The Health of Canada's Communities

- *People living in large metropolitan areas and urban centres have the longest life expectancies and disability-free life expectancies in Canada.*
- *People living in Canada's northern remote communities are the least healthy. The smoking rates, obesity rates, and heavy drinking rates in these communities are above the Canadian averages. Conversely, residents of these communities are less likely to report high levels of stress.*
- *Higher daily smoking rates and heavy drinking rates at the health region level are associated with shorter life expectancies.*
- *At the health region level, high obesity rates, high daily smoking rates, and high rates of depression are associated with shorter disability-free life expectancies.*

Abstract

Objectives

This article examines the health of Canadians at the community level. Canada's 139 health regions are grouped into 10 "peer groups" with similar socio-demographic profiles. Health outcomes and risk factors are compared between and within peer groups.

Data source

Life expectancy and disability-free life expectancy estimates are based on data from the 1996 Census of Canada and the Canadian Vital Statistics Database. Risk factor estimates are based on data from the 2000/01 Canadian Community Health Survey (CCHS).

Analytical techniques

Chiang's method for abridged life tables is used to calculate life expectancy. Disability-free life expectancy was calculated according to the Sullivan method. Estimates of self-perceived health and risk factors are derived from the CCHS data. Regression analysis is used to study associations between health outcomes and risk factors.

Main results

Socio-demographic factors and risk factors such as smoking and obesity play a critical role in accounting for differences between communities in health outcomes such as life expectancy and disability-free life expectancy.

Key words

life expectancy, disability-free life expectancy, health status indicators, health behaviour, geographic comparisons, health region, peer group

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Relative to people in most countries, Canadians enjoy a high level of health. Life expectancy in Canada is among the best in the world and has been for several decades.[1] However, health status is by no means evenly distributed across Canada's communities. Life expectancy, an important indicator of population health, varies considerably from region to region, from a low of 65.4 years in the Région du Nunavik, Québec, to a high of 81.2 years in Richmond, British Columbia. To some extent, such disparities can be attributed to socio-demographic differences between communities, since the life expectancy within a community is associated with factors such as the unemployment rate, the proportion of people with a postsecondary education, and the proportion of people who are Aboriginal.[2]

Methods

Data sources

Life expectancy and disability-free life expectancy (DFLE) estimates are based on mortality data for 1995 to 1997 from the Canadian Vital Statistics Database. Population estimates as of July 1, 1996, adjusted for net undercoverage, are from Statistics Canada's Demography Division. The numbers of people living in private households and collective dwellings are from the 1996 Census of Population. Estimated data for major activity limitation are from the 20% sample for the 1996 Census long form.

Estimates of self-perceived health and risk factors are from the Canadian Community Health Survey (CCHS) (see Annex).

Analytical techniques

The program used to calculate life expectancy was based on Chiang's method for abridged life tables.[3] Abridged life tables use 5-year age groupings of both population and mortality rate inputs (as opposed to single-year age breakdown). Because there is more variability in the number of events by age in smaller geographic areas and in areas with small populations, abridged life tables are more suitable to analyses at the sub-provincial (health region) level. Chiang's method was chosen because it was relatively easy to adapt it to the health region level and because it included a standard error calculation (in this case, addressing the variability in the number of deaths in a given health region from one year to the next).

Estimates of DFLE were calculated according to the Sullivan method.[4] This method is based on rates of disability in the population by age and sex group. The standard error of the estimates of DFLE and thus the upper and lower confidence limits around the estimates are based on the method of Mathers.[5] This method takes into account natural fluctuations in rates of death and sampling variability in rates of disability.

All estimates produced with data from the CCHS have been weighted to represent the appropriate target populations at the health region and peer group levels. Confidence intervals for the estimates based on CCHS data were calculated with the formula for simple random sampling, with incorporation of an estimate of a design effect of 2, to account for the complex sampling design of the CCHS. In comparisons of an estimate for a health region with the corresponding estimate for the peer group, the health region was designated as being significantly better (√) or worse (x) than the peer group if the 95% confidence interval for the health region estimate did not overlap with the 95% confidence interval for the peer group estimate. In these comparisons, the peer group estimate was based on all records from the peer group (i.e., including records from the health region for which the comparison was being made).

The age distribution of the population varied among health regions and peer groups. Therefore, all estimates at the health region and peer group levels based on CCHS data were age-standardized, according to the Canadian population.

In this article, the percentages of people in fair or poor health, as well as risk factor prevalence estimates, are based on individual self-reported data from the CCHS. To study and compare health at the community level, these data were aggregated to the health region level. In contrast, life expectancy and DFLE are derived from data on deaths and activity limitations among residents in these health regions. These indicators apply only to health regions, not to individuals within these regions. In the regression analyses focusing on the relationships between risk factor prevalence estimates and health outcomes, the unit of analysis is the health region. As such, associations observed between self-perceived health and risk factors at the health region level do not necessarily represent the associations that exist at the individual level. In the next paper (Regional Socio-economic Context and Health), self-perceived health is examined at the individual level in relation to both health risk factors at the individual level and health region characteristics.

Limitations

Comparison of health measures between health regions represents a much finer scale for examining population health indicators than has traditionally been possible in the Canadian context. However, such comparisons may mask important fluctuations within health regions. For example, even though the health indicators of Vancouver residents compare favourably with Canadian averages, this cannot be interpreted as meaning that the residents of the downtown core in Vancouver have better than average health.

Large sample sizes at the peer group level made it possible to detect significant differences in health indicators between groups, even when the magnitude of the differences was not large. At the health region level, larger differences between estimates were required to attain statistical significance because of smaller sample sizes.

To a great extent, the formulation of peer groups made it possible to compare health indicators for regions with similar socio-demographic profiles. However, even within a single peer group there was considerable variability in socio-demographic factors. This variability may in part explain why some health regions performed better than others within their peer group.

Health regions could be categorized into peer groups according to a variety of methods and variables. The use of other methods and variables could alter the composition of peer groups, as well as the interpretation of the analysis. A variety of approaches were explored,[6] and the one used reflects a consensus of a health expert group.

In this analysis, the obesity rate was based on the population aged 20 or older. Inaccurate self-reporting of height is common among the elderly, many of whom experience a loss of height with aging.[7] Such individuals often cite their height as measured in their younger years. As a result, body mass index for the elderly may be more prone to underestimation.

Because the positive association between socio-economic status and health is one of the most widespread and persistent findings in health research, comparisons between communities are more useful if they are made among those that are socio-economically similar. Therefore, as described in a previously released report,[6] Statistics Canada developed an algorithm to assemble Canada's 139 health regions into "peer groups." A peer group comprises health regions that have a similar socio-demographic profile. In defining the peer groups, data from the 1996 Census of Population were used to examine the socio-demographic profiles of Canada's health regions. Health variables were deliberately not used in the delineation of health regions into peer groups. On the basis of the socio-demographic profiles, cluster and discriminant analyses were used to formulate peer groups and then to determine the variables with the most influence on the grouping of health regions into these peer groups.

The health regions analyzed in this report have been defined by the provincial ministries of health in each province. In total, there are 139 of these regions across Canada (see Map). Comparison of health indicators, such as life expectancy, smoking rates, and obesity rates, among regions provides valuable information to administrators developing and monitoring coordinated programs aimed at improving health in their communities.

The purpose of this article is to compare key health indicators between and within peer groups, including life expectancy, disability-free life expectancy (DFLE), and self-perceived health, all of which are relevant indicators of population health (see *Definitions*). Because of the way in which the peer groups were delineated, it was expected that differences in the indicators would emerge between peer groups. Peer groups with better socio-economic status indicators are likely to have better health status measures. However, of more importance is identifying situations in which specific health regions distinguish themselves from their peers. Therefore, health regions where health status was significantly better or worse than that of the overall peer group are highlighted. A second purpose of this article is to explore reasons why the residents of some peer groups or health regions enjoy better health than others. Therefore, risk factor prevalence estimates, known to be key determinants of health, were compared between and within peer groups. The risk factors considered include lifestyle factors (smoking, exercise, heavy drinking, and obesity), as well as pyscho-social factors (stress levels and depression). Similar to health outcome measures, it was expected that risk factor estimates would be comparable for health regions within a peer group because of the association between risk factors and socio-demographic characteristics. Again, cases where a risk factor estimate for a health region was significantly better or worse than the estimate for the peer group to which it belongs are highlighted.

Links between health outcomes, health behaviours, and pyscho-social factors

A large body of research has established the importance to mortality and morbidity of particular lifestyle and pyscho-social factors. Smoking is the single most important preventable cause of death. In Canada, approximately 45,000 deaths in 1996 were attributed to smoking,[8] and one-fifth of all deaths due to the three leading causes of death—cancer, heart disease, and stroke—were attributed to cigarette smoking. As well, evidence indicating the importance of smoking as a cause of disability is now emerging. For example, in one study, heavy smokers were 30% to 50% more likely than never-smokers to have an activity limitation.[9] Another study, based on seniors, found that smokers had lower odds of recovering from physical dependency (requiring the assistance of another person in daily activities because of a long-term health problem).[10]

Several studies have found a positive association between physical exercise and health. Regular exercise improves strength and aerobic capacity, even in adults who are chronically ill.[11] Even a moderate level of regular exercise is associated with lower odds of later heart disease.[12] However, whether exercise leads to better functional status and prevents disability in older adults is less clear.[10,11,13]

In addition to causing adverse personal and social consequences, alcohol abuse is a major determinant of premature death, contributing to death due to cardiovascular disease, cancer and accidents.[14,15] Even when data are adjusted for the influence of smoking, heavy drinking persists as an independent risk factor for death from heart disease.[14]

Research has identified obesity as a major risk factor for numerous chronic conditions, including diabetes, arthritis, high blood pressure, heart disease, colorectal cancer, and respiratory problems.[16-18] Research also indicates that obesity is a key determinant of disability.[17]

People who experience high levels of personal stress are also at higher risk of certain diseases, perhaps because of an adverse effect on the immune system.[19,20] Longitudinal analysis of Canadian data has indicated that stress is predictive of chronic conditions such as migraine, ulcers, arthritis,

Definitions

In general, *health regions* correspond to the administrative areas established by provincial authorities for local health and social services delivery. At the time the Canadian Community Health Survey (CCHS) was designed, there were 139 health regions in Canada. In this analysis, the Burntwood and Churchill health regions in Manitoba were combined because of Churchill's small population. There are two health regions for which the CCHS does not collect data: the Région du Nunavik and the Région des Terres-Cries-de-la-Baie-James, both in peer group C. Therefore estimates of the percentage of the population in fair or poor health and risk factor estimates are not available for these health regions. Estimates for peer group C are based on the remaining health regions, where CCHS data were collected.

Peer groups are groups of health regions with similar socio-economic characteristics. Each health region in Canada has been assigned to 1 of 10 peer groups.[6]

Life expectancy refers to life expectancy at birth and is the number of years a person is expected to live from the day he or she is born. This value is based on mortality statistics at the time of birth (according to 5-year age groupings). In this article, life expectancy at birth is based on mortality statistics for the years 1995 to 1997 and is referred to as 1996 life expectancy.

Disability-free life expectancy (DFLE) combines information on mortality rates with data on the prevalence of major activity limitation and the percentage of the population living in health care institutions. DFLE estimates the number of years of life that a person can expect to live without activity limitation and outside of a health care institution.[21]

Respondents were classified as having *fair or poor health* based on a question on their self-perceived health: "In general would you say your health is excellent, very good, good, fair, or poor?" Estimates of fair or poor health at the health region level are based on the population aged 12 or older.

Respondents were classified as *daily smokers* if they indicated that they currently smoked cigarettes daily. Daily smoking rates at the health region level are based on the population aged 12 or older.

Body mass index (BMI) is commonly used to determine if an individual is in a healthy weight range. BMI is calculated by dividing weight in kilograms by the square of height in metres. In this analysis, people with a BMI of 30 or more were classified as *obese*, a definition of obesity that is endorsed by the World Health Organization. Obesity rates at the health region level are based on the population aged 20 or older. Pregnant women were excluded in the calculation of obesity rates.

Physical activity is based on the number of times in the previous 3 months that respondents participated in leisure-time physical activity lasting more than 15 minutes. Monthly frequency was the number of times in the past 3 months divided by 3. Respondents were classified as *infrequent exercisers* if the number of times per month was 3 or less. Infrequent exercise rates at the health region level are based on the population aged 12 or older.

Heavy drinking was measured by asking respondents the number of times they had consumed five or more alcoholic drinks on one occasion in the past 12 months. Those who answered once a month or more often were classified as *heavy drinkers*. Heavy drinking rates at the health region level are based on the population aged 18 or older.

To measure levels of stress, respondents were asked the following question: "Thinking about the amount of stress in your life, would you say most days are not at all stressful, not very stressful, a bit stressful, quite a bit stressful, or extremely stressful?" Respondents who answered "quite a bit stressful" or "extremely stressful" were classified as having *high stress*. At the health region level, estimates of the population having high stress are based on the population aged 18 or older.

According to the methodology of Kessler[22] the CCHS defines a major depressive episode by means of a subset of questions from the Composite International Diagnostic Interview. These questions cover a cluster of symptoms for depressive disorder, which are listed in the *Diagnostic and Statistical Manual of Mental Disorders*.[23] Responses to these questions were scored and transformed into a probability estimate of a diagnosis of major depressive episode. If the estimate was 0.9 or more (that is, 90% certainty of a positive diagnosis), then the respondent was classified as *depressed*. Estimates of depression at the health region level are based on the population aged 12 or older.

Definitions for the census variables that were used in the delineation of health regions into peer groups can be found in Appendix Table A.

respiratory disease, and back problems.[24] In the same analysis, stress was also associated with lower ratings of self-perceived level of health.

Depression, estimated to affect about 6% of the Canadian population, is a relatively common mental disorder.[25] In addition to its devastating effects on emotional health, depression is also emerging as an important correlate of physical disability in older adults.[26,27]

Most of the cited studies examined the determinants of health at the individual level. Now, for the first time, it is possible to make Canada-wide comparisons of estimates of health outcomes and risk factors at the community (health region) level, thanks to the large sample size of Statistics Canada's Canadian Community Health Survey (CCHS). The CCHS data reveal that at the health region level, estimates of life expectancy, DFLE, and percentage of residents reporting fair or poor health are associated with estimates of several of the risk factors considered in this analysis (see *Links between health outcomes and risk factors at the health region level*). These associations persist even when the analysis controls for the socio-demographic status of the health region. As such, in comparing health outcomes between and within peer groups, an examination of differences in risk factors is critical to the understanding and interpretation of results.

Links between health outcomes and risk factors at the health region level

To examine the relationship between health outcome measures and risk factors at the health region level, three series of multiple linear regression models were run. In each model, the dependent variable was the estimate of one of the three health outcome variables at the health region level (life expectancy, disability-free life expectancy [DFLE], or the percentage of the population reporting fair or poor health). In the first set of regression models, these outcomes were examined only in relation to socio-demographic factors. The factors used in the regressions were the ones that had the most discriminating power in the designation of the peer groups (proportion of Aboriginal population, proportion of visible minority population, unemployment rate, population size, and percentage of population aged 65 or older), as well as average income and average number of years of schooling.

In subsequent models, each risk factor estimate (i.e., the daily smoking rate, the obesity rate, the infrequent exercise rate, the heavy drinking rate, the high stress rate, and the depression rate) was introduced separately (by itself) into each model to determine if it was significantly associated with each outcome, while controlling for socio-demographic characteristics. In the table at the right, significant risk factors are identified. The ability of each risk factor to explain differences in the three health outcomes considered is quantified by the change in the R^2 statistic. (The R^2 statistic indicates the amount of variance that is explained by all of the independent variables combined.)

Life expectancy at the health region level was negatively associated with both the daily smoking rate and the percentage of the population who drink heavily.

DFLE was negatively associated with a health region's daily smoking rate, obesity rate, heavy drinking rate, and depression rate. The addition of the daily smoking rate, the obesity rate, and the depression rate resulted in the greatest improvement in the R^2 value.

An unexpected finding was that DFLE was positively associated with infrequent exercise.

The percentage of the population reporting fair or poor health was positively associated with the smoking rate, the obesity rate, and the depression rate.

Results of multiple linear regression models relating life expectancy, disability-free life expectancy, and fair or poor health at the health region level to selected risk factors

Control variables	Life expectancy	Disability-free life expectancy	Fair or poor health
	----------R^2----------		
Socio-demographic factors only	0.56	0.32	0.25
Socio-demographic factors and:	----------Increase in R^2----------		
Daily smoking rate	0.08 Neg**	0.06 Neg**	0.04 Pos*
Obesity rate	0.01	0.05 Neg**	0.10 Pos**
Infrequent exercise rate	0	0.03 Pos*	0
Heavy drinking rate	0.01 Neg*	0.03 Neg*	0.01
High stress rate	0	0	0.01
Depression rate	0	0.08 Neg**	0.09 Pos**

Notes: *The original model, controlling only for socio-demographic factors, was based on observations for 136 of the 139 health regions. The Burntwood and Churchill health regions in Manitoba were combined as one health region because of Churchill's small population. The Région du Nunavik and the Région des Terres-Cries-de-la-Baie-James health regions were not included because the CCHS does not collect data in these health regions and therefore risk factor estimates were not available. The subsequent models are all based on these same observations with one exception. The model including the depression rate is based on two fewer observations since questions on depression were not asked in two health regions (Northern Health Services Branch, Saskatchewan, and Brant Public Health Unit, Ontario).*

** $p < 0.05$*

*** $p < 0.01$*

Table 1
Principal characteristics of the 10 peer groups

Peer group	Number of health regions	% of Canadian population	Principal characteristics
A	5	17.4	• Metropolitan areas such as Toronto, Montréal, and Vancouver • Average population size over 1 million • High percentage (32.0%) of visible minority population • Low percentage (0.6%) of Aboriginal population • High average number of years of schooling (13.9 years) • High inequality of income distribution (median share = 18.8%)
B	8	16.5	• Large urban centres with a relatively high population density • Average population size over 500,000 • High percentage (20.2%) of visible minority population • Low percentage (1.5%) of Aboriginal population • High average number of years of schooling (13.9 years)
C	6	0.4	• Mostly northern health regions • High percentage (75.5%) of Aboriginal population • High unemployment rate (17.2%) • Low density of population (3.9 people per square kilometre) • Low percentage (0.9%) of visible minority population • Low average number of years of schooling (10.6 years)
D	9	2.6	• Mostly eastern health regions • High unemployment rate (27.7%) • Low percentage (0.5%) of visible minority population • Low percentage (9.1%) of inter-municipality migrants • Low average personal income (slightly over $18,000)
E	13	2.8	• Mostly rural health regions in the Prairies • High percentage (16.5%) of people aged 65 or older • Low percentage (1.1%) of visible minority population • Low average personal income (slightly over $20,000)
F	13	2.2	• Mostly northern health regions • High percentage (17.2%) of Aboriginal population • Low density of population (0.5 people per square kilometre) • Low inequality of income distribution (median share = 23.6%) • High percentage (22.8%) of inter-municipality migrants
G	21	5.5	• Mostly rural health regions in the Prairies • Low unemployment rate (7.1%) • Low percentage (10.4%) of lone-parent families • Low percentage (13.8%) of people with low income
H	22	23.2	• Health regions mostly in Québec and its neighbouring provinces • Low population growth (0.6%) • High to moderate unemployment rate (11.2%) • Moderate percentage (14.9%) of lone-parent families
I	34	23.5	• Health regions mostly in Ontario • High percentage (85.9%) of residents commuting to the nearby urban centres • Moderate to high percentage (13.5%) of people aged 65 or older
J	8	5.9	• Mostly sub-metropolitan health regions • High population growth (4.3%) • Low unemployment rate (7.5%) • High percentage (24.0%) of inter-municipality migrants • Low percentage (13.9%) of children living in low-income households • Low inequality of income distribution (median share = 24.4%) • High average number of years of schooling (13.5 years)

Data source: *1996 Census of Population*
Note: *In total, 24 socio-demographic variables, in addition to prominent geographic characteristics, were used to delineate the 10 peer groups. In this table, results are presented for 15 of these variables. These specific variables were chosen to highlight the differences between peer groups because their variability between the peer groups was high and the results are easy to interpret. Appendix Table A contains a complete list of all 24 variables used to define the peer groups, definitions for each variable, and estimates for each variable by peer group.*

Canada's peer groups

In total, 10 peer groups were formed across Canada, encompassing from 5 to 34 health regions. The variables that were most critical in the assignment of health regions to peer groups were proportion of Aboriginal and visible minority populations, unemployment rate, population size, percentage of the population aged 65 or older, and income inequality. See Table 1 and Appendix Table A for more detailed descriptions of the composition of each peer group.

Not surprisingly, life expectancy estimates differ considerably between peer groups (Table 2). However, in many cases, the range of estimates for the health regions within a peer group is also substantial (Chart 1). Even relatively small differences in life expectancies may be important. For example, the elimination of lung cancer would increase life expectancy by 0.9 years,[28] an important increase given that lung cancer is the leading cause of cancer death for Canadian men and women.[29]

Peer group A

More than 90% of the population in the health regions of peer group A comes from Canada's largest cities (Toronto, Montréal, and Vancouver). Peer group A is characterized by a high percentage of visible minority population and high levels of education.

People living in the health regions of peer group A are among the healthiest in Canada (Table 3). Life expectancy is a half-year longer than the Canadian average, and DFLE is a full year longer. These people tend to have healthier behaviours than the average Canadian. The percentage of daily smokers is 4 percentage points lower than the overall Canadian rate (18% versus 22%). Peer group A has the lowest obesity rate and the lowest heavy drinking rate of the 10 peer groups. However, peer group A does not fare as well when it comes to exercise: 27% of the residents of the health regions of peer group A are categorized as being infrequent exercisers, whereas this percentage is 22% for all of Canada. Mental health estimates are favourable in peer group A. The depression rate is significantly lower than the rate for Canada as a whole.

Richmond, British Columbia, stands out as an exceptional health region within an exceptional peer group. Life expectancy in Richmond is the highest in the country, at 81.2 years (2.4 years higher than that of peer group A as a whole and 2.9 years higher than that of Canada). DFLE is also the best in the country, at 72.8 years (3.2 years higher than the overall estimate for peer group A and 4.2 years higher than that for Canada). Residents of Richmond have very healthy lifestyle practices. The smoking rate (9%) and the obesity rate (6%) are the lowest in the country.

Table 2
Comparison of Canada and peer groups, selected characteristics

					Health outcomes			Health behaviours				Psycho-social factors	
	CCHS population†		CCHS sample size	Number of health regions	Life expectancy (years)	Disability-free life expectancy (years)	Fair or poor health (age 12+) %	Daily smoking (age 12+) %	Obese (age 20+) %	Infrequent exercise (age 12+) %	Heavy drinking (age 18+) %	High stress (age 18+) %	Depression (age 12+) %
	'000	%											
Canada	25,802	100.0	131,535	139	78.3	68.6	12	22	15	22	16	26	7
PEER GROUP B	4,609	17.9	13,152	8	79.6 √	69.5 √	11 √	18 √	14 √	19 √	15 √	27	8
PEER GROUP A	4,564	17.7	8,229	5	78.8 √	69.6 √	12	18 √	11 √	27 ×	12 √	26	6 √
PEER GROUP J	1,568	6.1	7,866	8	78.8 √	68.8 √	11 √	22	16	17 √	18 ×	24	8
PEER GROUP I	6,001	23.3	34,622	34	78.3	67.6 ×	12	23 ×	17 ×	19 √	18 ×	26	8 ×
PEER GROUP G	1,355	5.3	14,385	21	77.9 ×	67.5 ×	12	23 ×	20 ×	20 √	20 ×	24 √	8
PEER GROUP E	672	2.6	10,535	13	77.8 ×	67.0 ×	14 ×	26 ×	22 ×	22	19 ×	22 √	7
PEER GROUP H	5,843	22.6	26,371	22	77.7 ×	68.8 √	12	25 ×	15	24 ×	17	29 ×	7
PEER GROUP D	624	2.4	6,123	9	77.0 ×	66.5 ×	15 ×	26 ×	21 ×	28 ×	20 ×	19 √	6 √
PEER GROUP F	515	2.0	8,615	13	76.7 ×	66.7 ×	13 ×	25 ×	19 ×	18 √	21 ×	22 √	8 ×
PEER GROUP C	52	0.2	1,637	6	71.8 ×	62.7 ×	15 ×	39 ×	26 ×	27 ×	22 ×	19 √	5 √

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*

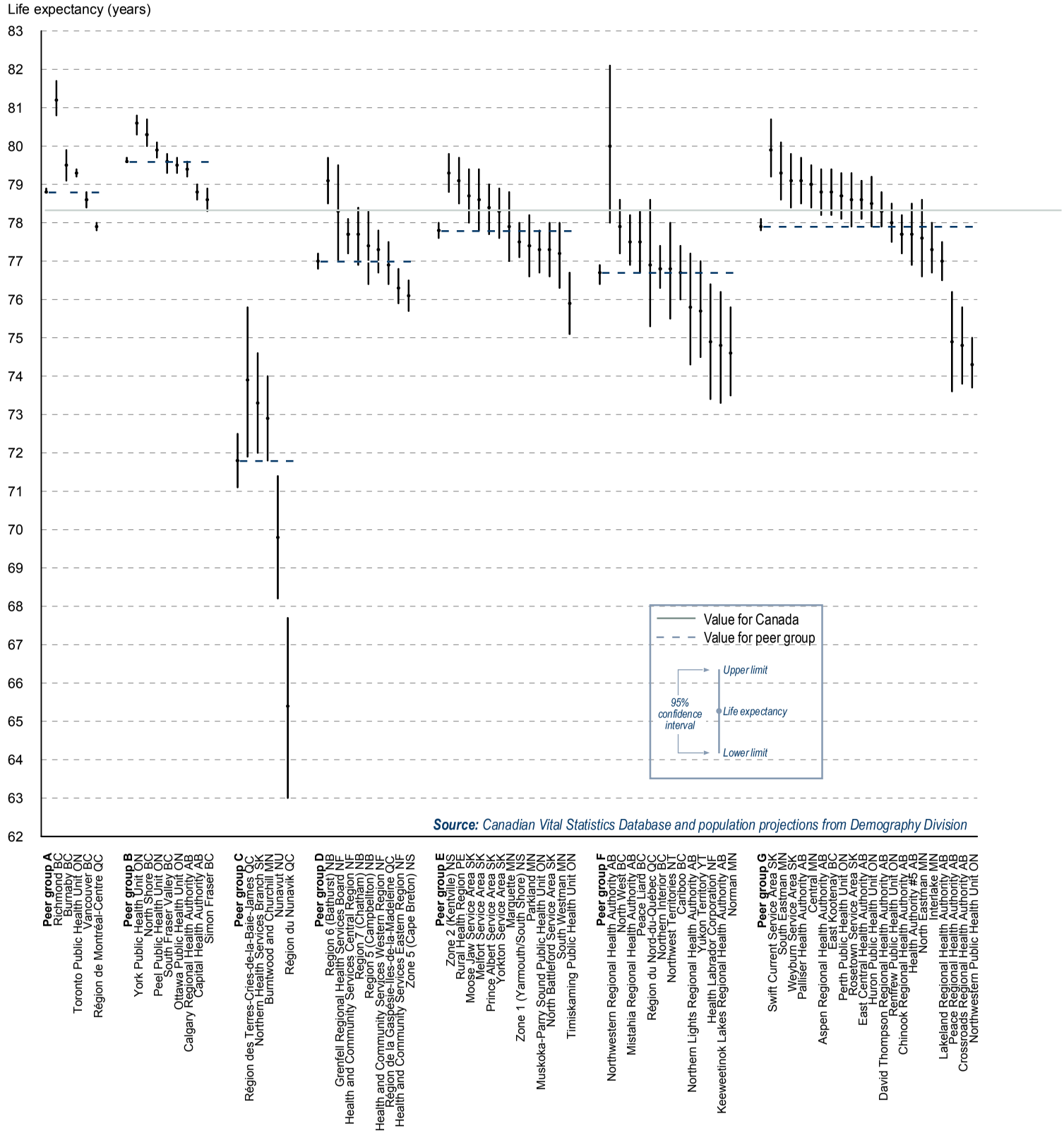
Notes*: The ordering of peer groups is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*

√ Indicates that peer group estimate is significantly better than Canadian estimate.

× Indicates that peer group estimate is significantly worse than Canadian estimate.

† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Chart 1
Life expectancy at birth, by peer group and health region, 1996



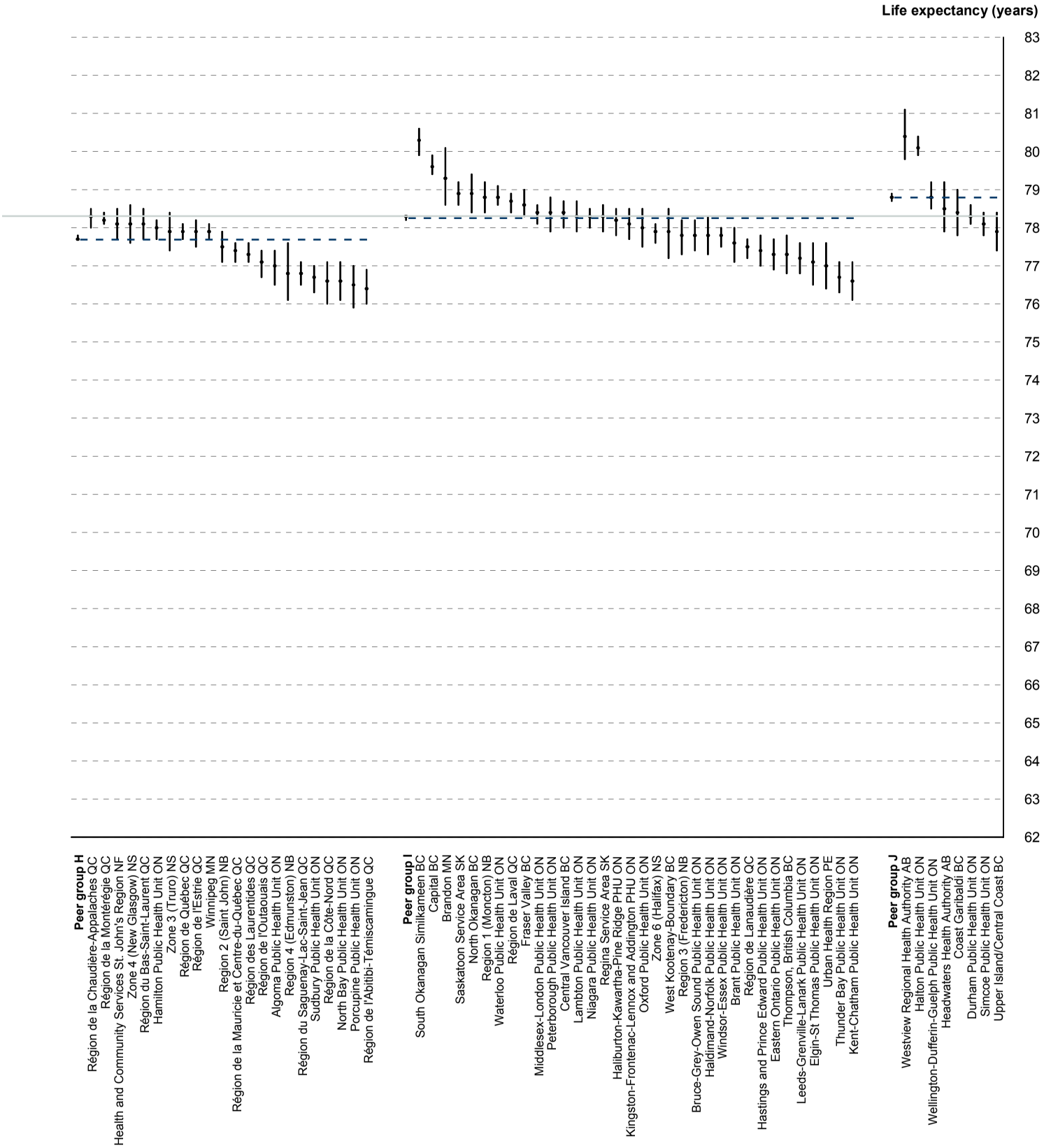

Life expectancy (years)
83
82
81
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
62
Peer group H
Région de la Chaudière-Appalaches QC
Région de la Montérégie QC
Health and Community Services St. John's Region NF
Zone 4 (New Glasgow) NS
Région du Bas-Saint-Laurent QC
Hamilton Public Health Unit ON
Zone 3 (Truro) NS
Région de Québec QC
Région de l'Estrie QC
Winnipeg MN
Region 2 (Saint John) NB
Région de la Mauricie et Centre-du-Québec QC
Région des Laurentides QC
Région de l'Outaouais QC
Algoma Public Health Unit ON
Region 4 (Edmunston) NB
Région du Saguenay-Lac-Saint-Jean QC
Sudbury Public Health Unit ON
Région de la Côte-Nord QC
North Bay Public Health Unit ON
Porcupine Public Health Unit ON
Région de l'Abitibi-Témiscamingue QC
Peer group I
South Okanagan Similkameen BC
Capital BC
Brandon MN
Saskatoon Service Area SK
North Okanagan BC
Region 1 (Moncton) NB
Waterloo Public Health Unit ON
Région de Laval QC
Fraser Valley BC
Middlesex-London Public Health Unit ON
Peterborough Public Health Unit ON
Central Vancouver Island BC
Lambton Public Health Unit ON
Niagara Public Health Unit ON
Regina Service Area SK
Haliburton-Kawartha-Pine Ridge PHU ON
Kingston-Frontenac-Lennox and Addington PHU ON
Oxford Public Health Unit ON
Zone 6 (Halifax) NS
West Kootenay-Boundary BC
Region 3 (Fredericton) NB
Bruce-Grey-Owen Sound Public Health Unit ON
Haldimand-Norfolk Public Health Unit ON
Windsor-Essex Public Health Unit ON
Brant Public Health Unit ON
Région de Lanaudière QC
Hastings and Prince Edward Public Health Unit ON
Eastern Ontario Public Health Unit ON
Thompson, British Columbia BC
Leeds-Grenville-Lanark Public Health Unit ON
Elgin-St Thomas Public Health Unit ON
Urban Health Region PE
Thunder Bay Public Health Unit ON
Kent-Chatham Public Health Unit ON
Peer group J
Westview Regional Health Authority AB
Halton Public Health Unit ON
Wellington-Dufferin-Guelph Public Health Unit ON
Headwaters Health Authority AB
Coast Garibaldi BC
Durham Public Health Unit ON
Simcoe Public Health Unit ON
Upper Island/Central Coast BC

Table 3
Comparison of peer group A health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Disability-free life expectancy (years)		Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Obese (age 20+) %		Infrequent exercise (age 12+) %		Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP A	4,564	100.0	8,229	78.8	√	69.6	√	12		18	√	11	√	27	×	12	√	26		6	√
BC	Richmond	144	3.2	828	81.2	√ √	72.8	√ √	13		9	√ √	6	√ √	18	√	10	√	24		5	√
BC	Burnaby	172	3.8	871	79.5	√ √	69.6	√	13		13	√ √	8	√	16	√ √	8	√ √	25		7	
ON	Toronto Public Health Unit	2,177	47.7	2,524	79.3	√ √	69.0	× √	12		17	√	11	√	29	×	10	√	24		6	
BC	Vancouver	501	11.0	1,285	78.6		68.9	× √	13		14	√ √	9	√	18	√ √	14		21	√ √	8	
QC	Région de Montréal-Centre	1,569	34.4	2,721	77.9	× ×	70.3	√ √	11		21	×	12	√	29	×	15		31	× ×	6	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Richmond residents are also less likely to be classified as infrequent exercisers: the infrequent exercise rate for Richmond is 18% compared with 27% for peer group A.

The Région de Montréal-Centre has the lowest life expectancy in peer group A, at 77.9 years (0.9 years lower then the overall rate for peer group A). Furthermore, it is the only health region within peer group A with a life expectancy lower than the Canadian average. Montréal also has the distinction of having the highest daily smoking rate, the highest obesity rate, the highest heavy drinking rate, and the highest stress rate within peer group A. Nonetheless, the DFLE for Montréal compares favourably with the DFLE for peer group A as a whole (70.3 versus 69.6).

Although the overall exercise rate for peer group A does not compare favourably with the Canadian rate, this finding is not consistent for all health regions within the peer group. In fact, two health regions (Burnaby and Vancouver), both in British Columbia, have better exercise rates than Canada as a whole. However, Toronto and the Région de Montréal-Centre have much poorer exercise rates, at 29%, 7 percentage points worse than the Canadian average.

Peer group B

Peer group B consists of Canada's large urban centres. The average population of the health regions within peer group B is in excess of 500,000. Similar to the health regions in peer group A, those in peer group B have a high visible minority population, and residents tend to have high levels of education.

Life expectancy in peer group B is the highest in Canada, at 79.6 years (Table 4). Seven of the 8 health regions in peer group B have life expectancies significantly higher than the Canadian average. Residents of the health regions in peer group B can expect to live 1.3 years longer than the average Canadian. DFLE is also higher than the Canadian average, and the percentage of people reporting fair or poor health is lower. Peer group B compares favourably with Canada as a whole in terms of lifestyle behaviours. It is tied with peer group A for the lowest daily smoking rate. The obesity rate, the infrequent exercise rate, and the heavy drinking rate are all lower than the Canadian figures.

Two health regions within peer group B have notably better health outcome measures than the others: York in Ontario and North Shore in British Columbia. The

Table 4
Comparison of peer group B health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP B	4,609	100.0	13,152	79.6	√	69.5	√	11	√	18	√	14	√	19	√	15	√	27		8	
ON	York Public Health Unit	635	13.8	1,732	80.6	√ √	71.1	√ √	11		18	√	12	√	20		13	√	29		7	
BC	North Shore	161	3.5	842	80.3	√ √	72.5	√ √	7	√ √	10	√ √	7	√ √	10	√ √	18		30		6	
ON	Peel Public Health Unit	858	18.6	1,837	79.9	√	70.1	√ √	11		16	√	14		26	× ×	13	√	28		7	
BC	South Fraser Valley	503	10.9	1,437	79.6	√	69.7	√	13		13	√ √	15		15	√ √	14		21	√ √	9	
ON	Ottawa Public Health Unit	664	14.4	1,936	79.5	√	69.2	× √	11		17	√	14		17	√	16		25		8	
AB	Calgary Regional Health Authority	810	17.6	2,092	79.4	√	69.1	× √	10	√	20		14		19		16		26		9	
AB	Capital Health Authority	700	15.2	2,111	78.8	× √	68.0	× ×	12		23	×	15		17	√	18		28		10	×
BC	Simon Fraser	279	6.1	1,165	78.6	×	68.6	×	12		16	√	13		18	√	11	√ √	27		6	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

life expectancies and DFLEs for both of these health regions are better than those of peer group B as a whole. In addition, North Shore has the lowest percentage of residents reporting fair or poor health in the country (7%). In the case of North Shore, these superior health outcome measures are accompanied by favourable health behaviours. North Shore enjoys a lower daily smoking rate, a lower obesity rate, and a lower infrequent exercise rate than peer group B as a whole. However, the same cannot be said for York. Although the health behaviour rates for York are better than those for Canada, they are not any better than those for peer group B as a whole.

Peer group C

Canada's northernmost remote health regions constitute peer group C. This peer group is characterized by a high percentage of Aboriginal population, a high unemployment rate, and low levels of education.

Peer group C has the lowest life expectancy and the lowest DFLE in the country (Table 5). These two measures are below the Canadian average for all of the health regions within peer group C. In the Région du Nunavik, Québec, life expectancy falls short of the overall life expectancy for peer group C and is the lowest in the country, at 65.4 years, close to 13 years less than the Canadian average. The DFLE in the Région du Nunavik is also the lowest in the country, at 61 years.

The daily smoking rate for peer group C (39%) is the highest in the country, 17 percentage points higher than the Canadian rate. The obesity rate and the heavy drinking rate are also the highest in the country. One of every four residents of the peer group C health regions is obese, whereas for Canada this ratio is one of every seven. In peer group C, 22% of residents have at least one day of heavy drinking each month, a substantially greater proportion than for Canada as a whole (16%). The infrequent exercise rate for peer group C (27%) is also higher than the Canadian average (22%).

Interestingly, peer group C compares favourably for pyscho-social factors. The percentage of the population in this peer group who report a high stress level is lower than the Canadian rate by seven percentage points (19% versus 26%). Generally, individuals living in rural communities report lower stress levels (data not shown). The depression rate for peer group C is the lowest among the 10 peer groups, at 5%.

Table 5
Comparison of peer group C health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP C	52	100.0	1,637	71.8	×	62.7	×	15	×	39	×	26	×	27	×	22	×	19	√	5	√
QC	Région des Terres-Cries-de-la-Baie-James	...		...	73.9	×	65.9	√ ×	...		...		...		...		...		...		...	
SK	Northern Health Services Branch	16	30.7	424	73.3	×	62.5	×	15		33	×	22	×	22		24	×	22		...	
MN	Burntwood and Churchill	16	31.5	506	72.9	×	62.4	×	15		35	×	26	×	27		24	×	19	√	6	
NU	Nunavut	19	37.8	707	69.8	×	62.9	×	16		48	× ×	28	×	30	×	18		16	√	4	√
QC	Région du Nunavik	...		...	65.4	× ×	61.0	×	...		...		...		...		...		...		...	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
Estimates for peer group C based on CCHS data exclude Région des Terres-Cries-de-la-Baie-James and Région du Nunavik since CCHS data were not collected in these health regions.
The questions on depression were not asked in the Northern Health Services Branch in Saskatchewan.
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.
··· Not applicable

Peer group D

The health regions in peer group D are mostly from Canada's eastern provinces. The unemployment rate in these regions is high, and average personal income is low. Most residents tend to live in these communities for long periods of time, as indicated by the low inter-municipality migration rate.

Peer group D falls behind Canada in terms of most of the health indicators considered (Table 6). Life expectancy is lower than the Canadian average, the DFLE ranks as the second lowest among the 10 peer groups, and a higher percentage of residents in this peer group rate their health as fair or poor, than Canadians as a whole. Residents of the health regions of peer group D tend to have poor health behaviours. The daily smoking rate, the obesity rate, the infrequent exercise rate, and the heavy drinking rate are all significantly higher than the Canadian rates. At 28%, the rate of infrequent exercise is the highest of the 10 peer groups. Similar to peer group C, peer group D does better when it comes to pyscho-social factors. Peer group D has the second lowest depression rate among the 10 peer groups and is tied with peer group C for the lowest stress rate.

The Bathurst region in New Brunswick (Region 6) has the highest life expectancy in peer group D, more than 2 years greater than the overall average for the peer group. It is the only health region within peer group D with a life expectancy higher than the Canadian average. However, the health behaviour rates for Bathurst are not significantly different than the overall rates for peer group D.

The health region within peer group D that distinguishes itself with regard to health behaviours is Région de la Gaspésie-Îles-de-la-Madeleine, Québec. In this health region, residents are less likely to be obese, less likely to be infrequent exercisers, and less likely to drink heavily than residents of peer group D as a whole. The DFLE for Gaspésie is greater than the DFLE for peer group D, but life expectancy is approximately the same.

The health region in peer group D with the lowest life expectancy is the Cape Breton region in Nova Scotia (Zone 5). Life expectancy in Cape Breton is 0.9 years less than that for peer group D and 2.2 years less than the Canadian average. DFLE in Cape Breton is very low, at 61.8 years, lagging 4.7 years behind peer group D and 6.8 years behind the Canadian

Table 6
Comparison of peer group D health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP D	624	100.0	6,123	77.0	×	66.5	×	15	×	26	×	21	×	28	×	20	×	19	√	6	√
NB	Region 6 (Bathurst)	75	12.1	681	79.1	√	67.1	×	17	×	20		17		31	×	18		23		6	
NF	Grenfell Regional Health Services Board	14	2.2	335	78.3		70.8	√	14		25		27	×	33	×	21		15	√	5	
NF	Health and Community Services Central Region	90	14.5	711	77.7	×	69.2	√	13		25		27	×	29	×	21		11	√	5	√
NB	Region 7 (Chatham)	41	6.6	481	77.7		65.9	×	18	×	27		25	×	35	×	16		19	√	5	
NB	Region 5 (Campbellton)	27	4.3	478	77.4		63.4	×	20	×	29	×	22	×	24		20		25		6	
NF	Health and Community Services Western Region	75	12.0	623	77.3	×	67.8	√	13		28	×	18		31	×	20		17	√	5	
QC	Région de la Gaspésie-Îles-de-la-Madeleine	85	13.7	1,184	76.9	×	68.8	√	13		31	×	15	√	23	√	15	√	21	√	6	
NF	Health and Community Services Eastern Region	104	16.6	810	76.3	×	67.0	×	13		25		23	×	28	×	23	×	14	√	4	√
NS	Zone 5 (Cape Breton)	112	18.0	820	76.1	×	61.8	×	15		26	×	23	×	27	×	25	×	25	×	10	×

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

average. When DFLE is compared with life expectancy, it becomes apparent that Cape Breton residents can expect to spend 14.3 years living with disability, the longest period for any health region across the country. However, health behaviours in Cape Breton do not stand out as being particularly poor. There are no significant differences in health behaviour rates between Cape Breton and peer group D as a whole. On the other hand, Cape Breton does not fare well when it comes to pyscho-social factors. The stress and depression rates for Cape Breton are the highest of the 9 health regions in peer group D.

Peer group E

For the most part, peer group E consists of rural health regions predominantly from the Prairie provinces. This is the peer group with the highest percentage of people aged 65 or older. Average income is low.

Life expectancy in peer group E is half a year less than the Canadian average (Table 7). DFLE also falls behind the Canadian average, and a higher percentage of residents report fair or poor health. These inferior health outcome measures are coupled with unhealthy lifestyles. The obesity rate in peer group E is the second worst of the 10 peer groups, at 22%; 9 of the 13 health regions in peer group E have obesity rates significantly higher than the Canadian average. The smoking rate and the heavy drinking rate are also higher than the Canadian rates. Conversely, the percentage of the population reporting high levels of stress is lower than the Canadian rate.

The Kentville region in Nova Scotia (Zone 2), has the highest life expectancy (79.3 years) of all health regions in peer group E. At the same time the DFLE for Kentville (66.0 years) is lower than the average for peer group E. Taken together, these measures mean that Kentville residents can expect to live for 13.3 years with a disability, which ranks this health region third highest in the country in terms of number of expected years of disability.

Table 7
Comparison of peer group E health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP E	672	100.0	10,535	77.8	×	67.0	×	14	×	26	×	22	×	22		19	×	22	√	7	
NS	Zone 2 (Kentville)	70	10.5	711	79.3	√ √	66.0	× ×	14		24		20	×	19		17		25		9	
PEI	Rural Health Region	62	9.2	2,262	79.1	√ √	68.8	√	12		24	×	21	×	24		16		18	√ √	5	√
SK	Moose Jaw Service Area	47	6.9	758	78.7		68.2	√	11		23		19		27		20		23		4	√
SK	Melfort Service Area	35	5.2	758	78.6		69.3	√	12		22		21	×	24		17		19	√	5	
SK	Prince Albert Service Area	56	8.4	658	78.4		67.2	×	13		29	×	26	×	19		20		22		6	
SK	Yorkton Service Area	49	7.3	633	78.3		68.5	√	16	×	26		24	×	29	× ×	16		28		6	
MN	Marquette	30	4.4	637	77.9		69.3	√	10		18	√	22	×	26		19		25		6	
NS	Zone 1 (Yarmouth/South Shore)	108	16.1	956	77.5	×	65.4	× ×	16	×	29	×	27	×	24		21	×	21	√	9	
MN	Parkland	34	5.0	614	77.4	×	67.7	×	18	×	21		25	×	18		24	×	18	√	4	√
ON	Muskoka-Parry Sound Public Health Unit	72	10.7	763	77.3	×	66.0	× ×	12		27	×	16	√	15	√ √	19		27		6	
SK	North Battleford Service Area	49	7.2	730	77.3	×	66.9	×	13		31	×	21	×	21		21		22		7	
MN	South Westman	29	4.3	550	77.2	×	69.3	√	10		17	√	17		25		17		19	√	6	
ON	Timiskaming Public Health Unit	32	4.7	505	75.9	× ×	63.3	× ×	15		33	× ×	18		14	√ √	18		23		9	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

PEI's Rural Health Region has the second highest life expectancy among the health regions in peer group E. It also has a higher DFLE than peer group E as a whole. Health behaviours for rural PEI are approximately equal to the overall rates for peer group E. However the stress rate is quite low, at 18%, significantly lower than the stress rate for peer group E (22%).

Timiskaming, Ontario, has both the lowest life expectancy and the lowest DFLE in peer group E. Life expectancy in Timiskaming is 1.9 years short of the life expectancy for peer group E as a whole, and DFLE is 3.7 years shorter than the DFLE for the peer group. The daily smoking rate in Timiskaming, 33%, is the highest smoking rate for all health regions in peer group E and the fifth highest smoking rate in the country. Timiskaming residents compare favourably when it comes to exercise: the infrequent exercise rate for Timiskaming is the lowest among all health regions in peer group E.

Peer group F

Peer group F encompasses many of Canada's northern communities, primarily from the west. Approximately one-sixth of the population of the health regions in peer group F is Aboriginal.

Life expectancy in peer group F is the second lowest among the 10 peer groups (Table 8). Nine of the 13 health regions in peer group F have life expectancies significantly lower than the Canadian average. DFLE also lags behind, 11 of the regions having DFLEs significantly less than the Canadian average. Peer group F does not fare well when it comes to health behaviours. The daily smoking rate, the obesity rate, and the heavy drinking rate are all higher than the Canadian average. However, this is not the case for exercise. The infrequent exercise rate for peer group F is significantly lower than the Canadian rate and is the second lowest among the 10 peer groups.

In terms of life expectancy, the Northwestern Regional Health Authority in Alberta and Norman, Manitoba, are the best and the worst health regions,

respectively, in peer group F. Northwestern residents can expect to live 3.3 years longer than the average for peer group F and 5.4 years longer than the residents of Norman. Heavy drinking is inversely related to these life expectancies: the Northwestern Regional Health Authority has the lowest heavy drinking rate in peer group F (14%), whereas Norman has the highest (30%) (this is also the highest heavy drinking rate in the country). The obesity rates for both of these health regions are higher than the rate for peer group F. This finding might be expected for Norman, given its low life expectancy. However, the very high rate for the Northwestern Regional Health Authority (the highest obesity rate in the country) is surprising, given the high life expectancy for this health region.

The Région du Nord-du-Québec has the highest DFLE in peer group F, 2 years longer than the average for the peer group as a whole. The other notable measure for the Région du Nord-du-Québec is the depression rate (4%), which is significantly lower than the depression rate for peer group F and the second lowest depression rate in the country.

The Northwest Territories has the worst health behaviour rates in peer group F. It has the highest daily smoking rate and the highest infrequent exercise rate in the peer group, and the obesity and heavy drinking rates are both above the overall peer group rates. However, the same is not true for the three health outcome measures. The Northwest Territories is in line with peer group F in terms of life expectancy, DFLE, and the percentage of the population reporting fair or poor health. This may be partially attributable to the economic situation in the Northwest Territories relative to peer F. The average income for residents of the Northwest Territories is higher than the overall average for peer group F (data not shown). It should be noted however, that the Northwest Territories lags behind Canada for all three health outcome measures.

Table 8
Comparison of peer group F health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP F	515	100.0	8,615	76.7	×	66.7	×	13	×	25	×	19	×	18	√	21	×	22	√	8	×
AB	Northwestern Regional Health Authority	10	2.0	341	80.0	√	67.7		18		21		34	× ×	25		14	√	23		7	
BC	North West	62	12.1	650	77.9	√	67.1	×	11		22		20		13	√ √	19		16	√	7	
AB	Mistahia Regional Health Authority	73	14.2	799	77.5	×	66.6	×	12		26	×	18		20		18		29	×	10	
BC	Peace Liard	51	9.9	611	77.5		67.4	×	12		22		18		17		23	×	22		7	
QC	Région du Nord-du-Québec	14	2.8	655	76.9		68.7	√	11		28	×	17		19		18		21	√	4	√ √
BC	Northern Interior	104	20.3	859	76.8	×	66.8	×	14		25		15		16	√	20		22		10	
NT	Northwest Territories	32	6.3	1,001	76.8	×	67.0	×	17	×	35	× ×	27	× ×	32	× ×	29	× ×	24		9	
BC	Cariboo	60	11.6	673	76.7	×	66.5	×	15		21		16		13	√	21		24		11	×
AB	Northern Lights Regional Health Authority	33	6.4	605	75.8	×	66.3	×	13		28	×	19		23		23	×	23		6	
YT	Yukon Territory	25	4.8	809	75.7	×	66.9	×	11		26	×	17		16	√	23	×	19	√	9	
NF	Health Labrador Corporation	20	3.9	499	74.9	×	66.3	×	13		32	×	24	×	23		26	×	13	√ √	5	
AB	Keeweetinok Lakes Regional Health Authority	16	3.0	556	74.8	× ×	64.4	× ×	19	×	32	× ×	22	×	24		18		24		8	
MN	Norman	15	2.9	557	74.6	× ×	65.1	× ×	16		21		27	× ×	12	√ √	30	× ×	15	√ √	8	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*

Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*

In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.

In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.

† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Peer group G

Like peer group E, peer group G is made up mostly of rural health regions from the Prairie provinces. It has a low level of unemployment and a low percentage of people with incomes below the low-income cut-off (see Appendix Table A definitions).

Life expectancy and DFLE for peer group G are both slightly lower than the national average, but within the peer group, the data are highly variable (Table 9). Of the total of 21 health regions, 3 have life expectancies significantly greater than the Canadian average, whereas 6 have life expectancies that are significantly lower than the national average. For 3 of the 21 health regions, DFLE is significantly greater than for Canada as a whole, and for 9, DFLE is significantly lower. The percentage of residents who smoke daily is slightly above the Canadian rate. The obesity and heavy drinking rates are moderately high. Nine health regions in peer group G have obesity rates significantly higher than that of Canada as a whole, and 7 regions have heavy drinking rates higher than Canada's. The infrequent exercise rate for peer group G is slightly better than the Canadian rate.

Swift Current Service Area, in Saskatchewan, has the highest life expectancy in peer group G, 2 years greater than the overall estimate for the peer group. Swift Current also has the greatest DFLE in peer group G and is the only health region in peer group G for which the percentage of people reporting fair or poor health is significantly lower than the Canadian rate.

Table 9
Comparison of peer group G health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%			P C		P C		P C		P C		P C		P C		P C		P C		P C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP G	1,355	100.0	14,385	77.9	×	67.5	×	12		23	×	20	×	20	√	20	×	24	√	8	
SK	Swift Current Service Area	38	2.8	492	79.9	√ √	70.8	√ √	8	√	22		20		19		22		24		6	
MN	South Eastman	43	3.2	749	79.3	√ √	69.3	√	12		18	√	19		29	× ×	11	√ √	20	√	4	√ √
SK	Weyburn Service Area	46	3.4	605	79.1	√	69.4	√ √	12		23		20		25		20		23		3	√ √
AB	Palliser Health Authority	78	5.7	726	79.1	√ √	68.7	√	10		24		17		19		18		23		7	
MN	Central	76	5.6	827	79.0	√	68.9	√	10		17	√ √	19		28	× ×	12	√ √	25		5	√ √
AB	Aspen Regional Health Authority	74	5.5	761	78.8	√	67.7	×	14		26		20	×	22		24	×	22		7	
BC	East Kootenay	69	5.1	645	78.8	√	68.3		12		23		19		13	√ √	23	×	23		9	
ON	Perth Public Health Unit	63	4.6	722	78.7		68.6	√	11		20		14	√	23		19		18	√ √	6	
SK	Rosetown Service Area	39	2.9	506	78.6		70.4	√ √	11		23		21		25		22		26		9	
AB	East Central Health Authority	86	6.3	802	78.6		68.2		11		29	× ×	22	×	24		23	×	26		10	
ON	Huron Public Health Unit	51	3.8	520	78.5		68.2		12		17	√	18		13	√ √	21		26		6	
AB	David Thompson Regional Health Authority	163	12.0	973	78.3		67.2	×	12		24		20	×	18	√	22	×	25		11	×
ON	Renfrew Public Health Unit	83	6.1	722	78.0		65.5	× ×	17	× ×	25		21	×	14	√ √	15		26		6	
AB	Chinook Regional Health Authority	121	8.9	890	77.7	×	67.4	×	13		22		20	×	21		16		27		10	
AB	Health Authority #5	43	3.2	623	77.7		68.1		10		24		17		22		17		22		5	
MN	North Eastman	30	2.2	522	77.6		68.3		12		19		22	×	20		20		24		6	
MN	Interlake	61	4.5	762	77.3	×	67.4	×	12		24		26	× ×	20		26	× ×	29		6	
AB	Lakeland Regional Health Authority	85	6.2	814	77.0	× ×	66.0	× ×	12		26	×	20	×	18		18		23		9	
AB	Peace Regional Health Authority	18	1.3	433	74.9	× ×	63.8	× ×	15		26		18		19		23	×	24		8	
AB	Crossroads Regional Health Authority	34	2.5	581	74.8	× ×	64.3	× ×	14		25		20		18		21		25		8	
ON	Northwestern Public Health Unit	56	4.1	710	74.3	× ×	63.9	× ×	13		23		21	×	17	√	22	×	23		8	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*

Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*

In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.

In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.

† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Three health regions in peer group G have particularly low depression rates: 4% for South Eastman, Manitoba, 3% for Weyburn Service Area, Saskatchewan, and 5% for Central, Manitoba. These rates are all significantly lower than the 8% rate for peer group G. These three health regions compare favourably to peer group G on a number of other measures. All three have life expectancies and DFLEs greater than the peer group average. South Eastman and Central have the lowest heavy drinking rates in peer group G (11% and 12%, respectively). They are the only two health regions in peer group G with lower heavy drinking rates than the Canadian average (16%) and considerably lower than the overall rate for peer group G (20%). The daily smoking rates for these two health regions (18% and 17%, respectively) are also much lower than the 23% for peer group G.

Peer group H

Half of the 22 health regions in peer group H are in Québec, and most of the others are in provinces bordering Québec. Peer group H is characterized by low population growth and high to moderate unemployment.

Table 10
Comparison of peer group H health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes						Health behaviours								Psycho-social factors			
					Life expectancy (years)		Disability-free life expectancy (years)		Fair or poor health (age 12+) %		Daily smoking (age 12+) %		Obese (age 20+) %		Infrequent exercise (age 12+) %		Heavy drinking (age 18+) %		High stress (age 18+) %		Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP H	5,843	100.0	26,371	77.7	×	68.8	√	12		25	×	15		24	×	17		29	×	7	
QC	Région de la Chaudière-Appalaches	331	5.7	1,427	78.3	√	70.2	√√	10		21		13		31	××	15		32	×	5	√
QC	Région de la Montérégie	1114	19.1	2,461	78.2	√	71.1	√√	11		25	×	13		24		16		31	×	6	
NF	Health and Community Services St. John's Region	158	2.7	892	78.1		68.2	×	12		24		17		27	×	24	××	18	√√	5	√
NS	Zone 4 (New Glasgow)	83	1.4	691	78.1		66.1	××	15		20		22	××	21		24	××	22	√	6	
QC	Région du Bas-Saint-Laurent	175	3.0	1,127	78.1		69.4	√√	12		25		12	√	30	××	11	√√	30		5	√
ON	Hamilton Public Health Unit	424	7.2	1,326	78.0	×	66.6	××	15		23		19	××	18	√√	16		30	×	9	
NS	Zone 3 (Truro)	89	1.5	801	77.9		65.6	××	16		25		21	××	19		18		23	√	12	××
QC	Région de Québec	556	9.5	1,653	77.9	×	70.8	√√	9	√√	23		10	√√	23		17		36	××	6	
QC	Région de l'Estrie	244	4.2	1,180	77.9	×	68.9		11		26	×	12	√	27	×	16		28		6	
MN	Winnipeg	536	9.2	2,070	77.9	×	68.0	××	12		21	√	16		25		18		27		8	
NB	Region 2 (Saint John)	149	2.6	915	77.5	×	66.3	××	13		20	√	19		22		17		26		9	
QC	Région de la Mauricie et Centre-du-Québec	408	7.0	1,622	77.4	××	69.4	√√	11		28	×	14		24		17		25	√	7	
QC	Région des Laurentides	395	6.8	1,440	77.3	××	70.0	√√	9	√√	27	×	12		22		15		32	×	7	
QC	Région de l'Outaouais	268	4.6	1,185	77.1	××	68.3	×	16	××	34	××	15		24		15		26		7	
ON	Algoma Public Health Unit	105	1.8	812	77.0	××	64.9	××	17	××	27	×	21	××	20		22	×	26		9	
NB	Region 4 (Edmunston)	46	0.8	583	76.8	××	64.7	××	20	××	24		19		28	×	16		31		8	
QC	Région du Saguenay-Lac-Saint-Jean	242	4.1	1,122	76.8	××	69.3	√√	9		28	×	12		28	×	20		25		6	
ON	Sudbury Public Health Unit	166	2.8	979	76.7	××	64.2	××	17	××	28	×	18		21		23	××	23	√	8	
QC	Région de la Côte-Nord	78	1.3	1,098	76.6	××	69.7	√√	13		31	××	19	××	23		21	×	19	√√	6	
ON	North Bay Public Health Unit	78	1.3	979	76.6	××	63.6	××	15		24		19		19	√	20		24	√	9	
ON	Porcupine Public Health Unit	75	1.3	755	76.5	××	64.1	××	18	××	25		24	××	20		22	××	25		6	
QC	Région de l'Abitibi-Témiscamingue	124	2.1	1,253	76.4	××	67.7	××	13		28	×	13		19	√	21	×	28		5	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Life expectancy in peer group H lags behind the Canadian average by 0.6 years, and 16 of the 22 health regions have life expectancies significantly lower than the Canadian level (Table 10). However, the DFLE is slightly greater than the Canadian average. This may be due in part to the large number of health regions in peer group H that are in Québec. Eight of the health regions in peer group H, all located in Québec, have DFLEs significantly greater than the Canadian average. In general, DFLEs in the province of Québec are the highest in the country and the DFLEs of 11 of the 18 health regions in Québec are in the top quartile of health regions in Canada.[21] This may in part be attributable to Québec's relatively low rates of arthritis, a major cause of activity limitation and disability. On the basis of CCHS data, of the 10 provinces, Québec has the lowest prevalence rate for arthritis (11%), 4 percentage points lower than the Canadian rate (15%).

The smoking rate in peer group H is higher than the Canadian rate (25% versus 22%), and 10 of the 22 regions have a rate significantly higher than that of Canada. There are no health regions in peer group H where the smoking rate is significantly lower than the rate for all of Canada. The percentage of residents in the health regions of peer group H reporting high stress levels is the highest among the 10 peer groups.

In terms of life expectancy, the two extremes within peer group H are both found in the province of Québec. The Région de la Chaudière-Appalaches has the highest life expectancy, at 78.3 years, identical with the Canadian average. The Région de l'Abitibi-Témiscamingue has the lowest life expectancy, lagging 1.9 years behind Chaudière-Appalaches. Surprisingly, Chaudière-Appalaches has the worst infrequent exercise rates in peer group H (31%), whereas Abitibi-Témiscamingue has one of the best rates (19%). Although the smoking and heavy drinking rates for Abitibi-Témiscamingue are not significantly different from the rates for peer group H, they are both significantly higher than the Canadian rates.

The Truro health region in Nova Scotia (Zone 3) is the only health region in peer group H with a depression rate higher than the Canadian average, and it has the second highest depression rate in the country (12%). The obesity rate for Truro is 6 percentage points higher that the overall rate for peer group H (21% versus 15%), and the DFLE is 3.2 fewer years than the DFLE for the overall peer group. However, Truro residents compare favourably when it comes to stress. Truro's stress rate is 6 percentage points lower than the rate for peer group H (23% versus 29%).

Peer group I

For the most part, peer group I consists of smaller urban centres and surrounding areas. Just over half of the health regions in peer group I are located in Ontario. A high percentage of residents commute to nearby urban centres for work. Among the 10 peer groups, peer group I ranks third in terms of the proportion of the population who are 65 or older.

Life expectancy in peer group I is 78.3 years, exactly the same as the Canadian average (Table 11). The DFLE lags behind the Canadian average by 1 year, and 26 of the 34 health regions have a DFLE significantly below the Canadian average. The smoking rate, the obesity rate, and the heavy drinking rate are all slightly higher than the corresponding Canadian rates. Peer group I compares well with all of Canada when it comes to exercise. The infrequent exercise rate is better than the Canadian average for 15 of the health regions in this peer group.

The two health regions in peer group I with the highest life expectancies are both in British Columbia: South Okanagan Similkameen and Capital. South Okanagan Similkameen ranks in the top 5 health regions in Canada with respect to life expectancy (80.3 years). In both of these health regions, DFLE is significantly greater than the average for peer group I. Furthermore, DFLE for both health regions is higher than the Canadian average. This finding is contrary to the general trend for peer group I, for which the overall DFLE is lower than the Canadian average. The favourable life expectancy and DFLE figures in these two health regions are associated with better than average health behaviours, particularly in the case of Capital. The infrequent exercise rates for both of these regions are lower than the overall rates for peer group I. Moreover, Capital has the lowest obesity rate and its tied with North Okanagan, British Columbia for the lowest daily smoking rate for peer group I.

The Région de Laval, Québec, has the best DFLE in peer group I and ranks third in Canada. The obesity rate, the heavy drinking rate, and the depression rate for Laval all compare favourably with the averages for peer group I.

Kent-Chatham Public Health Unit, Ontario, has both the lowest life expectancy and the lowest DFLE in peer group I. The heavy drinking rate for Kent-Chatham is high, at 23%, 5 percentage points higher that the rate for peer group I and 7 percentage points higher than the Canadian rate.

Table 11
Comparison of peer group I health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Disability-free life expectancy (years)		Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Obese (age 20+) %		Infrequent exercise (age 12+) %		Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP I	6,001	100.0	34,622	78.3		67.6	×	12		23	×	17	×	19	√	18	×	26		8	×
BC	South Okanagan Similkameen	196	3.3	1,063	80.3	√ √	69.1	√ √	13		22		13		13	√ √	20		23		10	×
BC	Capital	283	4.7	1,225	79.6	√ √	69.5	√ √	12		16	√ √	10	√ √	9	√ √	18		24		10	×
MN	Brandon	39	0.7	676	79.3	√ √	67.8		13		21		18		18		25	× ×	22		6	
SK	Saskatoon Service Area	232	3.9	1,274	78.9	√ √	68.3	√	12		22		19	×	22		19		27		10	
BC	North Okanagan	99	1.7	890	78.9	√	67.4	×	11		16	√ √	14		17	√	14		23		7	
NB	Region 1 (Moncton)	158	2.6	985	78.8	√	68.1	×	16	×	25		22	× ×	21		21	×	23		11	×
ON	Waterloo Public Health Unit	378	6.3	1,304	78.8	√ √	68.6	√	12		22		17		24	×	18		26		7	
QC	Région de Laval	297	5.0	1,045	78.7	√	72.0	√ √	10		22		13	√	28	× ×	9	√ √	32	× ×	5	√ √
BC	Fraser Valley	196	3.3	1,125	78.6		67.4	×	14		21		16		15	√ √	18		30		12	× ×
ON	Middlesex-London Public Health Unit	349	5.8	1,282	78.4		67.0	× ×	10		18	√	16		19		18		30		6	
ON	Peterborough Public Health Unit	109	1.8	842	78.4		66.9	× ×	12		19		15		11	√ √	21	×	24		5	√
BC	Central Vancouver Island	203	3.4	1,077	78.4		67.5	×	11		24		15		14	√ √	22	×	26		9	
ON	Lambton Public Health Unit	109	1.8	866	78.3		67.7	×	14		24		20	×	20		24	× ×	23		6	
ON	Niagara Public Health Unit	362	6.0	1,275	78.3		67.3	× ×	12		22		17		19		18		27		8	
SK	Regina Service Area	199	3.3	1,171	78.3		68.4	√	13		24		18		21		21	×	28		7	
ON	Haliburton-Kawartha-Pine Ridge Public Health Unit	145	2.4	967	78.2		67.2	×	12		24		17		14	√ √	19		24		9	
ON	Kingston-Frontenac-Lennox and Addington Public Health Unit	149	2.5	938	78.1		66.8	× ×	11		21		16		16	√	17		28		9	
ON	Oxford Public Health Unit	86	1.4	713	78.0		67.0	× ×	9	√	23		22	× ×	15	√ √	17		25		7	
NS	Zone 6 (Halifax)	325	5.4	1,340	77.9	× ×	66.8	× ×	12		22		19		20		21	×	22	√ √	8	
BC	West Kootenay-Boundary	71	1.2	705	77.9		66.8	× ×	17	× ×	22		15		14	√ √	20		26		13	× ×
NB	Region 3 (Fredericton)	137	2.3	873	77.8	×	66.8	× ×	15		25		21	×	26	×	14	√	19	√ √	6	
ON	Bruce-Grey-Owen Sound Public Health Unit	134	2.2	860	77.8	×	67.2	×	13		22		17		29	× ×	21	×	22		6	
ON	Haldimand-Norfolk Public Health Unit	93	1.6	723	77.8		66.8	× ×	16	×	26		19		19		19		21	√	8	
ON	Windsor-Essex Public Health Unit	325	5.4	1,250	77.8	× ×	66.6	× ×	15	×	22		19	×	23		17		26		8	
ON	Brant Public Health Unit	106	1.8	756	77.6	× ×	65.9	× ×	13		26		18		16	√	16		29		...	
QC	Région de Lanaudière	331	5.5	1,494	77.5	× ×	69.8	√ √	11		29	× ×	14		21		12	√ √	28		7	
ON	Hastings and Prince Edward Public Health Unit	133	2.2	889	77.4	× ×	65.5	× ×	12		25		17		23		20		28		6	
ON	Eastern Ontario Public Health Unit	163	2.7	982	77.3	× ×	65.6	× ×	12		29	× ×	21	×	16	√	18		26		6	
BC	Thompson, British Columbia	110	1.8	982	77.3	× ×	66.2	× ×	14		21		15		17	√	21	×	26		7	
ON	Leeds-Grenville-Lanark Public Health Unit	138	2.3	901	77.2	× ×	66.5	× ×	12		26	×	20	×	17	√	21	×	26		9	
ON	Elgin-St Thomas Public Health Unit	70	1.2	742	77.1	× ×	65.7	× ×	11		25		16		24	×	15		23		7	
PE	Urban Health Region	54	0.9	1,389	77.0	× ×	66.3	× ×	13		26	×	15		24	×	19		19	√ √	7	
ON	Thunder Bay Public Health Unit	130	2.2	959	76.7	× ×	65.5	× ×	15		24		19	×	16	√	22	×	26		7	
ON	Kent-Chatham Public Health Unit	93	1.6	1,059	76.6	× ×	64.9	× ×	11		25		20	×	23		23	× ×	23		6	

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*

Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
The questions on depression were not asked in the Brant Public Health Unit, Ontario.
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.
-- Not applicable

Table 12
Comparison of peer group J health regions, selected characteristics

		CCHS population†		CCHS sample size	Health outcomes: Life expectancy (years)		Health outcomes: Disability-free life expectancy (years)		Health outcomes: Fair or poor health (age 12+) %		Health behaviours: Daily smoking (age 12+) %		Health behaviours: Obese (age 20+) %		Health behaviours: Infrequent exercise (age 12+) %		Health behaviours: Heavy drinking (age 18+) %		Psycho-social factors: High stress (age 18+) %		Psycho-social factors: Depression (age 12+) %	
		'000	%		P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C
	Canada	25,802		131,535	78.3		68.6		12		22		15		22		16		26		7	
	PEER GROUP J	1,568	100.0	7,866	78.8	√	68.8	√	11	√	22		16		17	√	18	×	24		8	
AB	Westview Regional Health Authority	77	4.9	648	80.4	√ √	68.1		12		24		20	×	14	√	13		22		9	
ON	Halton Public Health Unit	321	20.5	1,257	80.1	√ √	71.1	√ √	9	√	19		15		18	√	20	×	26		8	
ON	Wellington-Dufferin-Guelph Public Health Unit	204	13.0	1,170	78.8	√	69.4	√ √	9	√	21		18		17	√	16		28		7	
AB	Headwaters Health Authority	63	4.0	701	78.5		69.5	√	7	√	22		16		15	√	21	×	23		8	
BC	Coast Garibaldi	63	4.0	623	78.4		68.2		10		16	√	13		10	√ √	22	×	24		8	
ON	Durham Public Health Unit	428	27.3	1,383	78.3	×	68.1	× ×	12		23		16		19		15		24		7	
ON	Simcoe Public Health Unit	317	20.2	1,338	78.1	×	67.2	× ×	13		25		18		17	√	20	×	23		9	
BC	Upper Island/Central Coast	95	6.1	746	77.9	×	67.9	× ×	11		18		14		10	√ √	20		22		12	×

Data source: *Estimates of life expectancy and disability-free life expectancy are based on 1996 Census of Population, Canadian Vital Statistics Database, and population projections from Demography Division. Other estimates, as well as population counts and sample sizes, are based on 2000/01 Canadian Community Health Survey (CCHS) (see Annex).*
Notes*: The ordering of health regions is based on life expectancy, from highest to lowest. All estimates based on CCHS data have been age-standardized.*
In column P, √ indicates that health region estimate is significantly better than peer group estimate; in column C, √ indicates that health region or peer group estimate is significantly better than Canadian estimate.
In column P, × indicates that health region estimate is significantly worse than peer group estimate; in column C, × indicates that health region or peer group estimate is significantly worse than Canadian estimate.
† Because of rounding, detail may not add to total population. Percentages were calculated using unrounded data.

Peer group J

Peer group J consists mostly of sub-metropolitan health regions. Population growth in these health regions is high. Correspondingly, a relatively high proportion of residents in these health regions lived in a different municipality 5 years previously. The unemployment rate in peer group J is low, and the average level of education is high.

Peer group J is tied with peer group A for the second highest life expectancy of the 10 peer groups, half a year longer than the Canadian average (Table 12). The estimates for DFLE and the percentage of the population in fair or poor health are both slightly better than the Canadian averages. Estimates for health behaviours are similar to Canadian rates, with the exception of exercise, for which peer group J fares better. Peer group J has the lowest infrequent exercise rate among the 10 peer groups. Seven of the 8 health regions within peer group J have significantly better exercise rates than the Canadian average.

Upper Island/Central Coast in British Columbia is the health region in peer group J with the lowest life expectancy. Its DFLE also lags behind the DFLE for peer group J. The depression rate for this health region is high, at 12%, which is 5 percentage points higher than the Canadian rate; this is one of the highest depression rates in Canada.

Concluding remarks

In Canada, most public health programs are administered at the municipal or community level. Throughout the 1990s, there was a growing trend in most provinces toward the devolution of health care responsibilities to sub-provincial regions. The goal was to make health care services and programs more responsive to local needs.[30] Whether or not this regionalization of responsibilities has resulted in improvements to community-based services has not yet been adequately assessed. More information and analysis are required at the community level to make such an assessment.

Comparisons of health outcome measures at the peer group level show clearly that socio-demographic factors are associated with health status. People living in large metropolitan areas and urban centres, where education levels are high (e.g., peer groups A and B), have the highest life expectancies and DFLEs in all of Canada. At the other end of the continuum, people

living in remote northern communities, where education levels are low and a large percentage of the population is Aboriginal (e.g., peer groups C and F), have the lowest life expectancies and DFLEs.

The links between health outcomes and risk factors are evident. Particularly high or particularly low life expectancies or DFLEs within a peer group often go hand in hand with estimates of various risk factors. For example, communities such as Richmond, British Columbia (peer group A), and North Shore, British Columbia (peer group B), that distinguish themselves within their respective peer groups by having long life expectancies and DFLEs also have low risk factor estimates. In contrast, Norman, Manitoba (peer group F), and Montréal (peer group A) have lower life expectancies than the other health regions in their peer groups and higher estimates for key risk factors.

In general, high life expectancies are associated with low rates of daily smoking and heavy drinking (see *Links between health outcomes and risk factors at the health region level*). Among the risk factors examined, a high obesity rate, a high smoking rate, and a high depression rate were the strongest predictors of a low DFLE. These relationships persisted even with adjustment for socio-demographic factors. At the same time, a number of health regions stand out as paradoxical, for example with both relatively good health outcomes and high prevalences of risk factors.

Many factors influence health at the community level. The present analysis is a first step in exploring some of these factors. Further analysis is needed to understand the patterns presented, including the more paradoxical health regions. The CCHS collects information on a range of health issues, many more than have been used in this overview. This information should be valuable to health region administrators, provincial health ministries, and researchers as they design and monitor programs to promote and improve health in their communities.

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Appendix

Table A
Estimates of socio-demographic characteristics and relative rankings of these characteristics at the peer group level

	Aboriginal		Visible minority		Unemployment		1996 Population		Population ≥ 65		Income inequality	
Rank	Peer	%	Peer	%	Peer	%	Peer	'000	Peer	%	Peer	%
1	C	75.5	A	32.0	D	27.7	I	6,973	E	16.5	J	24.4
2	F	17.2	B	20.2	C	17.2	H	6,883	A	13.6	F	23.6
3	E	7.5	J	5.7	F	11.4	A	5,159	I	13.5	G	23.5
4	G	6.8	I	4.5	A	11.3	B	4,887	G	12.9	B	23.2
5	I	2.5	F	3.5	H	11.2	J	1,739	D	12.1	I	22.9
6	H	2.1	H	3.1	E	10.5	G	1,642	H	11.8	E	22.8
7	D	2.1	G	1.8	I	9.4	E	830	J	10.6	D	22.4
8	J	1.8	E	1.1	B	7.8	D	770	B	9.3	C	22.2
9	B	1.5	C	0.9	J	7.5	F	663	F	5.8	H	22.1
10	A	0.6	D	0.5	G	7.1	C	125	C	3.1	A	18.8
Canada		***2.9***		***11.2***		***10.2***		***29,670***		***12.1***		***22.2***

	Migration mobility		Population < 15		Average dwelling		Population density		House affordability		Own dwelling	
Rank	Peer	%	Peer	%	Peer	$ '000	Peer	No./km²	Peer	%	Peer	%
1	J	24.0	C	35.8	A	236	A	2,936.6	A	35.7	D	79.3
2	F	22.8	F	25.7	B	206	B	331.4	B	27.3	E	76.8
3	G	20.5	G	23.1	J	179	I	93.8	I	25.1	G	76.0
4	I	18.4	J	22.3	I	136	H	84.5	J	25.0	J	74.3
5	B	18.0	B	21.4	F	111	J	83.7	H	24.4	I	69.3
6	C	16.1	E	21.0	G	99	D	7.3	D	19.7	F	69.0
7	E	15.9	I	20.4	H	97	G	5.0	E	18.4	B	67.4
8	H	15.8	H	19.8	C	89	E	5.0	F	18.0	H	64.9
9	A	11.9	D	19.2	E	76	C	3.9	G	17.7	A	43.2
10	D	9.1	A	16.7	D	60	F	0.5	C	13.5	C	38.2
Canada		***16.8***		***20.2***		***152***		***167.7***		***26.2***		***64.4***

	Average school		Employment		LT unemployment		Government transfer		Male–Female ratio		Average income	
Rank	Peer	No. years	Peer	%	Peer	%	Peer	%	Peer		Peer	$ '000
1	A	13.9	G	82.3	D	6.9	D	29.8	C	1.08	B	29.1
2	B	13.9	J	82.0	C	5.7	E	21.6	F	1.08	J	29.0
3	J	13.5	B	81.0	A	5.1	C	18.6	G	1.02	F	27.2
4	I	13.1	I	78.2	H	3.8	H	16.3	J	1.00	A	25.8
5	H	12.8	E	76.8	I	2.9	I	15.1	E	1.00	I	24.7
6	G	12.6	F	76.7	B	2.5	G	14.9	D	0.99	H	23.3
7	F	12.5	H	74.5	J	2.4	A	13.7	B	0.99	G	23.1
8	E	12.3	A	72.9	F	2.3	J	10.8	H	0.98	C	20.1
9	D	11.5	C	65.1	E	2.2	F	10.4	I	0.98	E	20.1
10	C	10.6	D	55.4	G	1.6	B	9.5	A	0.94	D	18.2
Canada		***13.2***		***76.6***		***3.4***		***14.4***		***0.98***		***25.2***

	Low kids		Growth		Low income		Lone parent		MIZ		Recent immigration	
Rank	Peer	%	Peer	%	Peer	%	Peer	%	Peer	%	Peer	%
1	A	37.7	B	4.4	A	30.4	C	20.4	A	100.0	A	52.6
2	D	28.4	J	4.3	D	22.4	A	18.8	B	100.0	B	45.9
3	E	22.0	F	4.1	H	20.0	H	14.9	J	89.4	H	38.4
4	C	22.0	C	4.1	B	18.0	D	14.9	I	85.9	C	37.8
5	H	21.9	A	2.0	E	17.5	I	13.8	H	80.8	D	31.1
6	B	21.2	I	1.9	C	17.2	F	13.7	F	59.6	F	28.5
7	I	19.7	G	1.7	I	16.2	B	13.4	G	38.9	I	27.7
8	G	16.8	H	0.6	G	13.8	J	12.0	D	32.9	J	25.1
9	F	15.2	E	0.3	F	12.7	E	11.8	E	25.8	G	24.4
10	J	13.9	D	-2.1	J	11.6	G	10.4	C	10.8	E	20.5
Canada		***23.3***		***2.1***		***19.6***		***14.6***		***83.1***		***37.1***

Data source: *1996 Census of Population*
Notes: *All estimates at the peer group level are based on the weighted average of the health regions within the peer group. The weight assigned to each health region was the 1996 population for the health region divided by the total population for the peer group. Likewise the estimate for Canada is based on the weighted average of all health regions in the country, based on the 1996 population. The one exception is that estimates for population density were based on unweighted averages.*

Definitions:

Aboriginal: Aboriginal people living in a geographic area as a percentage of the total population.

Visible minority: Population belonging to a visible minority group as a percentage of the total population.

Unemployment: Number of unemployed persons aged 15 or older divided by the total number of persons aged 15 or older participating in the labour force.

1996 population: Estimate of the total number of people living in the health region in 1996.

Population ≥ 65: Proportion of the population aged 65 or older.

I**ncome inequality:** Proportion of total household income in the less well-off 50% of households within a geographic area (that is, the "median share" of income). In a situation of complete inequality, the bottom half receives 0, and the top half 100%, of all income. With total equality, the bottom half of the income distribution receives 50% of the total income and the geographic area then has a median share value of 50%. In this range from 0 to 50%, higher median values indicate more equal income distributions.

Migration mobility: Proportion of the population that lived in a different census subdivision (municipality) at the time of the previous census (1991). Canadians living in households outside Canada, such as military and government personnel, are excluded.

Population < 15: Proportion of the population younger than 15.

Average dwelling: Average expected value of an owner-occupied, non-farm, non-reserve dwelling, including land, at the time of the 1996 Census.

Population density: Number of persons per square kilometre.

House affordability: Proportion of households spending more than 30% of their income on shelter.

Own dwelling: Proportion of dwellings in which the owner lives. Band housing and collective dwellings are excluded from both numerator and denominator.

Average school: Average number of years of schooling (elementary, secondary, university, and non-university) for the population aged 25 to 54.

Employment: Number of employed persons aged 25 to 54 divided by the total number of individuals aged 25 to 54.

LT unemployment (long-term unemployment): Proportion of the labour force aged 15 or older who did not have a job any time during the current or previous year.

Government transfer: Proportion of total income coming from federal programs such as Guaranteed Income Supplement/Old Age Security, Pension Plan, and Employment Insurance.

Male–female ratio: Total number of males in a given health region in 1996 divided by total number of females.

Average income: Average post-transfer, pre-tax personal income from all sources, for people aged 15 or older.

Low kids: Proportion of children under age 18 living in economic families with 1995 incomes below Statistics Canada's low-income cut-offs. Data were not derived for economic families or unattached individuals in the Territories or on Indian Reserves.

Growth: Change in the population size between 1995 and 1997.

Low income: Proportion of persons in economic families and unattached individuals with 1995 incomes below the Statistics Canada low-income cut-off (LICO). The cut-offs represent levels of income where people spend disproportionate amounts of money for food, shelter, and clothing. LICOs are based on family size and degree of urbanization; they are updated to account for changes in the consumer price index. Data were not derived for economic families or unattached individuals in the Territories or on Indian Reserves.

Lone parents: Proportion of lone-parent families, among all census families living in private households.

MIZ (metropolitan influenced zone): Population living in census metropolitan areas (CMAs), census agglomerations (CAs), and communities that fall outside CMAs/CAs in which at least 30% of the employed labour force commutes to the CMAs/CAs. The measure is used to describe the degree of urban influence in the health region. CMAs and CAs are large urban areas, together with adjacent urban and rural areas that have a high degree of economic and social integration with that urban area. CMAs and CAs are defined as urban areas that have attained certain population thresholds: 100,000 for CMAs and 10,000 for CAs.

Recent immigration: Proportion of individuals who came to Canada between 1981 and 1996 among total of immigrants.

Annex

Many analyses presented in this Health Reports Supplement are based on Statistics Canada's Canadian Community Health Survey (CCHS). Data collection for cycle 1.1 of the CCHS began in September 2000 and was conducted over 14 months. The CCHS covers the household population aged 12 or older in all provinces and territories, except persons living on Indian reserves, on Canadian Forces Bases, and in some remote areas.

Cycle 1.1 of CCHS was designed to collect information at the health region level.[1] For administrative purposes, each province is divided into health regions (HR); each territory is designated as a single HR. When cycle 1.1 of the CCHS was designed, there were 139 health regions in Canada. The CCHS combines data collection for the Burntwood and Churchill health regions in Manitoba because of Churchill's small population. There are two remote health regions for which the CCHS does not collect data: the Région du Nunavik and the Région des Terres-Cries-de-la-Baie-James, both in Québec.

The CCHS uses the area frame designed for the Labour Force Survey as its primary sampling frame. A multistage stratified cluster design was used to sample dwellings within the area frame. A list of the dwellings was prepared, and a sample of dwellings was selected from the list. The majority (83%) of the sampled households came from the area frame, and face-to-face interviews were held with respondents randomly selected from households in this frame. In some HRs, a random digit dialling (RDD) and/or list frame of telephone numbers was also used. Respondents in the telephone frames, who accounted for the remaining 17% of the targeted sample, were interviewed by telephone.

In approximately 82% of the households selected from the area frame, one person was randomly selected; two people were randomly chosen in the remaining households. For households selected from the telephone frames, one person was randomly chosen. The response rate was 84.7%. The responding sample size for cycle 1.1 was 131,535. A total of 6.3% of interviews were obtained by proxy.

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