employment wage has not increased proportionately.[318] The wage gap between men and women has only decreased by 2% (from 20 to 18% between 1991 and 2001) for full-time employment wages.[318]

In general, there is a correlation between levels of education and literacy where the more educated a person, the more likely he or she is to have a comparable ability to read and comprehend written material. The term 'literacy' is now understood to include not only the ability to read, write and calculate, but also to understand and apply learned information in everyday life activities and decisions. Illiteracy can have a direct impact on health, for example, through the incorrect use of medications or safety risks associated with the misuse of potentially hazardous chemicals in the home or workplace.

About nine million Canadians (42% of those aged 16 to 65 years) perform below the literacy level considered the minimum necessary to succeed in today's economy and society.[314] The statistics are even more troubling for certain groups, including seniors, immigrants and Aboriginal Peoples.

Enhancing Opportunities for Education

Pathways to Education

Regent Park, located in the centre of Toronto is considered Canada's most economically disadvantaged public housing project. The community has limited infrastructure and resources, and, until recently, offered few reasons for youth to hope for a better future. Over 80% of residents are visible minorities and for 60% English is a second language.[315] The neighbourhood has the highest concentration of low-income families in Toronto and twice the number of single-parent families as the rest of the city. With no secondary school in the community, 56% of the area's high-school age kids dropped out of high school in 2001 – twice the Toronto average.[316] That same year, the Regent Park Community Health Centre decided to step in and take action. They believed that today's Regent Park youth could become tomorrow's leaders – so they created Pathways to Education to break the cycle of poverty and increase the chances that youth would complete secondary school and carry on to post-secondary education.[315] The program provides academic, social, financial and advocacy supports to at-risk and economically disadvantaged youth, including access to tutors, career mentors, student-parent support workers, free transit tickets to get to and from school (tied to attendance), and bursaries for college or university for all students who go on to accredited post-secondary programs.[317] A recent independent evaluation of the program found that:

- over 90% of Regent Park's high school students were enrolled in the program;
- school drop-out rates had significantly decreased from 56 to 10% and absenteeism had decreased by 50%;
- the number of young people from this community attending college or university quadrupled from 20 to 80%; and
- teen pregnancy rates fell 75%.[316]

The Pathways to Education Program is now being expanded to five other communities, with plans to reach more than 20 communities across Canada.[315]

Social support and connectedness

Family, friends and a feeling of belonging to a community give people the sense of being a part of something larger than themselves. Satisfaction with self and community, problem-solving capabilities and the ability to manage life situations can contribute to better health overall.[98] The extent to which people participate in their community and feel that they belong can positively influence their long-term physical and mental health.

Four out of five Canadians report that in times of crisis, they rely on someone (e.g. friends, family members) as a confidante, for advice and for care. Relying on individuals or communities for assistance during these times is considered essential for good mental health and coping skills.[2] In terms of feeling a sense of community, about 62% of Canadians report this.[321] Generally, people living in rural Canada are more likely to report feeling a part of their community than people living in urban areas, as are people with higher incomes.

Social cohesion is a measure of social connectedness that is based on how much people participate in their community and how satisfied they are with their lives in those communities. A frequently used measure of social cohesion is voter turnout.[311] Participation in the political system suggests that individuals believe their participation in the democratic process matters and that they are invested in the community by caring about the outcome. Young adults do not vote as often as their older counterparts; however, they are more likely to participate in politically related activities such as petitions, meetings and boycotts.[322] Overall, fewer Canadians participate in elections than in the past. Generally, those who do participate are more likely to vote in national and provincial/territorial elections than in municipal elections.[323] The trend is reversed for First Nations voters, whose rate of participation in national elections is relatively low but is high for First Nations community elections.[324]

Levels of social connectedness are also shaped by how safe a person feels and the level of violence to which he or she is exposed or perceives a threat – both of which can impact mental and physical health.[167] One measure of safety in a community is the crime rate. Canadians perceive that crime rates are increasing.[325] Previous victims, in particular, believe this and feel unsafe during daily activities. In reality, the overall crime rate has decreased about 30% since peaking in 1991, and the violent crime rate in Canada has remained unchanged. Currently, the rate of violent offences is approximately 951 per 100,000 population, and is higher in rural areas (1,067 incidents per 100,000 population), than in urban areas (830 per 100,000 population).[327, 328] In Canada's territories, the rate of violent victimization is almost three times higher and the rate of physical assault is almost four times higher than reported in the provinces.[329]

Often violence and maltreatment occur in places where individuals should expect to feel the safest. The disturbing problem of family violence continues, and involves a range of abusive behaviours on the part of someone in a relationship of trust and/or dependency. About 8% of women and 7% of men report having experienced an incidence of violence with a current or previous partner.[330] Women report experiencing more serious forms of violence than men, and are also more likely to incur injuries as a result of the violence. Reported spousal abuse among Aboriginal women and men off reserve is much higher than the national average (e.g. 21% compared to 7% for physical and sexual abuse in 2004).[331] Approximately 4% of seniors living in their own homes reported experiences of abuse or neglect, most commonly material abuse involving the misuse of the victim's money or property by a caretaker.[332]

Improving Social Connectedness

Santropol Roulant

Santropol Roulant is a Montréal-based not-for-profit organization founded in 1995 to provide inexpensive, nutritious meals to seniors and others living with a loss of autonomy.[338] It was initially conceived as a youth employment initiative to provide meaningful work experience to young people in the community while meeting the dietary needs of vulnerable populations, but has since grown to serve an even greater purpose.[339] In addition to preparing and delivering meals, the volunteers and staff also provide friendship and caring. Young people seem to make a special impact on the meal recipients with their youthful energy and outlook. The connections being made are unique – forged from a genuine interest between generations, with sometimes differing linguistic and cultural backgrounds, instead of through family or obligation.[340] With urban isolation on the increase among seniors, this new approach to community is an important part of what Santropol Roulant delivers. Other Santropol activities include the creation of a roof-top garden to provide fresh organic fruits and vegetables to its kitchen, and a roof-top garden guide and start-up kits that are available to individuals and groups interested in making their own urban garden.[341, 342] It is hoped that rooftop gardening will help reconnect people in their area to healthy foods, the environment and to the greater community.[343]

Santropol Roulant currently relies on over 100 volunteers to run its program each week.[344] Given the soaring costs of hospitalization ($700 per day to treat a malnourished patient), the potential savings to taxpayers from this service is estimated at $2.4 million over the last five years.[345]

Children are also victims of violence and maltreatment. In 2003, there were more than 235,000 investigations of maltreatment involving children from birth to 15 years in Canada. For nearly half of the investigations (49%), reports of maltreatment were substantiated by an investigating agency. At least one parent was the alleged perpetrator in 82% of child maltreatment investigations in Canada (excluding Quebec).[333] Children who witness family violence often exhibit negative behaviours, physical aggression, emotional disorders, hyperactivity and destructive behaviours.[331, 334] In addition, a survivor of child abuse is seven times more likely to become dependent on substances and ten times more likely to commit suicide.[335]

Rates of violence experienced by youth are four times higher than for children. Among 14- to 17-year-olds who reported being assaulted, over 50% were assaulted by a close friend, co-worker or an acquaintance, 20% were assaulted by a stranger and 16% by a family member.[336] And most often the violent acts occur in a public place. At younger ages (between 11 and 15 years old), 25% of males and 21% of females reported being bullied as a result of their race, ethnicity or religion.[337]

Loneliness and isolation can have adverse impacts on the health of many Canadians, particularly some seniors. More than 6% of Canadians over the age of 65 reported not having any friends compared to 3% of those aged 55 to 64. Those seniors who reported having no friends are also less likely to report being in excellent or very good health.[123]

Social exclusion is experienced when some people or groups have limited control and access to social, economic, political and cultural resources.[145] Aboriginal Peoples have a long history of unequal access to and control over education and health care, as well as lands and natural resources, which has resulted in social disconnection.[216]

Health can be influenced by historical and cultural experiences that not only affect individuals but whole communities.[216] For example, residential schools had a significant impact on the health and well-being of many First Nations adults and consequently their children and grandchildren.[281, 346] Almost half of residential school survivors report that the experience

negatively affected their mental and physical health through isolation from family, separation from community, and a loss of identity and language.[347] Among their children, 43% believe the residential school experience had a negative effect on their parents' parenting skills.[161]

High rates of suicide among First Nations people, particularly among youth, are linked to social exclusion and disconnection from their traditions and culture. However, research suggests that it is a mistake to assume these challenges are systemic within First Nations communities and points to protective factors that can reduce these risks. Research from British Columbia has revealed that 90% of Aboriginal youth suicides in the province occur in just 10% of First Nations communities. Suicide rates in these communities sometimes reach 800 times the Canadian average, while more than half of the First Nations communities in the province have not had any suicides in many years. Further research on language groups and community identity suggest that cultural preservation and continuity, as well as living in communities with self-government, settled land claims, and access to self-managed education, health, cultural and policing services all have positive impacts on the health of the local population. The British Columbia studies found that communities with some level of self government and/or multiple community control factors present had the lowest rates of suicide.[348, 349]

Connectedness Through Self-Determination

The Eskasoni Primary Care Project

The Eskasoni project began with the decision of one community of nearly 3,000 Mi'kmaq people on Cape Breton Island, Nova Scotia to manage their own health care.[350] Overseeing the project was a collaborative effort involving a Tripartite Steering Committee made up of representatives from the Eskasoni Band Council, the Nova Scotia Department of Health, the First Nations and Inuit Health Branch of Health Canada, and Dalhousie University's Department of Family Medicine.[8] The approach sought to break down barriers to accessing health care and allow involved community members to become proficient at planning, executing and evaluating their own health programming. The first step was the building of a new health centre to bring programs and services under one roof and to streamline recordkeeping. Physician services were then revamped to replace the one-doctor, fee-for-service approach with a multi-doctor, multi-discipline approach based on salaried positions. The results – better quality of care, lower health care costs, greater accessibility to services, and high client and staff satisfaction – have been well worth the investment: 96% of all pregnancies are now followed from pre- to post-natal care within the community; costs for prescription drugs have decreased, despite a population increase; and referrals from physicians to a nutritionist/health educator for managing diabetes have increased by 850%.[351, 352] In addition, 73% of centre users report receiving an appointment with their family doctor within 24 hours or less and 90% within 48 hours. Annual visits to the family doctor are also down from a high of 11 visits per year to approximately 4. Trips to the out-patient/emergency department at the regional hospital are down 40%. With fewer trips off reserve for care, medical transportation costs were reduced by $200,000 in the three-year period after the centre opened.[351]

In 2004, the five Cape Breton Bands (Eskasoni, Potlotek, Wagmatcook, We'koqma'q and Membertou First Nations) came together through the Tui'kn Initiative to build upon and expand the Eskasoni model of primary health care to all Cape Breton First Nations communities.

Health behaviours

Individual behaviours, such as staying physically active and eating well, can contribute to good health. Other behaviours, such as smoking, heavy drinking and illicit drug use, can have detrimental health effects. Ultimately, health behaviours are individual choices that people make. However, these behaviours are influenced by the social and economic environments where individuals work, live and learn.[7, 9]

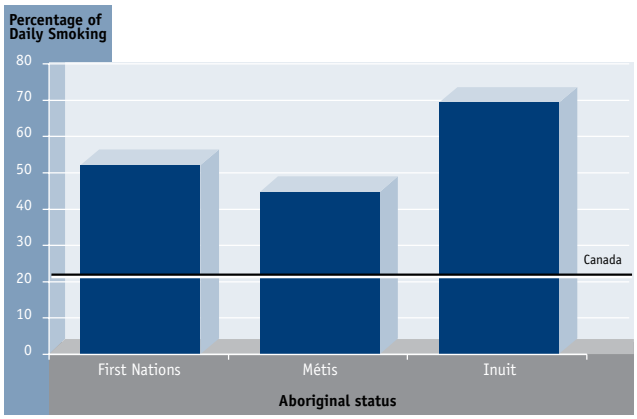
Smoking

While the overall smoking rate in Canada is declining, 19% of the Canadian population (over 15 years old) still reports smoking (women 17%; men 20%).[353] Smoking is responsible for high rates of disease and death. It is a risk factor for lung cancer, head, neck and throat cancers, heart disease, stroke, chronic respiratory disease and other conditions.[354] It is estimated that 16.6% of all Canadian deaths are attributable to smoking.[355] And the cost of smoking in Canada – in terms of services such as health care, and the loss of productivity in the workplace or at home resulting from premature death and disability – is estimated at $17 billion per year.[355]

Most Canadian smokers (90%) report beginning to smoke during their teens.[356] However, most do not quit until later in life. Among all Canadians who have ever smoked, 59% have quit. For those smokers in their early 20s (20- to 25-year-olds), only 25% have reported quitting, while among those over the age of 45, 71% have reported quitting.[353]

A socio-economic gradient exists for smoking where – in general – as income and education levels drop, a larger proportion of people report daily smoking.[357] The highest smoking rates can be found among Canadians with lower income, Aboriginal populations and people living in Northern Canada, which likely contributes to the higher rates of cardiovascular and respiratory diseases found in these populations.[357, 358, 359] Figure 4.5 shows the proportion of daily tobacco smoking, excluding those who use tobacco solely for traditional purposes, among Aboriginal Peoples compared to the overall population in 2001.[360]

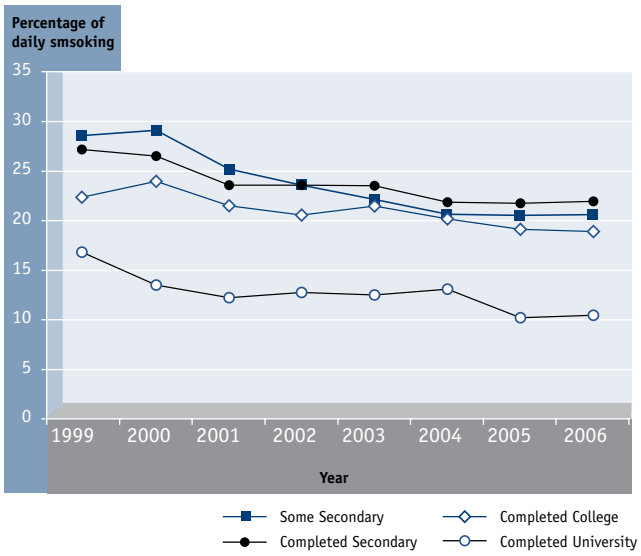
Figure 4.5 Daily smoking by Aboriginal status, Canada, 2001



Source: Public Health Agency of Canada using Health Canada's Data Analysis and Information System (DAIS), Aboriginal Peoples Survey, 2001 and Health Canada, Canadian Tobacco Use Monitoring System, 2001.

Figure 4.6 shows that although smoking rates have been falling for all education levels, there continues to be a marked difference between the percentage of smokers who have completed university and those who have not.[361]

Figure 4.6 Smoking and education, aged 15+ years, Canada, 1999-2006



Source: Public Health Agency of Canada using Health Canada, Canadian Tobacco Use Monitoring System 1999-2006.

For some, exposure to smoke is not a choice. About 9% of children under the age of 12 and 15% of Canadian households are regularly exposed to environmental tobacco smoke – often called 'second-hand smoke'.[80] Among affected children, 51% live in the lowest-income quintile households compared to 18% who live in the highest-income quintile households.[362] Recent measures to protect children from second-hand smoke include legislation to ban smoking in vehicles carrying children that was recently passed in Nova Scotia. Other provinces are considering the same measures, including British Columbia, Manitoba, Ontario and New Brunswick.[363] Rates of smoking during pregnancy – a known risk factor for unhealthy fetal growth and development – continue to decline in Canada. Yet, 9.8% of women who were pregnant in the last five years also reported smoking during their pregnancy.[353]

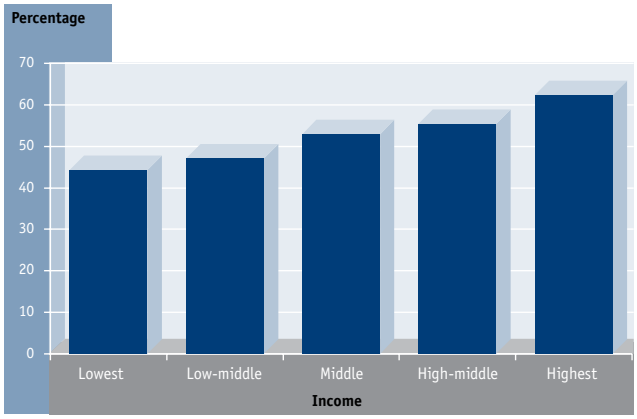
Physical activity

Research studies report a linear relationship between physical activity and health such that the most physically active are at the lowest risk of poor health.[364] Physical inactivity is a modifiable risk factor for a wide range of chronic diseases including cardiovascular disease, diabetes mellitus, cancer and depression.[364] Compared to people who are physically active, those who report being physically inactive are also more likely to report their mental health as fair or poor. It is estimated that $5.3 billion (2.6%) of the total direct health-care costs in Canada are attributable to physical inactivity.[365]

Only just over half (52%) of Canadians over age 12 reported being physically active or moderately active during leisure time in 2005. However, about 70% of those who are inactive during leisure time report some level of physical activity at non-leisure times. During normal daily activity: 8% report carrying or lifting heavy loads; 25% report frequently carrying light loads and climbing stairs; 42% report frequently standing or walking; and 24% report spending 6 or more hours a week bicycling or walking as a means of transportation.[366]

Leisure physical activity levels vary across different populations and income levels, which may be a product of available leisure time. The rate of leisure-time physical activity is highest among those at the highest end of the income spectrum (see Figure 4.7). About 62% of Canadians over age 12 in the highest-income quintile report being physically active compared to 44% among the lowest-income quintile.[366]

Figure 4.7 Percentage of the general population aged 12+ years who were physically active by income, Canada, 2005



Source: Statistics Canada, *Physically Active Canadians*.

Generally, women in all income groups report 5 to 10% lower levels of physical leisure-time activity than men and the gap between high- and low-income women is greater than it is for men. Across Canada there is regional variation in physical activity levels with a clear east-west gradient. Provinces in Western Canada report higher rates of active or moderate leisure-time physical activity (e.g. 59% in British Columbia) versus the East (e.g. 44% in Prince Edward Island). Overall, Canada's largest cities (over 2 million in population) report lower rates of leisure-time physical activity than the national average.[366]

Encouraging Healthy Lifestyles

ActNow BC

ActNow BC is a multi-year health and wellness campaign that was launched by the Government of British Columbia in March 2005. The campaign's programs and initiatives champion healthy eating, physical activity, ending tobacco use and healthy choices during pregnancy.[367] Through its many partnerships, ActNow BC is present in schools, workplaces and communities throughout the province. Since the start of the program, more than 130 towns, cities and First Nations communities have registered as "Active Communities"; 100% of school districts – encompassing over 1,300 elementary and middle schools with more than 360,000 students – have additional physical activity throughout the school day through Action Schools! BC; and the Ministry of Health has piloted a Workplace Wellness initiative that extends the approach to workplaces across the province.[368, 369, 370]

ActNow BC is also partnering with the National Collaborating Centre for Aboriginal Health, First Nations Health Council, Métis Nation BC and the BC Association Friendship Centres to bring the healthy living approach to Aboriginal communities in the province. The goal is to 'close the gap in health' between Aboriginal Peoples and the overall population of British Columbia.[371] Though early in the process, ActNow BC's uptake has been promising and it has already been highlighted by the Health Council of Canada (December 2007) as having the potential to have a positive effect on the incidence of diabetes and other chronic diseases in the province.[372]

Healthy eating

The types, quantity and quality of food eaten also affect health. Aside from nutritional value, the availability and affordability of nutritious food and the individual food choices made are important. Less healthy eating, combined with inadequate physical activity, can lead to increased body weights. For adults, obesity is a risk factor for many chronic diseases including hypertension, Type 2 diabetes, gallbladder disease, coronary artery disease, osteoarthritis, and certain types of cancer.[14] The annual economic burden of unhealthy eating in Canada has been estimated at $6.6 billion, including direct health-care costs of $1.3 billion.[373] Only 41.2% of Canadians aged 12 years and over report consuming fruits and vegetables at least five times per day.[374]

Eating healthy foods – such as fresh fruit and vegetables, fibre-rich foods and those with a lower fat content – is related to their accessibility and affordability. Northern and remote communities do not have as many food choices and healthy foods are often more expensive than in more populated regions of the country. A further challenge to healthy eating is the availability of quick, less expensive and less healthy foods. A recent University of Alberta study found that more fast-food restaurants are situated in Edmonton neighbourhoods where residents have lower incomes and education levels and most people are renters rather than home owners compared to other neighbourhoods in the city.[264]

Parental practices such as breastfeeding can positively influence an infant's start in life. Canada's breastfeeding initiation rates have increased dramatically over the last four decades (25% of mothers initiated breastfeeding in 1965 compared to 87% of mothers in 2003).[375] Breastfeeding initiation rates vary between populations and are generally lower for younger mothers (76% of those aged 15 to 19 years), single mothers (78%), Aboriginal off-reserve mothers (82%), First Nations on-reserve mothers (63%), and higher among immigrant mothers (92%) (see text box).[376] Although more mothers are now initiating breastfeeding in Canada, many do not maintain the practice. While the Canadian Paediatric Society (2005) recommends that babies be breastfed exclusively for six months, only 39% of Canadian mothers report exclusive breastfeeding for four

Promoting Healthy Eating

Canada Prenatal Nutrition Program

For more than a decade, the Canada Prenatal Nutrition Program (CPNP) has provided long-term funding to community groups to develop or enhance programs for at-risk pregnant women and their children.[382] The CPNP is delivered through two separate organizations: First Nations and Inuit Health Branch of Health Canada and the Public Health Agency of Canada (PHAC).[382] CPNP aims to: improve the health of both infant and mother; reduce the incidence of unhealthy birth weights; promote and support breastfeeding; build partnerships; and strengthen community supports for pregnant women.[382] One way it does this is working closely with other programs and organizations to ensure that there is a continuum of community-based support for women, and their children and families.[383] CPNP also provides services like food supplementations, nutritional counselling, prenatal vitamins, food and food coupons, prenatal health and lifestyle counselling (including smoking cessation), breastfeeding education and support, food preparation training, infant care and child development, as well as referrals to other services and agencies.[382] The PHAC stream of CPNP now serves about 50,000 women annually through more than 330 projects in over 2,000 communities across Canada.[384] In addition, more than 9,000 women take part in the First Nations and Inuit Health Branch stream of the program each year.[382] Initial program evaluation results indicate that compared to similar high-risk populations, CPNP program participants had higher birth weights with increased program participation and higher breastfeeding rates than the general population.[382, 385] Participants also reported that, as a result of the programs, they experienced improved access to services and information on better nutrition and parenting, felt less isolated and stressed, and had greater self-confidence.[382]

months and 17% report exclusive breastfeeding for six months or more.[377, 378, 379] Overall, 48% of Canadian mothers breastfeed for six months or more (exclusive and non-exclusive) which is lower than rates in other countries such as Sweden (70.6% in 2003).[380, 381]

Alcohol consumption

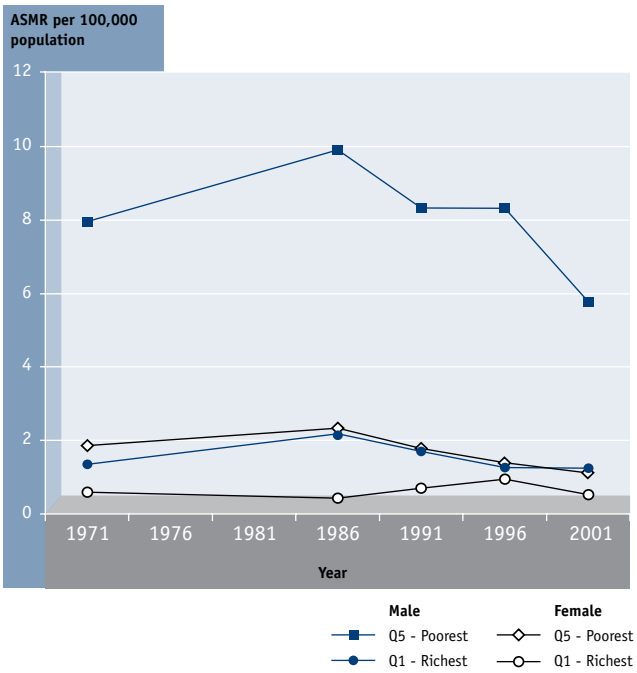
The majority of Canadians over the age of 15 drink alcohol (77%).[386] Some epidemiological evidence indicates that there are protective health effects from moderate alcohol consumption, specifically in relation to circulatory diseases.[355] However, excess alcohol consumption over both the short and long term can negatively influence health.[386] Alcohol abuse also has high economic and social costs. Alcohol-related acute-care hospitalizations totalled 1.6 million days in 2002. That same year, there were 4,258 deaths attributable to alcohol, of which 1,246 were due to cirrhosis, 909 to motor vehicle crashes and 603 to suicides.[355]

Deaths related to alcohol dependence have declined over time, but remain higher for low-income men (see Figure 4.8).[144] Differences between income levels exist for both men and women but are greater for men. Overall, the age-standardized mortality rate for alcohol dependence has declined in all groups, with the greatest decline for low-income men.[144]

Approximately 641,000 Canadians – roughly 3% of the total population – are considered alcohol-dependent and about 21% of all adult Canadians over the age of 19 reported engaging in heavy drinking (five or more drinks on one occasion, 12 or more times a year) in 2005.[386, 387]

A greater share of individuals at the lowest income level (about 5%), report behaviours consistent with being dependent on alcohol.[386] Because alcohol dependence is a chronic condition that takes many years to cause death from disease, and during that period an alcoholic's earning power may be reduced by the condition, some of the gaps in these death rates among income levels may be due to 'reverse causation' where the disease can reduce income before it kills.

Figure 4.8 Age-standardized mortality rates for alcohol dependence, by sex and income quintile, urban Canada, 1971-2001



ASMR – Age-standardized mortality rate.
Q – population divided into fifths based on the percentage of the population in their neighbourhood below the low-income cut-offs.

Source: Wilkins et al. (2007), Statistics Canada.

First Nations on reserve report lower rates of alcohol use (65.6%) but higher rates of heavy drinking than the overall population. More than 42% of First Nations youth on reserve report using alcohol and 27% report heavy drinking at least once a month. In addition, approximately 64% of First Nations reported that no progress was being made within these communities on reducing both frequent alcohol and drug use.[161]

Drinking during pregnancy can result in serious health and development problems for children as a result of Fetal Alcohol Spectrum Disorder (FASD) – a preventable life-long disability. It is estimated that 1% of children born in Canada have FASD.[388]

Illicit drug use

In 2002, 12.6% of Canadians over the age of 15 reported using illicit drugs in the previous 12 months (9.4% of women and 15.9% of men). Approximately 1% of Canadians self-reported behaviours consistent with being dependent on illicit drugs, with the proportion being the highest among those with the lowest incomes (3%). However, as with alcohol dependence, illicit drug dependence among low-income Canadians could be related to reverse causation.[386] Although fewer people die directly from higher levels of illicit drug use than from alcohol and tobacco use, such deaths generally occur at a young age making years of life lost due to early death high (62,110 years in 2002).[355] These deaths are primarily due to overdose, drug-attributable suicide and infectious diseases (hepatitis C and HIV infections) acquired as a result of drug-use activities.[355]

Sexual health

Unsafe sexual practices – including early initiation, infrequent use of condoms and multiple partners – increase the risk of acquiring STIs and unplanned pregnancies.[122] Youth and young adults have the highest rates of STIs in Canada, particularly street youth who have rates 10 to 12 times higher than their peers in the general population and a greater susceptibility to the hepatitis B virus (i.e. 40% are not vaccinated against it).[204, 286]

Overall, Canadian youth are becoming sexually active at younger ages than previous generations.[389] About 90% of 14- to 17-year-olds surveyed believe they are knowledgeable about sexual health; however, one quarter of Grade 9 and 10 students who reported being sexually active also reported not using contraceptives.[337, 390] A second cross-Canada survey also found that two thirds of Grade 9 students incorrectly believed there is a vaccine to prevent HIV-AIDS.[390] A recent increase in officially reported STI rates may therefore partially be a result of major misconceptions about these diseases. Despite inconsistent contraception use and an increase in STIs, teen pregnancy rates (including live births, fetal losses and induced abortions) are decreasing.[391]

Access to health care

Access to health care is fundamental to health. Approximately 80% of the Canadian population reports visiting a regular family physician and 64% report being in contact with a dental professional.[392, 393] More women than men report that they have contacted a medical doctor in the previous year and that they have a regular family physician.[392]

Not only do people seek treatment through Canada's publicly funded health care system, they benefit from a number of disease prevention and health promotion services. These services are generally integrated into front-line care (sometimes referred to as 'primary care') and range from childhood vaccinations to disease screening to advice on healthy living and mental health counselling.

Unfortunately, some people face barriers to health care services including physical inaccessibility, socio-cultural issues or the cost of non-insured health services (e.g. eye and dental care, mental health counselling and prescription drugs).[394, 395] A Canadian study on immigrant women's health reports that while immigrant women view health and prevention in similar ways to Canadian-born women, a difference exists in their ability to access the resources needed to stay healthy.[396] Reasons include: language difficulties experienced by immigrants from countries of origin where French or English is not a primary language; a lack of cultural sensitivity among health-care providers – especially for women clients; and the fact that many immigrant women who are employed work long hours in low-paying jobs, while struggling to maintain households and care for young children.[397, 396, 398] Social supports are also often lacking. These challenges can lead to a deterioration of health, as can emotional distress caused by feelings of displacement and isolation.[396]

Access to health care is also an issue for Aboriginal populations who live off-reserve, as they are less likely than the overall population (77% compared to 79%) to regularly visit a physician, and more likely to report having unmet health care needs (20% compared to 13%).[402] First Nations adults living on-reserve cite barriers to accessing the health care system ranging from extensive wait times, services not covered by benefits, a shortage of doctors/nurses in the area and the cost of transportation, to complaints that services provided were inadequate or not culturally sensitive.[161]

Canadians in remote communities also face difficulties accessing the health care system. Looking at the Northwest Territories, both Aboriginal (59%) and non-Aboriginal (76%) populations report lower rates of contact with a health care professional than the general population (79%).[402] Both populations (49% and 22%, respectively) are also more likely to use available nursing services compared to the general Canadian population (10%) indicating the vital role nursing stations play in the health of remote communities.[402]

Summary

To address health inequalities, the WHO states that countries must make addressing the 'structural' stratification of their societies a priority. This means reducing the gap between those at the highest and lowest income levels through actions that will eradicate poverty and increase opportunities for employment, education and early child development among the entire population. That, in turn, will help to reduce the health inequalities currently found among the Canadian population.

The successful interventions profiled in this chapter are a beginning. They reinforce that public health partners representing all sectors of society are making inroads in identifying and implementing effective interventions that are making a measurable difference in Canadians' lives. These successes provide a starting point from which to draw inspiration, think, plan and act.

What follows is a discussion of Canada's efforts, as a country, to address health inequalities with an eye to where future efforts may be directed.

Improving Access to Care

Toronto's Mobile Health Unit

A unique pilot project was created in 1981 to bring health services to immigrant women who could not afford time away from their jobs to take care of their own health needs.[399] Today, Toronto's Mobile Health Unit – part of the Immigrant Women's Health Centre – is still providing women in factories, shelters, community centres and other locations with the opportunity to receive primary care at no cost from female health care providers experienced in cultural and gender sensitivity and the challenges facing immigrant women.[400] The project was launched after discussions with immigrant women revealed that, although they looked after their children's health care needs, their own needs were often unmet due to a number of barriers.[401] These included an unwillingness to take unpaid time off work, lack of child care, language issues and discomfort with male health-care providers.[396] In response, the Mobile Health Unit can be called in, preceded by a team of counsellors who visit the work site in advance and talk to the women in their native languages about a range of health care issues like pap tests and breast exams.[399, 401] Once comfortable, the women will often seek more information (e.g. birth control, mental health). Then appointments are booked for the day the unit will be on site. At work sites visited by the unit, employers report experiencing lower employee absenteeism caused by health issues and off-site medical appointments.[401, 398] The need for accessible and culturally sensitive health care continues to be an issue for all regions of Canada where immigrants and refugees settle. The Toronto unit, for example, currently has a three- to four-month waiting list and constantly fields calls from employers and organizations outside of the city limits that it cannot serve.[401]

TeleHomeCare in Prince Edward Island

West Prince TeleHomeCare program began in 1999 as a pilot project in TeleHospice. The pilot project was created to compensate for a shortage of nurses in the area, increasing the ability of existing staff to monitor terminally ill patients living in rural and isolated areas of the community who wish to stay at home. Due to its success, the program has been expanded to include patients with complex health needs such as mental health, diabetes, congestive heart failure, and chronic obstructive pulmonary disease.[403]

Through the use of an innovative video-conferencing system, nurses can provide care, instruction and education to patients through a telephone line and two-way video screen. Blood pressure, heart rate, weight and blood oxygen levels can be monitored through attachments. Patients like the service because they stay at home, with little disruption to their lives, but can consult with medical staff as required. Though care is facilitated through technology, patients like the interactive component and feel personally connected to providers that they can see and hear in real time during their daily exchanges. Caregivers also appreciate the ability to consult with nursing staff. Since launching the tele-hospice service, the West Prince Health region has seen a 73% reduction in days of hospitalization, 15% fewer emergency room visits, 46% fewer hospital admissions and a 20% drop in doctor's office appointments among clients.[404]

It has also garnered national and international recognition as a model for the cost-effective use of technology to address the health-care needs of persons living in rural and remote locations.[405]

Addressing Inequalities – Where are we in Canada

CHAPTER 5

Canadians take pride in the fact that they live in a healthy and egalitarian society. However, the evidence in the previous chapters should serve as notice that this is not a state of affairs shared across the population. The situation is not irreversible, as shown by the interventions highlighted in this report. These demonstrate examples of effective actions that can be undertaken to address inequalities and improve people's health status.

This chapter provides an accounting of where Canada is in terms of addressing health inequalities and identifies areas that require priority consideration in order to achieve further change. Chapter 6 provides more specific direction on how Canada, as a country, can move forward in three key areas.

Of course, solutions are not always easy or straightforward. What works for one individual or community may not work for another. Understanding the reasons for this, and identifying what does and does not work, is key. Part of the challenge is that many of Canada's social investments do not have the explicit goal of reducing health inequalities, and so their impact is never measured in those terms. In fact, Canada does not have a strong record on measuring the outcomes of many of its investments, not just those involving public health.[2, 7, 82, 92, 406] Impact measurement is an area where better investment would be warranted.

While there is work to do in terms of measuring the impact of Canada's policies and programs, some things are already very clear. The first is that it is not enough to focus solely on individual health choices and behaviours, as peoples' actions are very much shaped by the social and environmental conditions in which they live and work. A balanced mix of targeted interventions for some and universal programs for all is more likely to work in a country as vast and complex as Canada.[2, 7] This kind of balance ensures that, regardless of personal circumstances, Canadians experience those conditions necessary for better health and for making healthy choices easier choices.

Leading-edge Knowledge

A number of reports are expected in 2008 that will contribute greatly to a better understanding of promising approaches to addressing health inequalities and determinants of health. Among them are reports from:

WHO Commission on Social Determinants of Health - Canada is a significant contributor to the Commission, which was established to reduce health inequalities within and between countries through policy and action. The Commission will release several reports of interest, including its final report and recommendations, reports of country partners' experiences in addressing health inequalities and research synthesis reports from the Commission's Knowledge Networks.

Senate Sub-Committee on Population Health - Established in 2006, this sub-committee is mandated to examine the multiple determinants of health and make recommendations to Parliament regarding how to more effectively address them through action across government departments.

Finally – and most importantly – waiting until all the evidence is in before taking action is not an option. Some health inequalities are widening, necessitating that Canada move further and faster to alleviate the conditions that contribute to their existence in the first place.[144] Failing to do so will impact all Canadians.

Priority areas for action

Evidence indicates that the following priority areas can make a difference in reducing health inequalities:

- social investment;
- community capacity;
- inter-sectoral action;
- knowledge infrastructure; and
- leadership.[2, 407]

Social investment

Canada has strong social policy foundations that have helped to make it both healthier and more egalitarian. Programs like the Canada and Quebec Pension Plans, Old Age Security, Employment Insurance, publicly funded health care and universal primary and secondary education have all helped to establish a minimum standard of living. This minimum standard is a critical factor in the health of Canadians.

However, Canada may not be keeping pace with the progress being made in other countries, especially (as noted) in areas like child poverty.[307, 408] If this continues, increasing numbers of Canadians may not achieve their health potential and increased inequalities will follow, impacting the nation's collective economic and social well-being.

Community capacity

Working to strengthen communities is a critical component of any comprehensive plan to address health inequalities and is an area of strength in Canada.

Programs and initiatives that rely on input and participation at the community level – like the Community Action Program for Children and Aboriginal Head Start – enable communities to be directly involved in identifying their needs and tailoring appropriate solutions. In addition to building capacity within communities, investments in such initiatives are often managed by coalitions of local stakeholders, ensuring more comprehensive, cross-sectoral approaches. Much has been learned about how to reach people and influence behaviours and health outcomes as a result of these partnerships.

The influence of community-level initiatives is limited by the communities' inability to address or override the broader societal factors affecting the health of their inhabitants.[409] At times, social programs and policies operating in an uncoordinated way may negate the good work of community-level initiatives and consequently discourage the pursuit of financial independence for individuals. For example, if social assistance recipients lose money or benefits as the result of increasing their income or gaining employment, they are essentially discouraged from becoming independent and leaving social assistance. In these cases, government benefits programs work contrary to their purpose.[410] Complementary and coherent action is therefore needed over broader social policy and investments.

Greater support for the various efforts being made in community health can also make a difference. This requires considering and more strongly defining the roles that can be taken by governments, non-governmental organizations and the private sector.

Finally, it is essential to measure longer-term progress being made in communities so that programs can be supported consistently based on their impact and effectiveness.

Inter-sectoral action

Throughout this report it has been demonstrated that factors such as adequate income, education and housing are critical to maintaining good health. Most interventions in these areas fall outside of the mandate of the formal health sector. Therefore, to effectively prevent and improve health inequalities, all levels of government, the private and non-governmental sectors, and international organizations must work together towards integrated, coherent policies and actions.

Canada has experience working across sectors. These efforts generally fall into four categories:

- supporting communities to solve complex issues (e.g. the Vancouver Agreement);
- population-specific approaches to address multiple determinants of health (e.g. Healthy Child Manitoba);
- issues-based collaboration (e.g. ActNow BC, Joint Consortium on School Health); and
- providing tools for cross-departmental policy review (e.g. Quebec Public Health Act – see text box).

Canada can build on these efforts, especially where mutual benefits across sectors (health, social and economic) hold the greatest promise.

Knowledge infrastructure

There is good and improving knowledge of what is required to address the social determinants of health that lead to inequalities in this country. The roles that the public (individuals and communities), civic leaders and decision-makers (government, not-for-profit and private sectors) can play in addressing these inequalities are also well understood.[409] This provides a good foundation from which to build:

- better information about specific sub-populations and regions of this country that consistently demonstrate poorer health outcomes;
- further research to more clearly understand how determinants interact to create health inequalities; and
- stronger insight into how to apply practices that have proven effective in other jurisdictions domestically and internationally.[411]

Most important, however, is the need to determine whether current and future efforts in addressing health inequalities are working. This can only be achieved by monitoring results over time. This, in turn, depends on the use of better reporting systems and tools, increasing the availability of data, and better co-ordination and co-operation across sectors and jurisdictions. Some work is underway to address these requirements but support for further efforts is critical.

Leadership

Bringing about action requires more than good ideas or honourable ideals. The many examples outlined in this report have underscored that, ultimately, high-level leadership in all sectors – health and otherwise – is crucial to reducing health inequalities.

While socio-economic conditions and specific health problems vary globally, all countries have portions of their population at higher risk of health challenges.[7, 10, 122, 412, 413, 414, 418] Some, however, have moved from concern to concerted action by establishing a commitment to reducing health inequalities. In particular, the Nordic countries and the United Kingdom (U.K.) have identified health inequalities as a priority and conducted audits of the roles that government departments can and do play in reducing social and health inequalities.[412, 414] The U.K. has set specific goals, objectives and targets to reduce inequalities, with implications across a number of sectors, and they have committed to measuring impact and reporting on progress.

Domestically, Quebec is at the forefront of efforts to reduce health inequalities through new approaches to leadership and healthy public policy. Considering the approaches taken by various governments can help Canada's efforts to evolve and improve as new information and best practices emerge (see text box).

Potential for progress

With the creation of the position of Chief Public Health Officer, as well as the establishment of the Public Health Agency of Canada, there is strengthened national public health leadership in Canada. When the Agency was formed, its legislation provided the authority to communicate with other sectors regarding public health issues in order to foster collaboration towards better health for all Canadians. It also mandated the Chief Public Health Officer to report on the state of public health and identify the issues which impact the health of Canadians. This report has been submitted to the Minister of Health and Parliament as part of that mandate.

Along with the creation of the Agency came the development of the Pan-Canadian Public Health Network.[422] The network is comprised of federal, provincial and territorial representatives, and is a forum for discussion across Canada on public health issues. As well, the National Collaborating Centres for Public Health were created to translate existing and new research evidence into public policy. The six centres are located in different regions across the country and each one specializes in a priority area (see Appendix B).

These are new tools and resources that, when combined with efforts like those highlighted throughout this report by the health sector and other sectors (e.g. education and social services), provide Canada with an unprecedented opportunity to effect positive change in public health. The question is: are Canadians up to the challenge?

Government Approaches to Tackling Health Inequalities and the Social Determinants of Health

The U.K. approach

In 1998, the U.K. government undertook a study of health inequalities, examining the social, economic and environmental factors affecting peoples' health. A subsequent report provided 40 recommendations to tackle the underlying issues at the root of health disparities. It also emphasized that addressing the short-term consequences of ill health is not enough and that efforts must be made in partnership with the voluntary, community and business sectors, as well as individual citizens to prevent ill health and promote healthy living.[415]

The following year, "The National Health Services (NHS) Plan: A Plan for Investment, A Plan for Reform" committed government to local targets to reduce health inequalities with reinforcement from proposed national health inequalities targets.[416] A cross-cutting federal review followed in 2002 that examined how government spending could be applied to greatest effect on health inequalities.[417]

Based on this research and advice, the *National Public Service Agreement* (PSA) committed government to, by 2010, reducing inequalities in health outcomes by 10% as measured by infant mortality and life expectancy at birth. A high-level, government-wide strategy called "A Programme for Action" was then developed. The first principle of the strategy was to stop the U.K.'s health gap from widening further, before trying to narrow it.[412]

Status reports on the progress made since the initiation of the program have shown an improvement in two of the indicators associated with health inequality: child poverty and housing. There is also evidence of a narrowing of the gap in heart disease mortality, cancer, influenza vaccinations and educational attainment. Life expectancies were found to be higher overall

since 1997-1999 and the life expectancy gap seemed to be narrowing in three fifths of the 70 local authority areas with the worst health and deprivation indicators. The one exception was infant mortality rates where the gap widened since the baseline period.[413]

A plan to target health inequalities in Norway

The general health of the population of Norway is considered quite good by international standards. Like other nations, however, not everyone in the population enjoys the same level of health – in order to have an average you must have people whose health is either better than average or worse. On June 6, 2007 the Norwegian parliament (Storting) adopted a 10-year "National Strategy to Reduce Social Inequalities in Health" which identifies key actions to be taken in four priority areas:

- reduction of social inequalities that contribute to health inequalities;
- reduction of social inequalities in health-related behaviour and use of health services;
- use of targeted initiatives to promote social inclusion; and
- development of knowledge and cross-sectoral tools.

The strategy is based on the premise that health inequalities should be tackled through a process called 'levelling up' where those who enjoy the best health should strive to maintain it while national efforts focus on helping the rest of the population to bring their health up to that same level.[414]

Quebec's Public Health Act (Article 54)

A unique approach to public health in the province of Quebec has other provinces and, indeed, other countries, taking notice.[419] By requiring other government departments to consult with the Minister of Health and Social Services in regard to decisions or actions that could impact public health – a broader, more comprehensive and inclusive approach to public health strategies and interventions has been taken.[420] The consulting component of this 'whole of government' approach came into law with the adoption of Article 54 in Quebec's *Public Health Act* in 2001. It states that new measures provided for in an Act or regulation in all provincial ministries be assessed to determine significant impacts of proposed actions on the health of populations. A health impact assessment (HIA) process is currently used to carry out these determinations, an approach that is fairly new to Canada outside of Quebec but more common in some European countries.[420] At the national level, Canada's National Collaborating Centre for Healthy Public Policy is currently studying HIA in relation to Article 54 and public policy, and will disseminate its findings to the public health community.[421]

Moving Forward – Imagine the Possibilities

CHAPTER 6

It is well documented that the top three causes of premature death in this country are cancers, circulatory diseases and unintentional injuries.[116]

But there are some things that might surprise Canadians.

If levels of education and income are viewed as rungs on a ladder, there is evidence that shows that every step down from the top brings with it a reduction in health.[9, 98, 122, 145] Those not at the highest levels of education and income are less healthy, and collectively lose more years of life to premature death. Evidence suggests that if all Canadians had the same rate of premature death as the most affluent one fifth of Canadians, there would be a 20% reduction in premature mortality across the population.[144] This would be equivalent to wiping out all premature deaths from either injuries or cardiovascular diseases.[144] However, this is not simply a matter of extremes between those at the highest and lowest incomes, or between the most and least educated. It is a gradient where at every level there is a difference in health status.

This is not to say that lower education and income directly cause early death. There is no evidence to make the claim of clear linear cause and effect in that regard. But what can be said is that, in general, people are less healthy in relation to lower levels of education and income, and much of why and how this occurs is not well understood.

In the last chapter, priority areas for action were discussed. This chapter considers what could be done in regards to Canada's three most pressing priorities – fostering leadership and collective will, reducing child poverty and strengthening communities.

Imagine if all Canadians and all sectors applied their energy, resources and resolve to address the full range of issues that can affect health.

It is estimated that $1 invested in the early years saves between $3 and $9 in future spending on the health and criminal justice systems, as well as on social assistance.[423] Imagine the long-term benefit to taxpayers then, if Canada were to achieve progress on child poverty rates as good or better than world leaders such as Finland, Norway and Sweden.[8, 424]

Imagine if the extraordinary success of Regent Park's "Pathways to Education" project was replicated nation-wide.[316] While we have some of the highest rates of high school completion in the world, think what Canada could achieve if *all* young people had the supports they needed to finish a secondary education and the corresponding increase that would bring to the number of youth moving on to college or university. Consider the impact of those highly skilled and educated workers on Canada's competitiveness and future prosperity, not to mention the likely health benefits to these individuals.

Imagine how much healthier people would be if every Canadian had access to adequate housing. The impacts would be profound for many communities, but in particular for people living on First Nations reserves where half of existing housing falls short of Canada Mortgage and Housing Corporation standards and where, partly as a consequence, tuberculosis rates are eight to ten times higher than the general population.[209, 278] Could individual ownership help Canada move in that direction?

What would be the impact if all First Nations and Inuit communities had agreements in place for education and health services that provided them with increased control over their communities' future?

CHAPTER 6 Moving Forward

Imagine the improvements in peoples' quality of life if, by addressing the factors that influence health, physical and social environments were created in which Canadians could easily make good choices to achieve and maintain the highest state of health possible.[425] Far fewer Canadians would be treated for chronic conditions like heart disease, cancer, Type 2 diabetes and emphysema. And waiting lists for hip and knee replacement would be shortened.

None of this is beyond the realm of possibility. In fact, all Canadians pay a high price by failing to address these issues. There are direct costs to the health care system resulting from health inequalities, and these costs will only grow if the causes of health inequalities are not addressed.[2] There are also indirect costs, such as lost productivity, that have negative repercussions for the entire economy.[2, 98, 426]

A time to act

Improvements in quality of life over the past century have helped Canada to become one of the healthiest nations in the world.[141, 427] Conditions are ripe to take this a step further by aiming to be the healthiest nation with the smallest gap in health. Employment levels are at an all-time high, Canada also boasts one of the best-educated populations in the world, with a higher proportion of post-secondary graduates than almost any other country.[314]

Clearly, the necessary means and talent exist to tackle the wide array of health inequalities that prevent individuals from achieving their dreams and goals, and which limit Canada's ability to achieve its full economic and social potential.

What can be done?

Foster collective will and leadership

If Canadians are serious about wanting to be the healthiest country in the world, addressing health gaps must become a priority.

Working across sectors and jurisdictions, there is reason to believe health inequalities can be reduced while advancing other social goals such as reducing crime and fostering civic participation. Through collective will and leadership Canada can achieve this goal by:

- building recognition of the importance of preventing disease and injury, and of promoting health. While a strong and accessible health care system will always be vitally important, prevention is preferable to treatment and has the potential to yield a significant return on investment.[328] Public health is about more than being ready to respond in times of health emergencies – it is about keeping the population healthy at all times so that the impact of health emergencies can be kept to a minimum;
- identifying the appropriate indicators and creating the tools required to measure and monitor progress, as well as addressing knowledge and data gaps that prevent effective measurement. By establishing a point of comparison, it will be possible to assess Canada's progress, or lack thereof, in responding to health inequalities – over time and in relation to other countries;
- cultivating a whole-of-society response. Canadians' health is a shared responsibility and individuals, communities, public, private and not-for-profit sectors all have a role to play; and
- engaging leaders at all levels and across all sectors of society to act as champions, helping people to think about the contribution they can make to ensuring that all Canadians have the opportunity to achieve the best possible health.

Reduce child poverty

There is a growing body of evidence that some of the greatest returns on taxpayers' investments are those targeted to Canada's youngest citizens.[429] Every dollar spent in ensuring a healthy start in the early years will reduce the long-term costs associated with health care, addictions, crime, unemployment and welfare.[430] As well, it will ensure Canadian children become better educated, well adjusted and more productive adults.[431]

Canada has had success in reducing poverty among seniors in recent decades.[8, 123] We have the ability to achieve the same kind of progress with children. This requires further examination of:

- income redistribution policies, programs and initiatives so that all families have the resources needed for healthy child development;
- opportunities for healthy early learning and childhood development, housing and infrastructure, post-secondary education, employment and employment supports;
- targeted interventions aimed at supporting children living in low-income families;
- collective contributions that can be made to alleviate child poverty; and
- best practices and lessons learned from other jurisdictions with proven success in reducing child poverty rates.

Strengthen communities

People living closest to the problem are often closest to the solution.[432] This has been proven repeatedly by innovative projects ranging from the Eskasoni primary care initiative that offers culturally appropriate approaches to Aboriginal health and Toronto's mobile health clinic meeting the needs of immigrant women living in a major urban centre, to the food security programs that feed hungry school children all across Canada, and bringing unemployed youth in Montreal together with isolated seniors.

The community is where all sectors converge and where it is often easiest for the various players to come to the table to establish local priorities and develop shared strategies to address inequalities.[432] Communities are also in a position to mitigate the health impacts of factors like low income and poor access to education, and can play a pivotal role in creating environments that are supportive of healthy choices for all citizens.

Every effort must be made to build on the existing knowledge, experience, energy and investments already in place in Canadian communities to reduce inequalities in both health and the factors that influence health, including:

- working collaboratively to support community efforts to create sustainable conditions that enable and promote good health;
- making it easier for communities to access the skills and resources for local programs;
- developing and sharing community-generated and national-level data from which non-governmental and community groups can draw; and
- supporting and sharing research and knowledge to encourage the replication of successful initiatives across the country that can spur further innovations and improvements in inequalities in health.

A commitment to change

"The journey of a thousand miles begins with one step"

— Lao Tzu

Ultimately, public health comes down to us. Some might call it cliché, but the reality is that as individuals, community members and decision-makers we all have a part to play in either improving or risking public health. Understanding the issues and connections may, at the very least, help us avoid being part of the problem. This includes the inequalities that exist in the health of our population, in our own lives and those of our family members, in our schools and workplaces, and within our neighbourhoods and communities.

A society is only as healthy as its least healthy members. None of us is immune to Canada's health problems and the inequalities that limit our potential as a nation. In this report, I have presented many examples of policies and programs, both large and small, that are making real differences in the lives of Canadians and that are working to reduce inequalities in our health. As we each take ownership of this issue to the best of our capabilities, we can help to ensure that all Canadians have the opportunity to be as completely healthy as possible. We can do this by, for instance, taking part in our democratic processes, getting actively involved in our communities, promoting healthy choices and reaching out to individuals and groups in need of support. Volunteering, interestingly, in addition to the good work we may do, is associated with better health for the volunteer as well. Why? Health is more than merely the absence of disease or the presence of physical well-being. It is about having those basic, solid foundations for life and society in place, and ensuring we have community, connections, friendship, control over our lives and influence over our own destinies.

As I said at the beginning of this report, our health is influenced by the type of society we choose to create. We all have a role to play in creating the physical, economic, social and cultural conditions that are the foundation of good health. And what we do, even in small ways, can make a difference.

By paying attention to and addressing these underlying determinants of health, not only do we level the playing field for all Canadians, we effectively support the functioning of society and Canada's competitiveness as a nation. As fewer are left behind more will prosper.

Dr. David Butler-Jones

Appendixes

Acronyms

APPENDIX A

AIDS	Acquired Immune Deficiency Syndrome
ASMR	Age-standardized Mortality Rate
BMI	Body Mass Index
CAFB	Canadian Association of Food Banks
CANSIM	Canadian Socio-economic Information Management System
CAPC	Community Action Program for Children
CCHS	Canadian Community Health Survey
CEGEP	Collège d'Enseignement Général et Professionnel
CPHI	Canadian Population Health Initiative
CPHO	Chief Public Health Officer
CPP	Canada Pension Plan
COPD	Chronic Obstructive Pulmonary Disease
CPNP	Canada Prenatal Nutrition Program
CTUMS	Canadian Tobacco Use Monitoring Survey
DAIS	Data Analysis and Information System
FASD	Fetal Alcohol Spectrum Disorder
GIS	Guaranteed Income Supplement
HIA	Health Impact Assessment
HIV	Human Immunodeficiency Virus
HPV	Human Papillomavirus
HUI	Health Utility Index
LFS	Labour Force Survey
LICO	Low-income Cut-off
NHS	National Health Service
OAS	Old Age Security
OECD	Organisation for Economic Co-operation and Development
PHAC	Public Health Agency of Canada
PSA	Public Service Agreement
PYLL	Potential Years of Life Lost
Q	Quintile
QPP	Quebec Pension Plan
RHS	First Nations Regional Longitudinal Health Survey
SARS	Severe Acute Respiratory Syndrome
SPA	Spouse's Allowance
STI	Sexually Transmitted Infection
U.K.	United Kingdom
WHO	World Health Organization

APPENDIX B

National Collaboration Centres

The National Collaborating Centre for Aboriginal Health
University of Northern British Columbia, Prince George

The National Collaborating Centre for Determinants of Health
St. Francis Xavier University, Antigonish

The National Collaborating Centre for Environmental Health
BC Centre for Disease Control, Vancouver

The National Collaborating Centre for Healthy Public Policy
Institut national de santé publique du Québec, Montréal

The National Collaborating Centre for Infectious Diseases
International Centre for Infectious Diseases, Winnipeg

The National Collaborating Centre for Methods and Tools
McMaster University, Hamilton

Health Goals for Canada

APPENDIX C

A Federal, Provincial and Territorial Commitment to Canadians[108]

Overarching Goal

As a nation, we aspire to a Canada in which every person is as healthy as they can be – physically, mentally, emotionally and spiritually.

Health Goals for Canada

Canada is a country where:

Basic Needs (Social and Physical Environments)

Our children reach their full potential, growing up happy, healthy, confident and secure.

The air we breathe, the water we drink, the food we eat, and the places we live, work and play are safe and healthy – now and for generations to come.

Belonging and Engagement

Each and every person has dignity, a sense of belonging, and contributes to supportive families, friendships and diverse communities.

We keep learning throughout our lives through formal and informal education, relationships with others and the land.

We participate in and influence the decisions that affect our personal and collective health and well-being.

We work to make the world a healthy place for all people, through leadership, collaboration and knowledge.

Healthy Living

Every person receives the support and information they need to make healthy choices.

A System for Health

We work to prevent and are prepared to respond to threats to our health and safety through coordinated efforts across the country and around the world.

A strong system for health and social well-being responds to disparities in health status and offers timely, appropriate care.

APPENDIX D

Definitions and Data Sources

Population (*2006*)[433]

The census enumerates the entire Canadian population, which consists of Canadian citizens (by birth and by naturalization), landed immigrants and non-permanent residents and their families living with them in Canada. Non-permanent residents are persons who hold a work or student permit, or who claim refugee status.

The census also counts Canadian citizens and landed immigrants who are temporarily outside the country on Census Day. This includes federal and provincial government employees working outside Canada, Canadian embassy staff posted to other countries, members of the Canadian Forces stationed abroad, all Canadian crew members of merchant vessels and their families.

Data Source: Statistics Canada. (2007). *Population and dwelling counts, for Canada, provinces and territories, 2006 and 2001 censuses – 100% data (table)*. Population and Dwelling Count Highlight Tables. 2006 Census. Statistics Canada Catalogue no. 97-550-XWE2006002. Ottawa.

Aboriginal (*2006*)[434]

This is a collective name for all of the original peoples of Canada and their descendants. The *Constitution Act* of 1982 specifies that the Aboriginal Peoples in Canada consist of three groups - Indians, Inuit and Métis. Indians, Inuit and Métis peoples have unique heritages, languages, cultural practices and spiritual beliefs.

Data Source: Statistics Canada. (2008). *Aboriginal Peoples in Canada 2006: Inuit, Métis, and First Nations, 2006 Census*. Statistics Canada Catalogue no. 97-558-XIE. Ottawa. Analysis Series, 2006 Census.

First Nations (*2006*)[434]

A term which came into common usage in the 1970s to replace Indian. Although the term First Nation is widely used, no legal definition of it exists. Among its uses, the term "First Nations Peoples" refers generally to the Indian Peoples in Canada, both Status and non-Status.

Data Source: Statistics Canada. (2008). *Aboriginal Peoples in Canada 2006: Inuit, Métis and First Nations, 2006 Census*. Statistics Canada Catalogue no. 97-558-XIE. Ottawa. Analysis Series, 2006 Census.

Indian[434]

A term which collectively describes all the Indigenous People in Canada who are not Inuit or Métis. Indians are one of three peoples recognized as Aboriginal in the *Constitution Act* of 1982, along with Inuit and Métis. Three categories apply to Indians in Canada: Status Indians, non-Status Indians and Treaty Indians.

Métis (*2006*)[434]

A term which is used broadly to describe people with mixed First Nations and European ancestry who identify themselves as Métis, distinct from Indian people, Inuit or non-Aboriginal people.

Data Source: Statistics Canada. (2008). *Aboriginal Peoples in Canada 2006: Inuit, Métis and First Nations, 2006 Census*. Statistics Canada Catalogue no. 97-558-XIE. Ottawa. Analysis Series, 2006 Census.

Inuit (*2006*)[434]

Inuit are the Aboriginal People of Arctic Canada who live primarily in Nunavut, the Northwest Territories and northern parts of Labrador and Quebec.

Data Source: Statistics Canada. (2008). *Aboriginal Peoples in Canada 2006: Inuit, Métis and First Nations, 2006 Census*. Statistics Canada Catalogue no. 97-558-XIE. Ottawa. Analysis Series, 2006 Census.

Immigrant (*2006*)[435]

A landed immigrant is a person who has been granted the right to live in Canada by immigration authorities.

Data Source: Statistics Canada. (2007). *Immigrant Status and Period of Immigration (9), Knowledge of Official Languages (5), Detailed Mother Tongue (103), Age Groups (10) and Sex (3) for the Population of Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 2006 Census - 20% Sample Data (table)*. Topic-based tabulation. 2006 Census of Population. Statistics Canada Catalogue no. 97-557-XCB2006021. Ottawa. Released December 4, 2007.

By birth place (*2006*)[436]

The concept of place of birth applies to the country of a respondent if born outside Canada. Respondents are to report their place of birth according to international boundaries in effect at the time of enumeration not at the time of birth. Countries should be coded according to the most recent ISO codes and it is recommended that they be aggregated into regions according to the most recent United Nations' standards for the reporting of demographic and social data.

Data Source: Statistics Canada. (2007). *Profile of Language, Immigration, Citizenship, Mobility and Migration for Canada, Provinces, Territories, Census Divisions and Census Subdivisions, 2006 Census (table)*. 2006 Electronic Profiles. 2006 Census of Population. Statistics Canada Catalogue no. 94-577-XCB2006001. Ottawa. Released December 4, 2007.

By years since immigration (*2006*)[435]

Year/Period of immigration refers to a person who is a landed immigrant by the period of time in which he or she first obtained landed immigrant status.

Data Source: Statistics Canada. (2007). *Immigrant Status and Period of Immigration (9), Knowledge of Official Languages (5), Detailed Mother Tongue (103), Age Groups (10) and Sex (3) for the Population of Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 2006 Census - 20% Sample Data (table)*. Topic-based tabulation. 2006 Census of Population. Statistics Canada Catalogue no. 97-557-xcb2006021. Ottawa. Released December 4, 2007.

Urban population (*2006*)[437]

An urban area has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre, based on the current census population count.

Data Source: Statistics Canada. (2007). *Population and dwelling counts, for urban areas, 2006 and 2001 censuses – 100% data (table)*. Population and Dwelling Count Highlight Tables. 2006 Census. Statistics Canada Catalogue no. 97-550-XWE2006002. Ottawa. Released March 13, 2007.

Life expectancy at birth (*2005*)[438]

Life expectancy is the number of years a person would be expected to live, starting from birth (for life expectancy at birth) and similarly for other age groups, on the basis of the mortality statistics for a given observation period.

Data Source: Statistics Canada. (n.d.). *Table 102-0511 - Life expectancy, abridged life table, at birth and at age 65, by sex, Canada, provinces and territories, annual (years)*, CANSIM (database).

Health-adjusted life expectancy at birth (2001)[439]

Health-adjusted life expectancy is the number of years in full health that an individual can expect to live given the current morbidity and mortality conditions. Health-adjusted life expectancy uses the Health Utility Index (HUI) to weigh years lived in good health higher than years lived in poor health. Thus, health-adjusted life expectancy is not only a measure of quantity of life but also a measure of quality of life.

Data Source: Statistics Canada. (n.d.). *Table 102-0121 - Health-adjusted life expectancy, at birth and at age 65, by sex and income group, Canada and provinces, occasional (years)*, CANSIM (database).

Definitions and Data Sources

Infant mortality rate (*2005*)[440]

Infant mortality rate is the number of infant deaths during a given year per 1,000 live births in the same year.

Data Source: Statistics Canada. (n.d). *Table 102-0507 - Infant mortality, by age group, Canada, provinces and territories, annual*, CANSIM (database).

Excellent or very good self-rated health (*2005*)[441]

Population (aged 12 years and over for data from the Canadian Community Health Survey and National Population Health Survey, North component) who rate their own health status as being either excellent, very good, good, fair or poor.

Data Source: Statistics Canada. (n.d.). *Table 105-0422 - Self-rated health, by age group and sex, household population aged 12 and over, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, every 2 years*, CANSIM (database).

Excellent or very good self-rated mental health (*2005*)[441]

Population aged 12 years and over who rate their own mental health status as being excellent, very good, good, fair or poor.

Self-reported mental health provides a general indication of the population suffering from some form of mental disorder, mental or emotional problems, or distress, not necessarily reflected in self-reported (physical) health.

Data Source: Statistics Canada. (n.d.). *Table 105-0421 - Self-rated mental health, by age group and sex, household population aged 12 and over, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, every 2 years*, CANSIM (database).

Death due to circulatory diseases (*2004*)[442]

Death due to circulatory diseases classified as International Classification of Disease Codes: I00-I99.

Data Source: Statistics Canada. (n.d.). *Table 102-0529 - Deaths, by cause, Chapter IX: Diseases of the circulatory system (I00 to I99), age group and sex, Canada, annual (number)*, CANSIM (database).

Statistics Canada. (n.d.). Table 109-5315 - *Estimates of population (2001 Census and administrative data), by age group and sex, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, annual (number)*, CANSIM (database).

Death due to malignant cancers (*2004*)[443]

Death due to malignant cancers classified as International Classification of Disease Codes: C00-C99.

Data Source: Statistics Canada. (n.d.). *Table 102-0522 - Deaths, by cause, Chapter II: Neoplasms (C00 to D48), age group and sex, Canada, annual (number)*, CANSIM (database).

Statistics Canada. (n.d.). Table 109-5315 - *Estimates of population (2001 Census and administrative data), by age group and sex, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, annual (number)*, CANSIM (database).

Death due to Respiratory Diseases (*2004*)[444]

Death due to respiratory diseases classified as International Classification of Disease Codes: J00-J99.

Data Source: Statistics Canada. (n.d.). *Table 102-0530 - Deaths, by cause, Chapter X: Diseases of the respiratory system (J00 to J99), age group and sex, Canada, annual (number),* CANSIM (database).

Statistics Canada. (n.d.). Table 109-5315 - *Estimates of population (2001 Census and administrative data), by age group and sex, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, annual (number),* CANSIM (database).

Potential years of life lost[438]

Potential years of life lost (PYLL) is the number of years of life lost when a person dies prematurely from any cause – before age 75. A person dying at age 25, for example, has lost 50 years of life.

Premature mortality due to cancer (*2001*)[438]

Potential years of life lost (PYLL) for all malignant neoplasms (ICD-10 C00-C97) and for specific sites [colorectal (ICD-10 C18-C21), lung (ICD-10 C33-C34), female breast (ICD-10 C50) and prostate cancer (ICD-10 C61)] is the number of years of life lost when a person dies prematurely from any cancer – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Premature mortality due to circulatory diseases (*2001*)[438]

Potential years of life lost (PYLL) for all circulatory disease deaths (ICD-10 I00-I99) and specific causes [ischaemic heart disease (ICD-10 I20-I25), cerebro-vascular diseases (stroke) (ICD-10 I60-I69) and all other circulatory diseases (ICD-10 I00-I02, I05-I09, I10-I15, I26-I28, I30-I52, I70-I79, I80-I89, I95-I99)] is the number of years of life lost when a person dies prematurely from any circulatory disease – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Premature mortality due to unintentional injuries (*2001*)[438]

Potential years of life lost (PYLL) for unintentional injuries (ICD-10 V01-X59, Y85-Y86) is the number of years of life lost when a person dies prematurely from unintentional injuries – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Premature mortality due to suicide and self-inflicted injuries (*2001*)[438]

Potential years of life lost (PYLL) for suicides (ICD-10 X60-X84, Y87.0) is the number of years of life lost when a person dies prematurely from suicide – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Premature mortality due to respiratory diseases (*2001*)[438]

Potential years of life lost (PYLL) for all respiratory disease deaths (ICD-10 J00-J99) and for specific causes [pneumonia and influenza (ICD-10 J10-J18), bronchitis/emphysema/asthma (ICD-10 J40-J43, J45-J46) and all other respiratory diseases (ICD-10 J00-J06, J20-J22, J30-J39, J44, J47, J60-J70, J80- J84, J85-J86, J90-J94, J95-J99)] is the number of years of life lost when a person dies prematurely from any respiratory disease – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Premature mortality due to HIV (*2001*)[438]

Potential years of life lost (PYLL) for human immuno-deficiency virus (HIV) infection deaths (ICD-10 B20-B24) is the number of years of life lost when a person dies prematurely from HIV-AIDS – before age 75.

Data Source: Statistics Canada. (n.d.). *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional*, CANSIM (database).

Malignant cancers (*2003*)[186]

Indicates the total number of people who are currently living with a diagnosis of cancer in 2003 and are still alive 15 years after their cancer has been diagnosed. These estimates are based on survival rates from Saskatchewan, which are applied to the Canadian incidence data.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control. (2007). *Health Status Indicators – Chronic Disease Prevalences*.

Diabetes (*2004-2005*)[182]

Individuals were counted as having been diagnosed with diabetes when they had at least one hospitalization with a diagnosis of diabetes or had at least two physician visits with a diagnosis of diabetes within a two-year period.

Data Source: Public Health Agency of Canada. (2007). *Diabetes in Canada: Highlights from the National Diabetes Surveillance System 2004/2005*. Unpublished data.

Obesity (*2005*)[445]

According to the WHO and Health Canada guidelines, the index for body weight classification is: less than 18.50 (underweight); 18.50 to 24.99 (normal weight); 25.00 to 29.99 (overweight); 30.00 to 34.99 (obese, class I); 35.00 to 39.99 (obese, class II); 40.00 or greater (obese, class III).

The index is calculated for the population aged 18 years and over, excluding pregnant females and persons less than 3 feet (0.914 metres) tall or greater than 6 feet 11 inches (2.108 metres).

Body mass index (BMI) is calculated by dividing the respondent's body weight (in kilograms) by their height (in metres) squared.

Data Source: Statistics Canada. (n.d.). *Table 105-0407 - Measured adult body mass index (BMI), by age group and sex, household population aged 18 and over excluding pregnant females, Canadian Community Health Survey (CCHS 3.1), Canada, every 2 years,* CANSIM (database*)*.

Arthritis/Rheumatism (*2005*)[446]

Respondents (aged 12+ years) who report having arthritis or rheumatism, excluding fibromyalgia.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control. (2007). *Health Status Indicators – Chronic Disease Prevalences*.

Asthma (*2005*)[446]

Respondents (aged 12+ years) who report having:
- asthma;
- asthma symptoms or attacks in the past 12 months; or
- taken medicine for asthma such as inhalers, nebulizers, pills, liquids or injections.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Heart disease (*2005*)[446]

Respondents (aged 12+ years) who report having heart disease.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

High blood pressure (*2005*)[446]

Respondents (aged 20+ years) who report having:

- high blood pressure;
- been diagnosed with high blood pressure; or
- taken high blood pressure medication.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Chronic obstructive pulmonary disease (*2005*)[446]

Respondents (aged 35+ years) who report having chronic obstructive pulmonary disease.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Schizophrenia (*2002*)[447]

Respondents (aged 12+ years) reporting schizophrenia as diagnosed by a health professional.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Major depression (*2002*)[447]

A major depressive episode is a period of two weeks or more with persistent depressed mood and loss of interest or pleasure in normal activities, accompanied by symptoms such as decreased energy, changes in sleep and appetite, impaired concentration, and feelings of guilt, hopelessness or suicidal thoughts.

Respondents (aged 15+ years) who reported experiencing the following associated with major depressive episode were considered to fit the criteria for the 12-month period prevalence of major depression:

- a period of two weeks or more with depressed mood or loss of interest or pleasure **and** at least five additional symptoms;
- clinically significant distress or social or occupational impairment;
- the symptoms are not better accounted for by bereavement;
- meet the criteria for lifetime diagnosis of major depressive episode;
- report a 12-month episode; and
- report marked impairment in occupational or social functioning.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Definitions and Data Sources

Alcohol dependence (*2002*)[447]

Alcohol dependence is defined as tolerance, withdrawal, loss of control or social or physical problems related to alcohol use.

A respondent (aged 15+ years) who reported having five drinks or more on one occasion at least once a month during the past 12 months **and** had five drinks or more during another 12-month period.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Anxiety disorders (*2002*)[447]

A respondent (aged 15+ years) who reported experiencing any of the following criteria associated with agoraphobia, panic disorder and social phobia in the past 12 months was considered to meet the criteria for anxiety disorders:

- a panic attack in the past 12 months;
- significant emotional distress during a panic attack in the past 12 months;
- fear or avoidance of social or performance situation(s) in the past 12 months;
- clinically significant distress or impairment in social, occupational or other important areas of functioning;
- anxiety about being in at least two different places or situations from which escape might be difficult or embarrassing, along with fear of having a panic attack; and
- avoidance of situations associated with agoraphobia; or endurance of situations with marked distress or anxiety; or requiring the presence of a companion in the situations.

Data Source: Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, *Health Status Indicators – Chronic Disease Prevalences*.

Alzheimer's and other dementias (*2000*)[448]

Person's aged 65+ years who have been diagnosed as having Alzheimer's disease, vascular disease, frontal lobe dementia or Lewy Body disease (ICD10 F01, F03, G30-G31).

Data Source: Mathers, C.E. & Matidle, L. (2002). *Global burden of dementia in the year 2000: Summary of methods and data sources.*

HIV (*2005*)[210]

The number of new HIV infections occurring in 2005.

Data Source: Public Health Agency of Canada. (2007). *HIV/AIDS EPI Updates, November 2007.* Surveillance and Risk Assessment Division, Centre for Infectious Disease and Control.

Chlamydia (*2004*)[449]

Rate per 100,000 population where Chlamydia (*Chlamydia trachomatis*) has been identified by a laboratory.

Data Source: Public Health Agency of Canada. (2007). *Reported cases of notifiable STI from January 1 to September 30, 2006 and January 1 to September 30, 2007 and corresponding annual rates for 2006 and 2007.*

Gonorrhea (*2004*)[450]

Rate per 100,000 population where Gonorrhea (*Neisseria gonorrhoeae*) has been identified by a laboratory.

Data Source: Public Health Agency of Canada. (2007). *Reported cases of notifiable STI from January 1 to September 30, 2006 and January 1 to September 30, 2007 and corresponding annual rates for 2006 and 2007.*

Infectious syphilis (*2004*)[451]

Rate per 100,000 population where Infectious syphilis (including primary, secondary and early latent stages) has been identified by a laboratory.

Data Source: Public Health Agency of Canada. (2007). *Reported cases of notifiable STI from January 1 to September 30, 2006 and January 1 to September 30, 2007 and corresponding annual rates for 2006 and 2007.*

Low-income cut-off (LICO)[213]

A statistical measure of the income threshold below which Canadians likely devote a larger share of income than average to the necessities of food, shelter and clothing.

Unemployment rate (*2006*)[453]

The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force.

Data Source: Public Health Agency of Canada. (2007). Analyses were performed using Health Canada's DAIS edition of anonymized microdata from the *Labour Force Survey – 3701*; Table 282-0004 - *Labour Force Survey Estimates (LFS), by Educational Attainment, Sex and Age Group, Annual (Persons Unless Otherwise Noted)*, prepared by Statistics Canada.

Persons living in low income after tax (*2005*)[452]

Below are the low-income cut-off after-tax thresholds for person(s) in varying community sizes for 2005.

Data Source: Statistics Canada. (2007). *Income in Canada 2005* (Statistics Canada Catalogue no. 75-202-XIE). Ottawa.

	Rural Areas	Urban Areas			
Size of family unit		**Less than 30,000**	**30,000 to 99,999**	**100,000 to 499,999**	**500,000 and over**
1 person	11,264	12,890	14,380	14,562	17,219
2 persons	13,709	15,690	17,502	17,723	20,956
3 persons	17,071	19,535	21,794	22,069	26,095
4 persons	21,296	24,373	27,190	27,532	32,556
5 persons	24,251	27,754	30,962	31,351	37,071
6 persons	26,895	30,780	34,338	34,769	41,113
7 or more persons	29,539	33,806	37,713	38,187	45,155

People reporting food insecurity (*2004*)[237]

A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life.

Data Source: Health Canada. (2007). *Canadian Community Health Survey cycle 2.2, Nutrition (2004): Income-Related Household Food Security in Canada*. Office of Nutrition Policy and Promotion, Health Products and Food Branch.

Ground-level ozone exposure (*2005*)[251]

This indicator uses the seasonal average of daily eight-hour maximum average concentrations, which is population-weighted to calculate trends and averages across monitoring stations located throughout the country.

Data Source: Environment Canada. (2007). *Ground-level ozone exposure indicator, Canada, 1990 to 2005*.

Fine particulate matter ($PM_{2.5}$) exposure *(2005)*[251]

This indicator uses the seasonal average of daily twenty four-hour maximum average concentrations, which is population-weighted to calculate trends and averages across monitoring stations located throughout the country.

Data Source: Environment Canada. (2007). *Fine particulate matter ($PM_{2.5}$) exposure indicator, Canada, 2000 to 2005*.

Unable to access acceptable housing (*2001*)[273]

Refers to affordable dwellings (costing less than 30% of before-tax household income), adequate dwellings (those reported by their residents as not requiring any major repairs) and suitable dwellings (having enough bedrooms for the size and make-up of resident households according to National Occupancy Standard requirements).

Data Source: Lewis, R.E. Jakubec, L. (April, 2004). *2001 Census Housing Series: Issue 3 Revised; The Adequacy, Suitability, and Affordability of Canadian Housing.* Canada Mortgage and Housing Canada. Housing Indicators and Demographics. Policy and Research Division. (Socio-economic Series 04-007).

High school graduates (*2006*)[310]

Persons who have received, at minimum, a high school diploma or, in Quebec, a completed Secondary V or, in Newfoundland and Labrador, completed fourth year of secondary.

Data Source: Public Health Agency of Canada. (2007). [Analyses were performed using the Health Canada's DAIS edition of anonymized microdata from the *Labour Force Survey - 3701*; Table 282-0004 - *Labour force survey estimates (LFS), by educational attainment, sex and age group, annual (persons unless otherwise noted)*, prepared by Statistics Canada.]

Some post-secondary education (*2006*)[310]

Persons who worked toward, but did not complete, a degree, certificate (including a trade certificate) or diploma from an educational institution, including a university, beyond the secondary level. This includes vocational schools, apprenticeship training, community colleges, Collège d'Enseignement Général et Professionnel (CEGEP), and schools of nursing.

Data Source: Public Health Agency of Canada. (2007). [Analyses were performed using the Health Canada's DAIS edition of anonymized microdata from the *Labour Force Survey-– 3701*; Table 282-0004 - *Labour force survey estimates (LFS), by educational attainment, sex and age group, annual (persons unless otherwise noted)*, prepared by Statistics Canada.]

Post-secondary education (*2006*)[310]

Persons who have completed a certificate (including a trade certificate), diploma or a minimum of a university bachelor's degree from an educational institution beyond the secondary level. This includes certificates from vocational schools, apprenticeship training, community colleges, Collège d'Enseignement Général et Professionnel (CEGEP), and schools of nursing.

Data Source: Public Health Agency of Canada. (2007). [Analyses were performed using the Health Canada's DAIS edition of anonymized microdata from the *Labour Force Survey - 3701*; Table 282-0004 - *Labour force survey estimates (LFS), by educational attainment, sex and age group, annual (persons unless otherwise noted)*, prepared by Statistics Canada.]

Very or somewhat strong sense of community belonging (*2005*)[454]

Population aged 12 years and over who describe their sense of belonging to their local community as very strong or somewhat strong.

Data Source: Statistics Canada. (n.d.). *Table 105-0490 - Sense of belonging to local community, by age group and sex, household population aged 12 and over, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, every 2 years,* CANSIM (database).

Violent crimes committed (*2006*)[455]

Offences that deal with the application or threat of application, of force to a person including homicide, attempted murder, various forms of sexual and non-sexual assault, robbery and abduction, as well as traffic incidents that result in death or bodily harm.

Data Source: Statistics Canada. (July 18, 2007). Crime Statistics, 2006. *The Daily*. (Statistics Canada Catalogue no. 11-001-XIE).

Daily smoking (*2006*)[456]

Respondents who have identified themselves as daily smokers and non-daily smokers (also known as occasional smokers).

Data Source: Health Canada. (December, 2006). *Smoking status and average number of cigarettes smoked per day, by age group and sex, age 15+ years, Canada 2006*.

Engaged in leisure-time physical activity (*2005*)[366]

Population aged 12 years and over reporting level of physical activity, based on their responses to questions about the frequency, duration and intensity of their participation in leisure-time physical activity.

Respondents are classified as active, moderately active or inactive based on an index of average daily physical activity over the past three months.

Data Source: Gilmour, H.(August 2007). *Physically Active Canadians. Statistics Canada Health Reports*. 18(3). (Statistics Canada Catalogue no. 82-003.)

Fruit and vegetable consumption 5+ times a day (*2005*)[374]

Population aged 12 years and over who reported that they consume fruits and vegetables five or more times per day.

Data Source: Statistics Canada. (n.d.). *Table 105-0449 - Fruit and vegetable consumption, by age group and sex, household population aged 12 and over, Canada, provinces, territories and selected health regions (June 2005 boundaries), every 2 years*, CANSIM (database).

Heavy drinking (5+ drinks on one occasion 12+ times in a year) *(2005)*[387]

Population aged 12 years and over who reported having five or more drinks on one occasion, twelve or more times a year.

Data Source: Statistics Canada. (n.d.). *Table 105-0431 - Frequency of drinking in the past 12 months, by age group and sex, household population aged 12 and over who are current drinkers, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, every 2 years,* CANSIM (database).

Illicit drug use (*2002*)[386]

Illicit drug use by persons aged 15 years and older, in Canada, excluding the Territories, who have used any illicit drug (including cannabis, cocaine, speed, ecstacy, hallucinogens, heroin, or sniffing solvents).

Data Source: Tjepkema, M. (2004). Alcohol and Illicit Drug Dependence. *Supplement to Health Reports*, 15, 9-63.

Teen pregnancy (*2004*)[391]

Total number of pregnancies (including live births, induced abortions and fetal loss) for women under the age of 20.

Data Source: Statistics Canada. (n.d.). *Table 106-9002 - Pregnancy outcomes, by age group, Canada, provinces and territories, annual*, CANSIM (database).

Regular family physician (*2005*)[357]

Refers to a family or general physician seen for most of an individual's routine care.

Data Source: Statistics Canada. (n.d.). *Table 105-3024 - Population reporting a regular family physician, household population aged 15 and over, Canada, provinces and territories, occasional*, CANSIM (database).

Contact with dental professional (*2005*)[393]

Persons who have consulted with a dental professional (including dentists and orthodontists) in the past 12 months

Data Source: Statistics Canada. (n.d.). *Table 105-0460 - Contact with dental professionals in the past 12 months, by age group and sex, household population aged 12 and over, Canada, provinces, territories, health regions (June 2005 boundaries) and peer groups, every 2 years,* CANSIM (database).

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