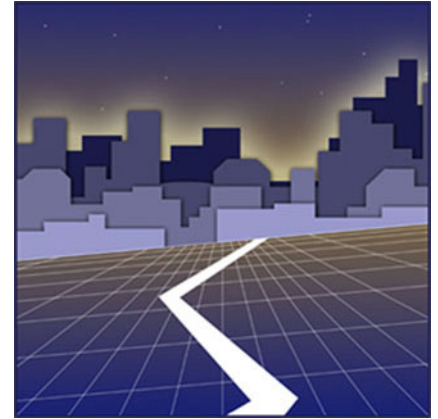## Analytical Paper

**Trends and Conditions in Census Metropolitan Areas**

# Health of Canadians Living in Census Metropolitan Areas

By Jason Gilmore

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*This paper represents the views of the author and does not necessarily reflect the opinions of Statistics Canada.*

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**Trends and Conditions in Census Metropolitan Areas**

This series of reports provides key background information on the trends and conditions in Canadian Census Metropolitan Areas (CMAs) across a number of dimensions. Subjects covered include demographics, housing, immigration, aboriginal persons, low income, economic conditions, health, location of work and commuting mode, and culture. Most reports cover the 1981-2001 period.

The objective of these reports is to provide statistical measures of trends and conditions in our larger metropolitan areas, and neighbourhoods within them. These measures will be available for use in city planning and in policy assessments of what works to create a healthy city.

Statistics Canada has worked on this project in collaboration with the Cities Secretariat of the Privy Council Office, with financial assistance from 14 other departments.

This project is being conducted under the direction of Doug Norris and Garnett Picot at Statistics Canada.

Statistics Canada
Health Statistics Division

**Trends and Conditions in Census Metropolitan Areas**

# *Health of Canadians Living in Census Metropolitan Areas*

Jason Gilmore

**Note of appreciation**

# Table of Contents

# Executive summary

This report is the second of a series that develops statistical measures to shed light on issues of importance for Canada's largest urban areas. Statistics Canada has worked on this project in collaboration with the Cities Secretariat of the Privy Council Office.

The objective is to provide statistical measures on trends and conditions in our larger urban areas and the neighbourhoods within them. These measures will be available for use in city planning and in policy assessments of what works to create a healthy city.

This report paints a statistical picture of health in Canadian Census Metropolitan Areas (CMAs) principally using data for 2000/2001 from the Canadian Community Health Survey (CCHS). This survey provides a wealth of data on Canadians' health status, risk factors, and health care use. Other data on health and health care are also used where appropriate.

## Life expectancy and self-rated health

Canadians enjoy longer life and generally better health than many other industrialized countries. Canada ranked fifth on a list of 22 OECD countries, and had life expectancy of 79.4 years in 2000. This was 2.6 years higher than life expectancy in the U.S. but 1.8 years behind the frontrunner–Japan.

Nevertheless, within Canada, there are large differences in life expectancy among Canada's largest metropolitan areas. Among the 25 CMAs examined in this study, life expectancy was highest in Vancouver (81.1 years) and lowest in Greater Sudbury (76.7). This range observed among CMAs within Canada was nearly as large as the range observed among OECD countries.

CMAs also differ importantly in their level of self-rated health. A number of CMAs from southern and northern Ontario have low proportions of residents with good self-rated health. Conversely, all Quebec CMAs have rates of good self-rated health that are at or above the Canadian average.

## Health behaviours

Vancouver, had the lowest smoking rate among CMAs with fewer than one in six of its population aged 12 and over smoking. Victoria and Toronto had rates of smoking that were significantly below the Canadian average. The highest rates of smoking among CMAs were found in Greater Sudbury and Trois-Rivières where more than 30% of the population, aged 12 and over, smoked.

Vancouver and Toronto also had the lowest rates of heavy drinking among CMAs, where no more than 12% of residents reported heavy drinking. This compares to about 15% in Canada overall, and rates of greater than 20% in Chicoutimi–Jonquière, Thunder Bay, St. John's and Greater Sudbury.

Vancouver and Victoria had the lowest rates of physical inactivity during leisure time of all CMAs with fewer than 40% of those aged 12 and over reporting inactivity during leisure time compared to a rate of about 50% in Canada overall.

**Health conditions**

Victoria, Vancouver, Québec, Montréal and Toronto were all CMAs where the obesity rate was significantly lower than the Canadian average. On average, 15% of Canadians aged 20 to 64 years were considered obese (through an examination of their Body Mass Index), while rates in Vancouver and Victoria were as low as 10%.

The rate of high blood pressure also varied substantially among CMAs, with Vancouver among those with a low rate (10.7%) and Hamilton among those with a high rate (15.4%).

**Psycho-social factors**

Québec (33%) and Montréal (28.9%) had higher rates of life stress than the Canadian average (26.4%). Rates of depression were somewhat varied among CMAs but were not statistically different from the Canadian average.

**Health system-related factors**

The percent of residents with self-perceived unmet health care needs varied among CMAs with Windsor having the highest rate at 18.7%. Vancouver, Toronto and Québec had rates of self-perceived unmet health care needs that were significantly lower than the Canadian average.

There were also large differences in the numbers of general and family practitioners (GPs/FPs) among the CMAs. St. Catharines–Niagara, Windsor and Oshawa had the lowest rates of GPs/FPs per 100,000 (60 to 61), while Victoria (148) and Sherbrooke (161) had the highest rates of GPs/FPs among all CMAs.

**Understanding CMA differences in health outcomes**

CMA differences in health outcomes derive from differences in the health and health care conditions discussed above, as well as from the socio-economic and socio-demographic make-up of the CMA. The data show that CMA life expectancy is negatively correlated with CMA smoking rates, heavy drinking rates, obesity rates and high blood pressure rates, and positively correlated with the share of the population that is a post-secondary graduate, the average family household income in the CMA and the share of the population that were recent immigrants. This is not to say that other factors are unimportant, only that they were not found to be correlated with life expectancy measured at the CMA level in Canada.

# Chapter 1

## Introduction

**H**ealth outcomes often have very striking spatial expressions both across and within countries, even those with well-developed health care systems. Often these differing aggregate health outcomes reflect underlying living conditions in those places. The purpose of this report is to provide an overview of lifestyle-related health behaviours, health conditions, health outcomes and the health care system concerns of residents of Canada's metropolitan areas.

The report draws its results primarily from the Canadian Community Health Survey (CCHS), which gathered information on 25 census metropolitan areas (CMAs) for 2000/2001.[1] This survey provides a wealth of data on Canadians' health status, risk factors, and health care use. Other data on health and health care are also used.

Health indicators are examined at the CMA level. A CMA is formed by one or more adjacent municipalities centred on a large urban area (known as the urban core). The census population count of the urban core must be at least 100,000 to form a census metropolitan area. To be included in the CMA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data. Over 60% of all Canadians live within one of the 25 CMAs examined in this report.

Studying the health of CMA residents paints a picture of one important aspect of the well-being of the majority of Canadians. The paper examines health of Canadians using a simple framework which links health outcomes such as life expectancy, with health behaviours like smoking, health characteristics like stress, health care availability and utilization like the number of doctors in the population, individual characteristics like immigration status, and other indicators of well-being including income and education status (see Appendix B: Relationship of health-related factors). This report explores differences in these measures in the context of Canada's 25 CMAs.

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1. Because the data for the CCHS was based on 1996 Census geography, the new 2001 CMAs of Kingston and Abbotsford were not part of this study.

# Chapter 2

## Health outcomes: Variation among countries and CMAs

**Life expectancy**

Life expectancy at birth is considered to be an important indicator of the health of a population and the life expectancy of Canadians ranks among the highest in the world. In 2000, Canada's life expectancy at birth was tied with Italy for 5th place out of 22 developed Organisation for Economic and Cooperative Development (OECD) countries at 79.4 years (Table 1). Canadians' life expectancy was 1.8 years behind the leader, Japan, but at least 2.5 years ahead of countries such as the United States, Ireland and Denmark.

Health differences between countries often masks considerable variation in health outcomes within countries. Within Canada, life expectancy in 2000 varied from a low of 76.7 years in Greater Sudbury to a high of 81.1 years in Vancouver. This is almost the same gap as between Japan and Ireland.

**Self-rated good or better health**

Self-rated health is considered to be a reliable and valid measure of health within a country and has good predictive power for outcomes like mortality.[2,3,4] Internationally, Canada has one of the highest proportion of citizens with good or better self-rated health out of 18 OECD countries that used similar definitions of self-rated health (see Table 2). However, some caution should be taken when comparing self-rated health across countries, as collection method and cultural tendencies can have an effect on their results. For instance, residents of Japan tend to favour a "central tendency" bias in their responses to self-rated health, claiming excellent or very poor health much less often than good or fair.[5]

Just as was seen for life expectancy, we see variations in self-rated good health across Canada's CMAs (Table 2). (Self-rated good health, as with other indicators coming from the CCHS are presented after adjusting for age differences across CMAs. See Appendix C: Definitions.) Greater Sudbury (83.2%), Thunder Bay (84.2%) and Windsor (84.6%) have among the lowest proportions of the population reporting good-self rated health. In fact, a number of CMAs from southern and northern Ontario have lower proportions of residents with good self-rated health. Conversely, Québec (91.6%) and Chicoutimi–Jonquière (90.6%) have among the highest proportions of people reporting good self-rated health. All Quebec CMAs have rates of good self-rated health that are at or above the Canadian average.

2. Idler, E.L. and Y. Breyamini. 1997. "Self-rated health and mortality: a review of twenty-seven community studies." *Journal of Health and Social Behaviour,* 38(1): 21-37.
3. Kaplan, G.A., D.E. Goldberg, S.A. Everson, R.D. Cohen, R. Salonen, J. Tuomilehto and J. Salonen. 1996. "Perceived health status and morbidity and mortality: evidence from the Kuopio Ischaemic Heart Disease Risk Study." *International Journal of Epidemiology,* 25(2): 259-265.
4. Brazier, J.E., R. Harper, N.M.B. Jones, A. O'Cathain, K.J. Thomas, T. Underwood and L. Westlake. 1992. "Validating the SF-36 Health Survey Questionnaire: new outcome measure for primary care." *British Medical Journal,* 305: 160-164.
5. Organisation for Economic Co-operation and Development (OECD). 2003. *Health at a Glance – OECD Indicators 2003*. Paris: OECD.

**Table 1: Life expectancy at birth, OECD countries and Canadian CMAs, listed from highest to lowest, 2000**

| Selected OECD countries | 2000 | CMAs | 2000 | 95% confidence interval |
|---|---|---|---|---|
| Japan | 81.2 | Vancouver | 81.1 | 80.9 - 81.3 |
| Switzerland | 79.8 | Toronto | 81.0 | 80.8 - 81.1 |
| Iceland | 79.7 | Victoria | 80.9 | 80.4 - 81.3 |
| Sweden | 79.7 | Calgary | 80.0 | 79.6 - 80.3 |
| **Canada** | **79.4** | Edmonton | 79.8 | 79.5 - 80.1 |
| Italy | 79.4 | Québec | 79.8 | 79.4 - 80.1 |
| Australia | 79.3 | Kitchener | 79.7 | 79.2 - 80.1 |
| Spain | 79.1 | Ottawa–Hull | 79.5 | 79.2 - 79.8 |
| France | 79.0 | Montréal | 79.5 | 79.3 - 79.6 |
| Norway | 78.7 | Hamilton | 79.4 | 79.0 - 79.7 |
| Austria | 78.3 | Oshawa | 79.3 | 78.8 - 79.8 |
| New Zealand | 78.3 | Saskatoon | 79.1 | 78.5 - 79.7 |
| Luxembourg | 78.1 | Sherbrooke | 79.1 | 78.3 - 79.8 |
| Netherlands | 78.0 | Halifax | 79.1 | 78.6 - 79.5 |
| United Kingdom | 77.8 | London | 78.8 | 78.3 - 79.2 |
| Belgium | 77.7 | Windsor | 78.6 | 78.1 - 79.1 |
| Finland | 77.6 | Trois-Rivières | 78.6 | 77.8 - 79.3 |
| Denmark | 76.9 | St. Catharines–Niagara | 78.5 | 78.1 - 79.0 |
| United States | 76.8 | Saint John | 78.3 | 77.6 - 79.1 |
| Ireland | 76.7 | Winnipeg | 78.1 | 77.8 - 78.5 |
| Portugal | 76.2 | Regina | 78.0 | 77.3 - 78.6 |
| Czech Republic | 75.1 | Chicoutimi–Jonquière | 77.7 | 76.9 - 78.4 |
| | | St. John's | 77.4 | 76.7 - 78.1 |
| | | Thunder Bay | 77.3 | 76.5 - 78.1 |
| | | Greater Sudbury | 76.7 | 76.0 - 77.4 |

Sources: OECD Health Data 2003 June edition, Statistics Canada, Health Statistics Division (special tabulations).

**Table 2: Good or better self-rated health, selected OECD countries and Canadian CMAs, listed from lowest to highest rate, 2000/01**

| Selected OECD countries with similar definitions | 2001 (%) | CMAs | Age adjusted (%) | 95% confidence interval (%) |
|---|---|---|---|---|
| United States | 88.9 | **CANADA** | **88.0** | 87.7 - 88.2 |
| **Canada** | **88.0** | Québec | 91.6 | 90.1 - 93.2 |
| Iceland | 84.6** | Chicoutimi–Jonquière | 90.6 | 88.6 - 92.7 |
| Australia | 81.9 | Calgary | 90.4 | 88.8 - 91.9 |
| Netherlands | 77.9 | Trois-Rivières | 90.4 | 87.8 - 92.9 |
| Denmark | 77.9 | London | 90.0 | 88.5 - 91.6 |
| Belgium | 77.2 | Montréal | 89.3 | 88.3 - 90.3 |
| United Kingdom | 74.3 | Sherbrooke | 89.2 | 86.9 - 91.5 |
| Sweden | 73.5 | Toronto | 88.3 | 87.3 - 89.2 |
| Spain | 69.8 | St. Catharines–Niagara | 88.2 | 85.9 - 90.6 |
| Finland | 67.1 | Edmonton | 88.1 | 86.6 - 89.7 |
| Mexico | 65.2 | Winnipeg | 88.1 | 86.7 - 89.5 |
| Czech Republic | 62.2** | Victoria | 88.0 | 85.8 - 90.3 |
| Italy | 60.6 | Ottawa–Hull | 88.0 | 86.5 - 89.4 |
| Poland | 46.8 | Saskatoon | 87.9 | 85.5 - 90.3 |
| Hungary | 43.2* | Halifax | 87.9 | 86.0 - 89.9 |
| Japan | 40.6 | Vancouver | 87.7 | 86.8 - 88.6 |
| Korea | 36.6 | St. John's | 87.7 | 85.4 - 89.9 |
| | | Kitchener | 87.6 | 85.7 - 89.5 |
| | | Regina | 87.4 | 84.8 - 90.0 |
| | | Saint John | 87.3 | 84.3 - 90.4 |
| | | Hamilton | 86.8 | 85.2 - 88.5 |
| | | Oshawa | 86.4 | 84.4 - 88.4 |
| | | Windsor | 84.6 | 82.0 - 87.2 |
| | | Thunder Bay | 84.2 | 81.5 - 87.0 |
| | | Greater Sudbury | 83.2 | 80.4 - 85.9 |

Note: * 2000 data, ** 2002 data.
Note: Cultural tendency bias in self-reporting of health may account for some differences between countries. Compare the OECD data with caution.
Source: OECD Health Data, 2003.
Source: Statistics Canada, Canadian Community Health Survey, 2000/01.

# Chapter 3

## Differences in lifestyle factors and health conditions among CMAs

Certain lifestyle behaviours can have serious impacts on one's health and well-being. Health outcomes associated with risky lifestyle choices are generally considered to be improved by changing one's own behaviour, either by one's own initiative or by the presence of laws or public policies that restrict or deter such behaviours. One's own behaviour can also have an influence on health conditions like obesity and high blood pressure. One of the most well-documented lifestyle behaviours with a strong association with health outcomes is that of smoking. In addition to tobacco consumption, the World Health Organization has also identified high blood pressure, obesity, alcohol consumption and high cholesterol as risk factors in relation to life expectancy for developed countries.[6]

### Smoking

As mentioned above, smoking has been well documented as a significant contributor to premature mortality and poor health conditions. In 2000/01, the CMAs of Vancouver (15.5%), Victoria (17.8%) and Toronto (19.2%) had among the lowest rates of smoking among all metro areas (Figure 1). The smaller CMAs of Greater Sudbury (31.1%), Trois-Rivières (30.4%) and Chicoutimi–Jonquière (29.2%), on the other hand, had some of the highest smoking rates of all of Canada's metropolitan areas.

### Heavy drinking

While some studies have shown that there are positive effects related to moderate alcohol consumption, others show that excessive drinking has a definitive negative impact. There are differences among CMAs in the frequency of heavy drinking (i.e., consuming five or more drinks on one occasion, at least 12 times a year). The proportion of people engaged in regular heavy drinking was highest in Greater Sudbury (22.8%), St. John's (22.5%), Thunder Bay (21.1%) and Chicoutimi–Jonquière (20.9%) (Figure 2). Generally speaking, the CMAs with the highest proportions of heavy drinking were in smaller parts of Ontario and Quebec, eastern Canada and the Prairies. Prevalence of such activity was lowest in Toronto (10.8%), followed by Vancouver (12.0%) and Montréal (13.5%), the three largest CMAs.

### Physical inactivity

Being physically inactive during leisure time is considered to have negative short-term and long-term effects on the health and well-being of individuals. Among CMAs, there were wide differences in the proportion of the population aged 12 and over that are physically inactive. In 2000/01, the CMAs with the least physically inactive populations were Victoria (35.5%), Vancouver (37.7%) and Thunder Bay (39.8%) (see Figure 3). Inactivity was, generally speaking, least frequent among CMAs west of Ontario, along with CMAs in northern Ontario. The CMAs with the most physically inactive populations were residents of Sherbrooke (60.2%) and Chicoutimi–Jonquière (60.0%).

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6. World Health Organization (WHO). 2002. *The World Health Report 2002: Reducing Risks, Promoting Healthy Life*. Switzerland: WHO.

**Obesity**

Obesity (i.e., a Body Mass Index score of 30.0 or higher, as classified by the WHO) is generally considered to be a lifestyle issue that, for most cases, can be addressed by combining healthier food intake with increased exercise. Despite this, recent Canadian studies have shown that obesity is an increasing problem in Canada and that it can have serious impacts on an individual's health as well as on the health care system.[7,8]

In 2000/01, the proportion of obese people aged 20 to 64 was highest in the CMAs of Thunder Bay (19.8%), Windsor (19.3%) and Saskatoon (19.1%) (Figure 4). Among CMAs, the lowest rates of obesity were found in Victoria (9.8%), Sherbrooke (10.0%), Vancouver (10.1%), Québec (10.4%) and Chicoutimi–Jonquière (10.7%)—about half the level as the CMAs with the largest proportion of obese people.

**High blood pressure**

Although there were not wide variations in the proportion of residents, aged 12 and over, having being diagnosed by a health professional as having high blood pressure, some differences are worth noting (see Figure 5). For example, Saint John (16.3%), Greater Sudbury (16.2%) and Hamilton (15.4%) had among the highest rates of high blood pressure of all CMAs, while Calgary (9.9%), Saskatoon (9.9%) and Vancouver (10.7%) were among the lowest. A large number of CMAs fell within the 11%-13% range for high blood pressure diagnosis.

7. Gilmore, J. 1999. "Body mass index and health." Statistics Canada Catalogue no. 82-003. *Health Reports,* 11(1): 31-43.
8. Birmingham, C.L., J.L. Muller, A. Palepu, J.J. Spinelli and A.H. Anis. 1999. "The cost of obesity in Canada." *Canadian Medical Association Journal*, 160: 483-488.

**Figure 1: Current smokers aged 12 and over, from highest to lowest, by CMA, 2000/01**
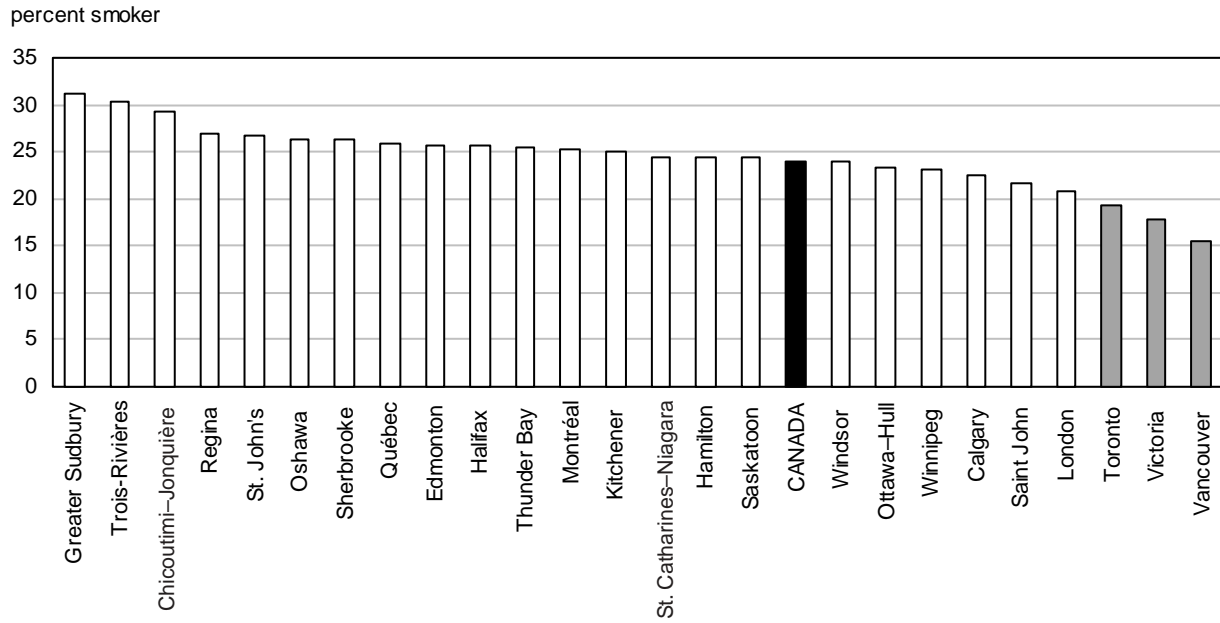
percent smoker



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

**Figure 2: Percent of heavy drinkers aged 12 and over, from highest to lowest, by CMA, 2000/01**
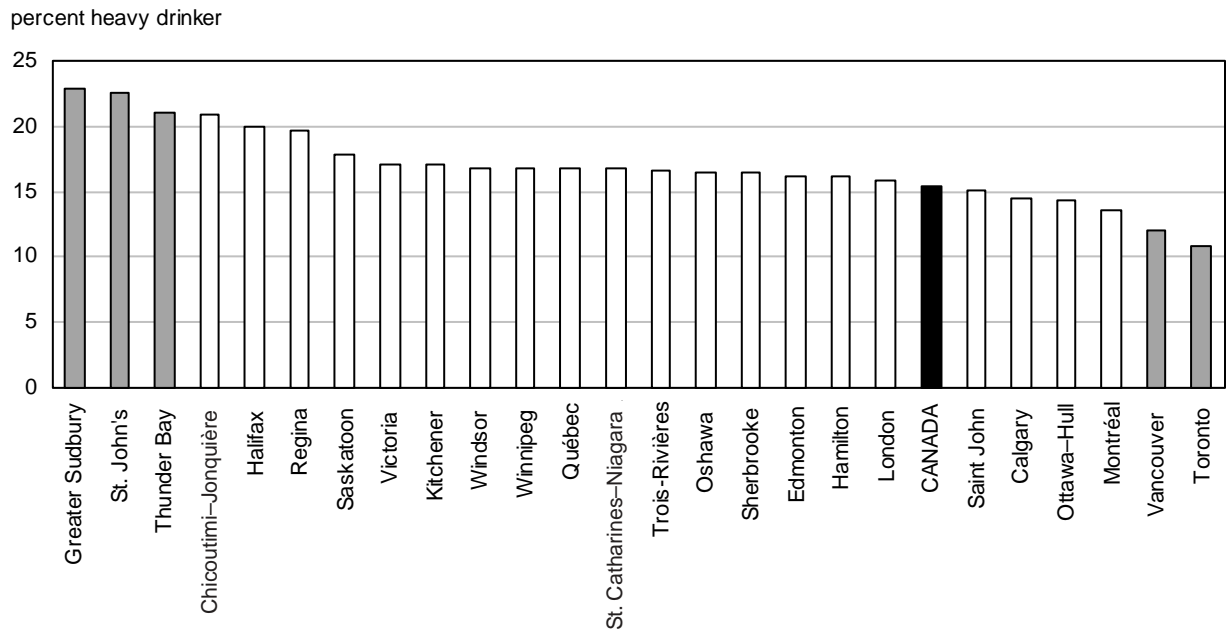
percent heavy drinker



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

**Figure 3: Percent physically inactive aged 12 and over, from highest to lowest, by CMA, 2000/01**

percent inactive



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

**Figure 4: Percent of obese aged 20 to 64, from highest to lowest, by CMA, 2000/01**
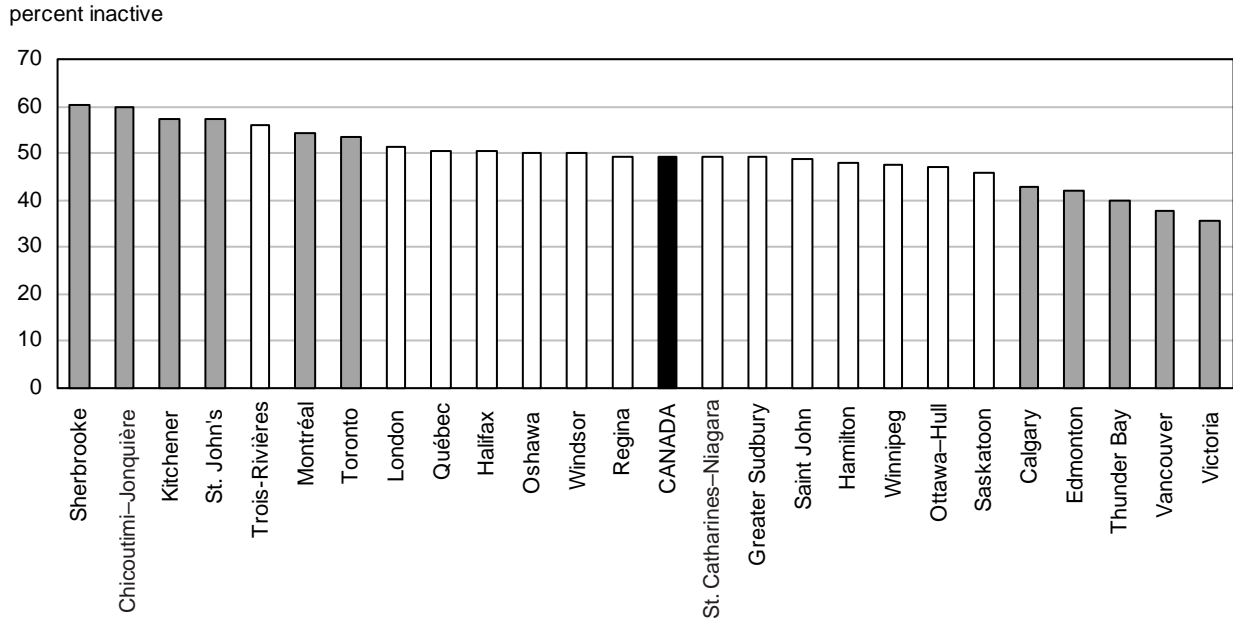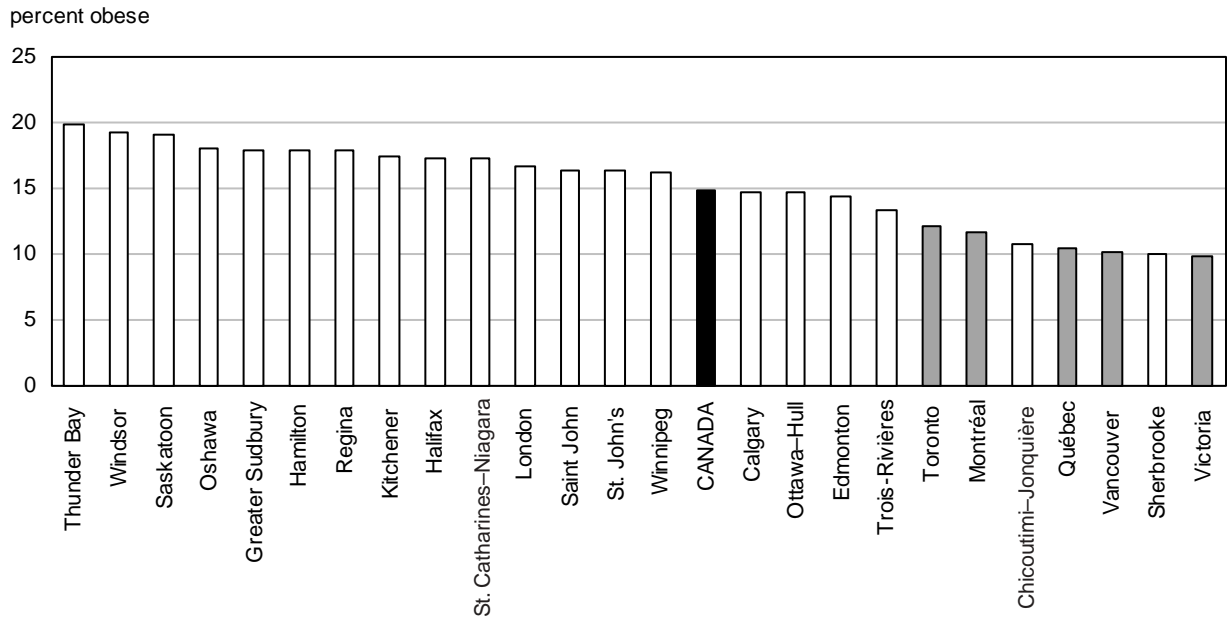
percent obese



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

**Figure 5: Percent with high blood pressure, aged 12 and over, from highest to lowest, by CMA, 2000/01**

percent high blood pressure

# Chapter 4

## Differences in psycho-social factors among CMAs

Some studies indicate a relationship between psycho-social factors and health outcomes.[9,10] Depression and life stress are two such factors that can be tested for such relationships.

**Depression**

There are only a few differences in prevalence of depression among CMAs; for example, St. John's residents had a low prevalence of depression (4.9%) while those in Victoria (10.2%) had a high rate (see Figure 6). However, neither of these rates were significantly different from the Canadian average (7.1%). Most other differences among CMAs were not of particular statistical significance.

**Life stress**

When it comes to prevalence of CMA residents having a lot of life stress, there are marked differences between the metropolitan areas with the lowest levels of life stress and those with the highest. In 2000/01, just over one in six (16.4%) of St. John's residents claimed to have a lot of life stress, compared with almost three out of eight (33.0%) residents of Québec (see Figure 7). Halifax and Vancouver CMAs also had low rates of life stress, while some other Quebec and southern Ontario CMAs had high levels.

9. Shields, Margot and Shooshtari, Shahin. 2001. "Determinants of self-perceived health." Statistics Canada Catalogue no. 82-003. *Health Reports,* 13(1): 35-53.
10. Shields, Margot. 2004. "Stress, health and the benefits of social support." Statistics Canada Catalogue no. 82-003. *Health Reports,* 15(1): 9-38.

**Figure 6: Percent with depression, aged 12 and over, from highest to lowest, by CMA, 2000/01**
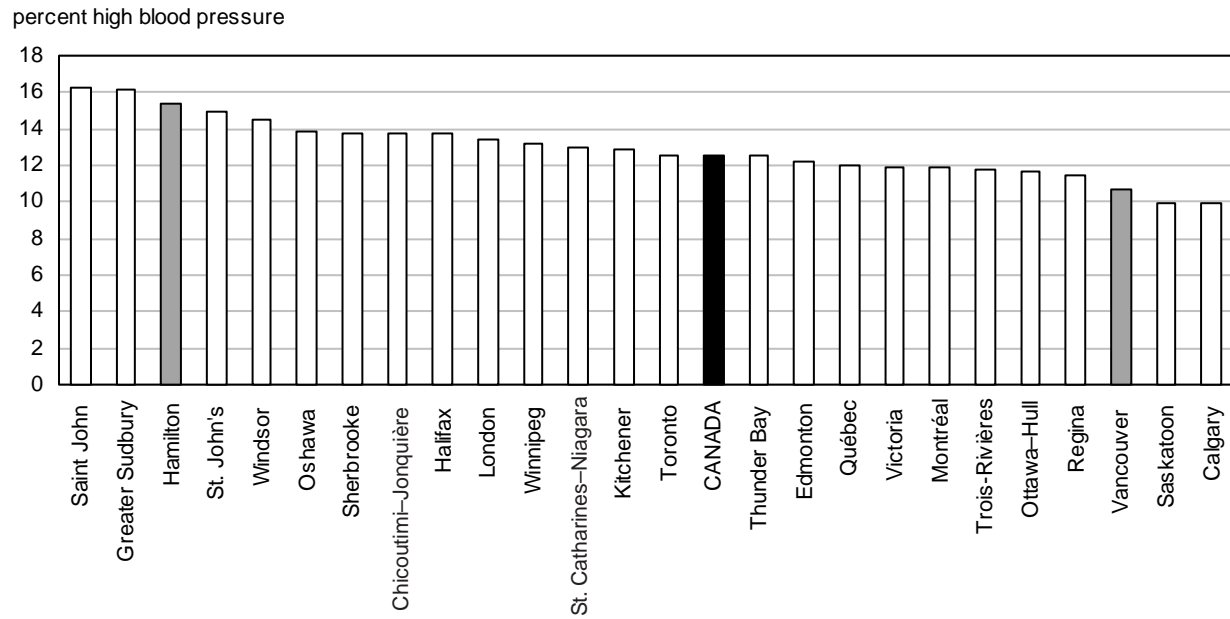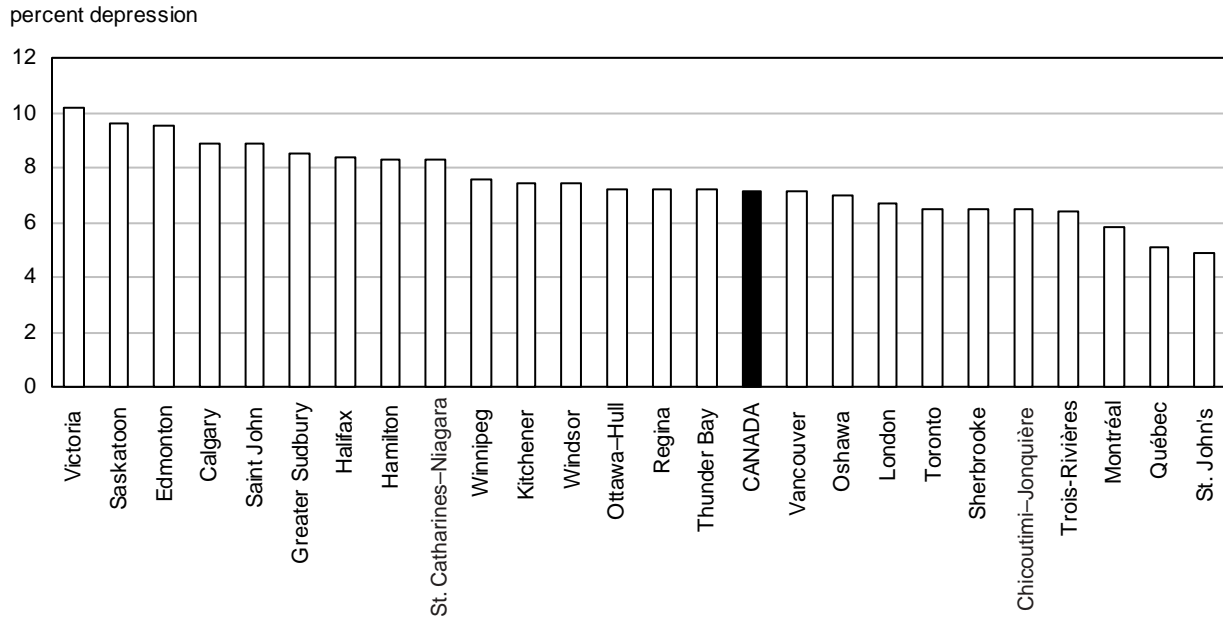
percent depression



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

**Figure 7: Percent with life stress, aged 18 and over, from highest to lowest, by CMA, 2000/01**
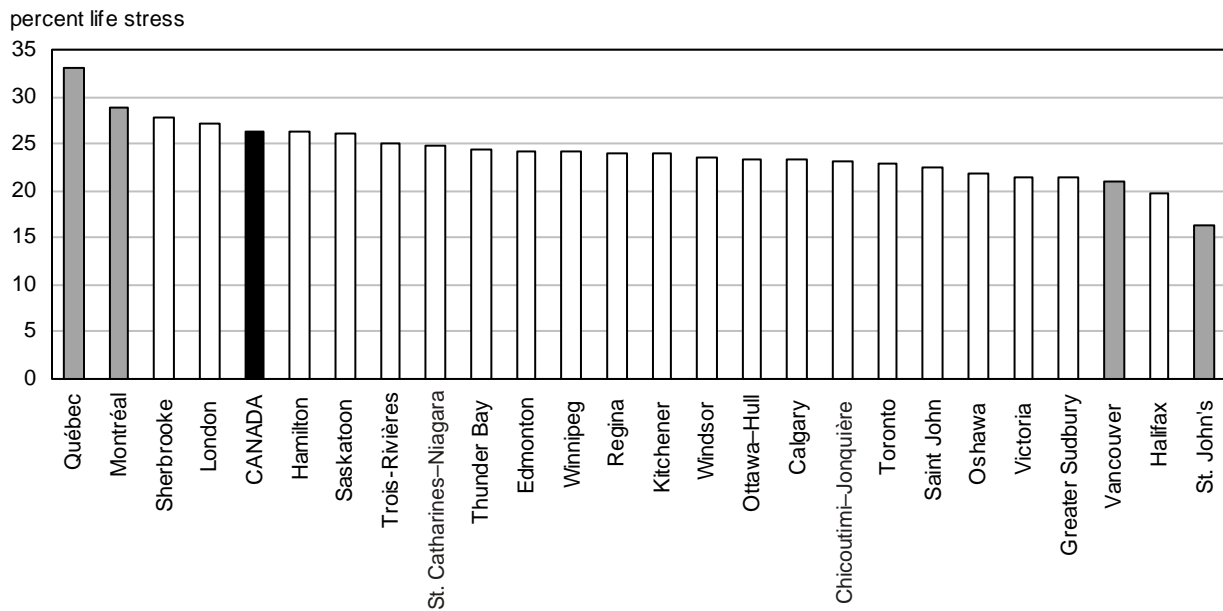
percent life stress



Source: Canadian Community Health Survey (2000/01), age-standardized. Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

# Chapter 5

## Differences in health system-related factors among CMAs

Some more recent studies have searched for relationships between health system characteristics and the health of the population.[11,12] Three health system variables of interest here are self-perceived unmet health care needs, general practitioners/family practitioners per 100,000 population and medical specialists per 100,000 population.

**Self-perceived unmet health care needs**

There was a fair degree of variation among CMAs with regards to their residents' perception as to whether they had a health care need over the past year that went unmet (regardless of whether it was due to their own choices or due to a perceived problem with the health care system itself). Residents of Québec were least likely to state that they had an unmet health care need during the previous year (7.6%), while residents of Windsor (18.7%), and Thunder Bay (17.1%) were among the most likely to cite an unmet health care need (see Figure 8).

**Doctors per 100,000 population/Medical specialists per 100,000 population**

It is generally thought that the presence of many general and family practitioners within an area will provide residents with increased access to such services. Therefore, residents should be able to better avoid negative health outcomes or get diagnosed or treated for existing conditions. There is definitely a great deal of differences in the number of GPs/FPs per 100,000 across CMAs; in 2001, St. Catharines–Niagara, Windsor and Oshawa had the lowest rates of GPs/FPs per 100,000 (60 to 61), while Victoria (148) and Sherbrooke (161) had the highest rates of GPs/FPs among all CMAs (Table 3).

Similar patterns exist for the number of medical specialists per 100,000. Kitchener (56 per 100,000) followed by St. Catharines–Niagara (60) had the lowest rates of medical specialists compared with all other CMAs; Sherbrooke (216 per 100,000) had the highest rate of medical specialists, followed distantly by London (191).

Some, but not all of these results by CMA may be influenced by the presence of medical schools. For example, Sherbrooke, Québec and London all have medical schools and this may partially explain why there are high proportions of GPs/FPs and specialist working in these communities. However, Victoria which has a high proportion of GPs/FPs per 100,00 population does not have a medical school.

---

11. Johansen, Helen, C. Nair, L. Mao and M.C. Wolfson. 2002. "Revascularization and heart attack outcomes." Statistics Canada Catalogue no. 82-003. *Health Reports,* 13(2): 35-47.
12. Sanmartin, Claudia and Jean-Marie Berthelot. 2002. "Changes in unmet health care needs." Statistics Canada Catalogue no. 82-003. *Health Reports,* 13(3): 15-22.

**Table 3: General practitioners/family practitioners (GP/FP) and medical specialists per 100,000 population, by CMA, listed from lowest to highest rate, 2001**

| CMA | GP/FP rate | CMA | Specialists rate |
|---|---|---|---|
| **Canada** | **95.0** | **Canada** | **93.0** |
| St. Catharines–Niagara | 60.0 | Kitchener | 55.6 |
| Windsor | 60.5 | St. Catharines–Niagara | 59.5 |
| Oshawa | 61.3 | Oshawa | 61.3 |
| Kitchener | 75.5 | Windsor | 73.0 |
| Greater Sudbury | 82.3 | Chicoutimi–Jonquière | 79.4 |
| Hamilton | 84.9 | Thunder Bay | 92.3 |
| Thunder Bay | 88.3 | Regina | 93.4 |
| Calgary | 90.3 | Greater Sudbury | 100.2 |
| Toronto | 90.6 | Saint John | 108.5 |
| Edmonton | 94.7 | Calgary | 109.5 |
| Winnipeg | 94.9 | Toronto | 110.8 |
| London | 97.3 | Trois-Rivières | 115.9 |
| Chicoutimi–Jonquière | 97.7 | Vancouver | 116.4 |
| Trois-Rivières | 98.2 | Edmonton | 116.8 |
| Saint John | 99.1 | Victoria | 122.0 |
| Montréal | 104.3 | Winnipeg | 135.5 |
| Vancouver | 108.2 | Montréal | 137.1 |
| Ottawa–Hull | 111.7 | Ottawa–Hull | 139.6 |
| Saskatoon | 116.3 | Hamilton | 140.5 |
| Regina | 120.1 | Saskatoon | 154.4 |
| Halifax | 124.2 | St. John's | 161.2 |
| St. John's | 127.7 | Québec | 180.1 |
| Québec | 142.7 | Halifax | 183.2 |
| Victoria | 148.1 | London | 191.4 |
| Sherbrooke | 160.7 | Sherbrooke | 216.3 |

Source: Canadian Institute for Health Information, Southam Medical Database.

**Figure 8: Percent with self-perceived unmet health care needs, aged 12 and over, from highest to lowest, by CMA, 2000/01**
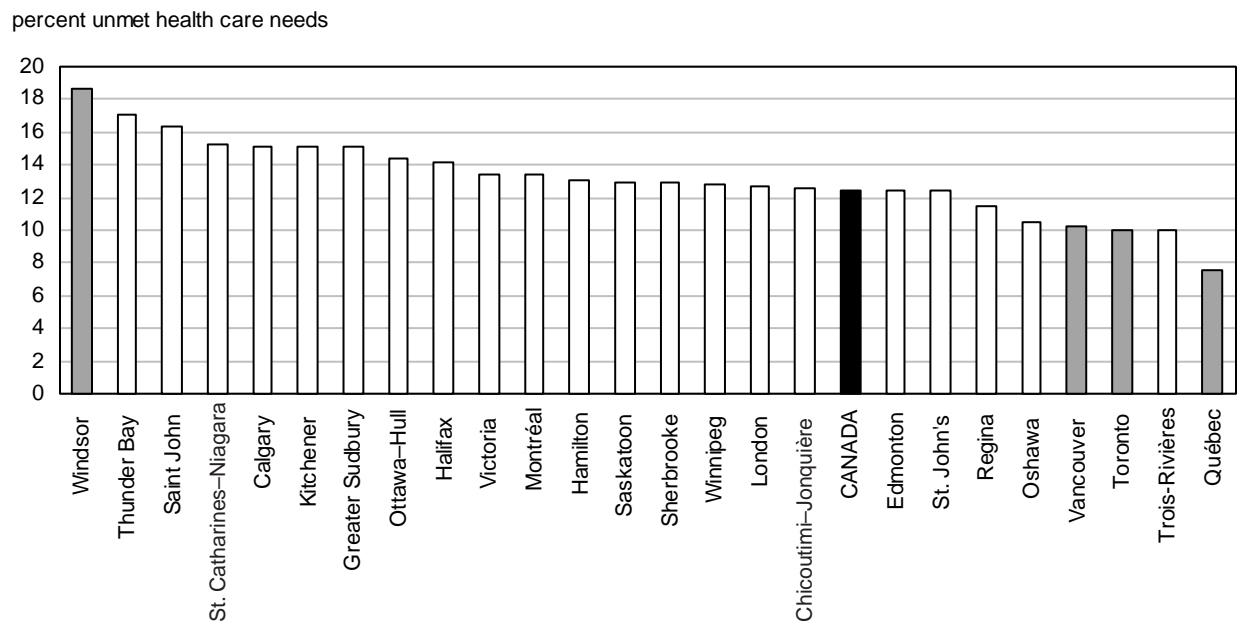
percent unmet health care needs



Source: Canadian Community Health Survey (2000/01), age-standardized.Grey shading indicates values different from the Canada average at the 5% level. Data are in Appendix A.

# Chapter 6

## Regional CMA patterns of health

There are some regional patterns of health among CMAs. Some of these patterns are more prominent than others, but they are all worth examining.

**Atlantic CMAs**

The Atlantic CMAs have some similarities to each other.  Namely, all three have life expectancy values that were below the Canada average. All three had proportions of persons with high blood pressure that were higher than the Canadian average, while all of them had proportions of persons with high life stress that were lower than the Canadian average. Halifax and St. John's also had proportions of smokers and heavy drinkers that were above the Canadian averages.

**Quebec CMAs**

Montréal and Québec had life expectancy values around the Canada average, while the other three CMAs had values that were below the national average. When compared with national rates, all had high proportions of good self-rated health, but worse smoking and physical inactivity rates. Most Quebec CMAs had below-average proportions of obese people and depression but higher-than-average proportions of life stress.

**Ontario CMAs**

Ontario CMAs have some notable north-south differences in health.  Most CMAs in southern and eastern Ontario had high life expectancy and high proportions of good self-rated health, but the two northern ones (Greater Sudbury and Thunder Bay) had below average proportions.  The heavy drinking rate was higher in these two northern metro areas compared with both the Canada average and most other Ontario CMAs; however, physical inactivity was less common among these two CMAs compared with the rate for most southern Ontario CMAs and the national rate. High rates of obesity appear to be an issue for most Ontario CMAs, with the exception of Toronto and Ottawa–Hull. Rates of FP/GP seem to be low across most Ontario CMAs compared with the Canada rate and that of other CMAs outside of Ontario. However, the rates of medical specialists per 100,000 in London, Hamilton and Ottawa–Hull were higher than the national rate.

**Manitoba and Saskatchewan CMAs**

The three Prairie CMAs of Winnipeg, Regina and Saskatoon have life expectancies below (but within a year of) the Canada average, and rates of good self-rated health that are around the national rate. The proportion of residents of these CMAs engaged in heavy drinking is somewhat higher than the national average, as is the proportion of obese people. Regina and Saskatoon have rates of FP/GPs per 100,000 population well above the Canada average, while Winnipeg and Saskatoon have rates of medical specialists per 100,000 well above the national figure.

**Alberta CMAs**

The Alberta CMAs of Calgary and Edmonton have life expectancies above the national average. Their rates of physical inactivity during leisure time are lower than the Canada rate, while their prevalence of depression is slightly higher than the national average. The rates of FP/GPs per 100,000 population are lower in the two Alberta CMAs compared with the national average, while their rates of medical specialists per 100,000 are higher.

**British Columbia CMAs**

The two British Columbia CMAs of Vancouver and Victoria have among the highest life expectancies of all Canadian CMAs and self-rated good health on par with the national average. Compared with the national figures, these two CMAs share lower rates of smoking, physical inactivity and obesity. They both have relatively high rates of FP/GPs and medical specialists per 100,000.

# Chapter 7

## Socio-economic and socio-demographic differences among CMAs

**H**ealth outcomes are affected by socio-economic conditions; traditional socio-economic indicators include education, income and unemployment. Demographic composition can also play a role in the health of a population. Immigration, for instance, has been noted in previous Canadian research as having a strong positive influence on a population's health, especially if the immigrants have recently arrived.[13,14] Aboriginal population and the overall age structure have also been cited as having an influence on the overall health status of a population.

**Post-secondary education**

At the individual level, Canadians with post-secondary education are generally in better health compared with those who do not have such high levels of education.[7,9,10] There are wide differences in the proportions of post-secondary graduates residing within these CMAs. This may be due, in part, to job prospects (or lack thereof) associated with their post-secondary field of study. That is to say, if there are good job prospects in a CMA, Canadians may move to or stay within a CMA; conversely if there are no jobs in their field in the CMA in which they do their studies, they aren't as likely to stay. In 2001, 45% of Ottawa–Hull residents aged 25 to 54, were graduates of a post-secondary institution—highest among all CMAs. This CMA is followed by Toronto, Victoria, Calgary, Halifax and Vancouver, with proportions of about 40% post-secondary graduates (see Table 4). At the bottom end, 28% of St. Catharines–Niagara residents, aged 25 to 54, graduated from a post-secondary institution, followed by Greater Sudbury (28.5%), Chicoutimi–Jonquière and Saint John (both at 29.3%).

**Unemployment rates**

Like post-secondary graduates, unemployment rates for the population aged 15 and over vary across metro areas. In 2001, rates ranged from a low of 4.5% in Calgary to a high of 11.2% in Chicoutimi–Jonquière.

**Income**

Although, generally speaking, education and income have fairly strong associations with each other, it is interesting to note some CMA differences based on various income measures. As seen in Table 4, average family income is high in many Ontario CMAs but low in many Quebec CMAs.

Some research has linked income inequality and health in cities. As other Canadian studies have shown, the median share of income (the proportion of income held by households whose income fall below the median household income; see Appendix C: Definitions) does not vary much between sub-provincial

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13. Chen, J., R. Wilkins and E. Ng. 1996. "Health Expectancy by Immigrant Status, 1986 and 1991. Statistics Canada Catalogue no. 82-003. *Health Reports,* 8(3): 29-38.
14. Pérez, C. 2002. "Health Status and health behaviours among immigrants." Statistics Canada Catalogue no. 82-003-SPE. Supplement to *Health Reports,* 13:89-100.

regions in Canada, especially compared with U.S. cities.[15] Nevertheless, it is worth similarly noting that Oshawa residents had higher median share of income (24.8%) compared with those in Toronto (20.2%) and Trois-Rivières (20.6%). Most other CMAs had about the same median shares of income.

**Immigrant population**

As mentioned earlier, a high proportion of immigrants (especially new immigrants) can have a strong positive influence on the health of a community. By far, Toronto has the highest proportion of immigrants among all other CMAs, with 43.7% of citizens having been born outside of Canada (see Table 4). Next is Vancouver, with 37.5% of citizens having been born elsewhere. The proportions of immigrants drop off drastically from there, with Hamilton being third-highest at 23.6%. The lowest proportions are found in some of the Quebec CMAs outside of Montréal, such as Chicoutimi–Jonquière (0.9%), Trois-Rivières (1.5%) and Québec (2.9%), in addition to St. John's (also at 2.9%).

**Aboriginal population**

Some recent sub-national Canadian studies[16,17,18,19] have indicated that Aboriginal population have poor health outcomes such as low life expectancy and poor self-rated health. However, because most of the Aboriginal population live in rural areas or urban areas outside of large cities,[20] the results of these recent studies may not be completely relevant to this particular analysis. In 2001, Regina (8.3%), Winnipeg (8.4%) and Saskatoon (9.1%) had the highest proportions of Aboriginal people among all CMAs; 11 others had Aboriginal populations of 1% or less. It remains to be seen, however, the degree to which the life expectancy of the three Prairie regions, which all fall below the national average, is due to their relatively high Aboriginal population.

15. Ross, N., M.C. Wolfson and J.-M. Berthelot. 1999. "Median share of income and mortality among working-age people in Canada and in the U.S." Statistics Canada Catalogue no. 82-003. *Health Reports,* 11(3): 77-82.
16. Shields, M. and S. Tremblay. 2002. "The Health of Canada's Communities." Statistics Canada Catalogue no. 82-003-SPE. *Supplement to Health Reports,* 13: 9-32.
17. Gilmore, J. and B. Wannell. 1999. "Life expectancy." Statistics Canada Catalogue no. 82-003. *Health Reports,* 11(3): 9-24.
18. Tjepkema, Michael. 2002. "The health of the off-reserve Aboriginal population". Statistics Canada Catalogue no. 82-003. *Supplement to Health Reports,* 13: 73-88.
19. Allard, Yvon, Russell Wilkins, and Jean-Marie Berthelot. 2004. "Premature mortality in health regions with high Aboriginal population." Statistics Canada Catalogue no. 82-003. *Health Reports,* 15(1): 51-62.
20. Statistics Canada. 2003. *Aboriginal Peoples of Canada: A Demographic Profile.* Census of Population 2001 Analysis Series no. 7. Statistics Canada Catalogue no. 96F003XIE001007. Ottawa: Statistics Canada.

**Table 4: Socio-economic and socio-demographic characteristics, by CMA, listed by highest to lowest life expectancy**

| | Post-secondary graduates, age 25-54, 2001 | Unemployment rate, 2001 | Median share of income, 2001 (2000 data) | Average family household income 2001 (2000 data) | Immigrant population, 2001 | Aboriginal population, 2001 |
|---|---|---|---|---|---|---|
| | % | % | $ | % | % | % |
| Vancouver | 39.6 | 6.6 | 23.7 | 70,196 | 37.5 | 1.9 |
| Toronto | 40.2 | 6.3 | 20.2 | 81,245 | 43.7 | 0.4 |
| Victoria | 40.1 | 8.1 | 22.4 | 66,594 | 18.8 | 2.8 |
| Calgary | 39.9 | 4.5 | 21.7 | 81,999 | 20.9 | 2.3 |
| Edmonton | 34.2 | 4.9 | 22.5 | 70,308 | 17.8 | 4.4 |
| Québec | 39.0 | 7.8 | 22.1 | 61,733 | 2.9 | 0.6 |
| Kitchener | 32.6 | 6.2 | 23.0 | 73,159 | 22.1 | 0.8 |
| Ottawa–Hull | 45.0 | 6.3 | 21.9 | 80,849 | 17.6 | 1.3 |
| Montréal | 36.7 | 8.2 | 22.0 | 64,461 | 18.4 | 0.3 |
| Hamilton | 33.8 | 6.1 | 21.3 | 73,364 | 23.6 | 1.1 |
| Oshawa | 31.8 | 5.6 | 24.8 | 75,212 | 15.7 | 1.0 |
| Saskatoon | 34.3 | 6.2 | 21.6 | 62,898 | 7.6 | 9.1 |
| Sherbrooke | 32.1 | 9.7 | 21.4 | 55,746 | 4.6 | 0.2 |
| Halifax | 39.8 | 7.0 | 21.9 | 64,913 | 6.9 | 1.0 |
| London | 35.5 | 6.4 | 21.4 | 69,463 | 18.8 | 1.3 |
| Windsor | 30.9 | 6.7 | 21.1 | 75,122 | 22.3 | 1.3 |
| Trois-Rivières | 34.9 | 7.8 | 20.6 | 54,409 | 1.5 | 0.5 |
| St. Catharines–Niagara | 28.0 | 6.3 | 22.4 | 63,748 | 17.8 | 1.3 |
| Saint John | 29.3 | 9.5 | 21.4 | 58,558 | 3.8 | 0.8 |
| Winnipeg | 32.8 | 5.1 | 22.0 | 64,422 | 10.3 | 8.4 |
| Regina | 31.9 | 5.5 | 22.3 | 66,663 | 7.4 | 8.3 |
| Chicoutimi–Jonquière | 29.3 | 11.2 | 22.2 | 56,057 | 0.9 | 0.8 |
| St. John's | 33.1 | 9.1 | 21.7 | 61,167 | 2.9 | 0.7 |
| Thunder Bay | 31.1 | 8.0 | 21.9 | 66,759 | 11.1 | 6.8 |
| Greater Sudbury | 28.5 | 8.7 | 21.0 | 63,973 | 7.0 | 4.8 |

Sources: Statistics Canada—Census (2001), Labour Force Survey (2002).

# Chapter 8

## Understanding CMA differences in health outcomes

**T**he preceding sections discussed CMA differences in health outcomes and health differences. This chapter investigates the relationship between health outcomes and health characteristics in order to help understand why it is that CMAs differ in health outcomes. Given that there are only 25 CMAs in the data, what can be done in such an analysis is limited. Table 5 examines the pairwise correlations between the health outcomes (life expectancy and self-rated health) and health-related characteristics.

Among health behaviours and health conditions, most relationships are as one would expect, lower incidences of smoking, heavy drinking, obesity and high blood pressure are all related to higher life expectancy. Of these, only obesity and high blood pressure were related to lower self-rated health. Among the psycho-social factors neither depression nor life stress was related to lower life expectancy at the CMA level. The unexpected positive relationship between life stress and self-rated health can be shown to be due to one outlying observation (Québec). When this was dropped, the correlation was no longer significantly different from zero.

Life expectancy was positively related to the share of post-secondary graduates, the average household income and the share of the population that were immigrants. Self-perceived unmet health care needs were significantly related to lower positive self-rated health but not lower life expectancy. The presence of doctors and medical specialists had a positive association with good self-rated health but shared no association with life expectancy. None of the socio-demographic or socio-economic characteristics were correlated with self-rated health. Of course, this is not to say that these uncorrelated factors are not associated with health, rather, in this limited analysis the relationship was not found to be significant. Scatter plots showing the relationships between life expectancy and those variables that were significantly correlated with life expectancy are shown in Figures 9 through 15.

**Table 5: Pairwise correlations between health outcomes and health characteristics**

| | Life expectancy | Proportion of population in good or better self-rated health |
|---|---|---|
| Health behaviours | | |
| Smoker (age 12+) | -0.710** | -0.084 |
| Heavy drinker (age 12+) | -0.808** | -0.350 |
| Physical inactivity (age 12+) | -0.344 | 0.291 |
| Health conditions | | |
| Obesity (BMI>30.0) (age 20-64) | -0.523** | -0.637** |
| High blood pressure (age 12+) | -0.520** | -0.444* |
| Psycho-social factors | | |
| Depression (age 12+) | 0.165 | -0.306 |
| Life stress (age 18+) | 0.163 | 0.438* |
| Health system characteristics | | |
| Self-perceived unmet health care needs (age 12+) | -0.365 | -0.565** |
| General Practitioners/Family Practitioners per 100,000 | 0.179 | 0.417* |
| Medical specialists per 100,000 | 0.108 | 0.402* |
| Socio-demographic and Socio-economic characteristics | | |
| Post-secondary graduates, age 25-54, 2001 | 0.711** | 0.394 |
| Unemployment rate, 2001 | -0.267 | 0.051 |
| Median share of income, 2001 (2000 data) | 0.230 | -0.028 |
| Average family household income, 2001 (2000 data) | 0.493* | -0.212 |
| Immigrant population, 2001 | 0.695** | -0.129 |
| Aboriginal population, 2001 | -0.308 | -0.343 |

\* Indicates the correlation is significantly different from 0 at the 5% level.
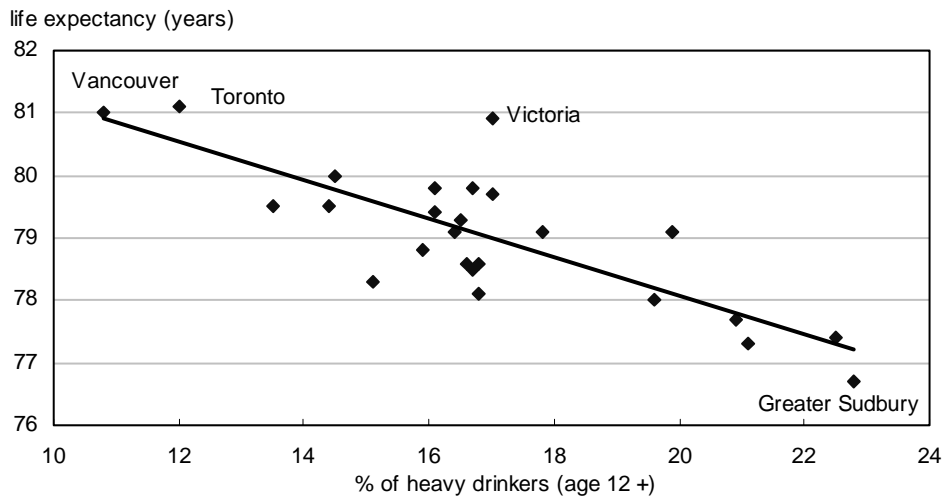\*\* Indicates the correlation significantly different from 0 at the 1% level. Based on 25 observations.

**Figure 9: Life expectancy and smoking**
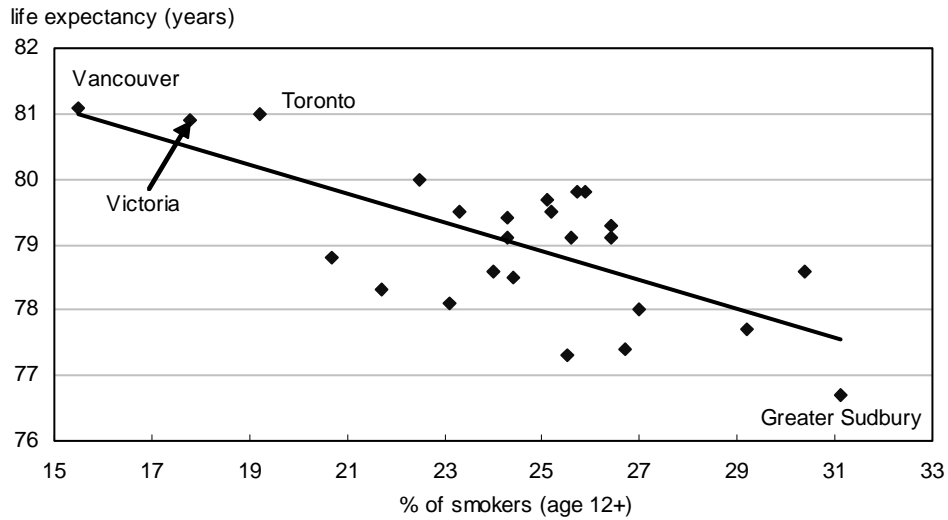
life expectancy (years)



% of smokers (age 12+)

**Figure 10: Life expectancy and heavy drinking**

life expectancy (years)



% of heavy drinkers (age 12 +)

**Figure 11: Life expectancy and obesity**

life expectancy (years)



% of obese persons (age 20-64)

Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Canadian Community Health Survey (2000/01), age-standardized.

**Figure 12: Life expectancy and high blood pressure**

life expectancy (years)
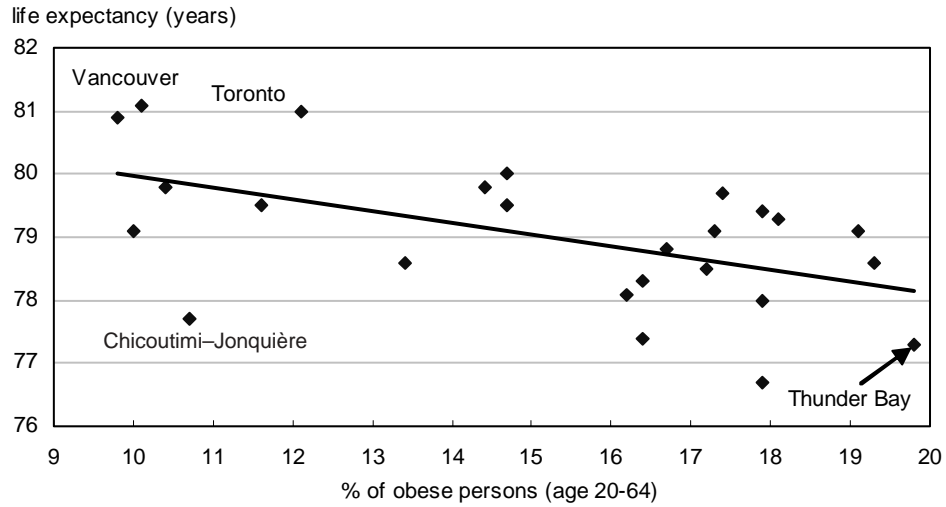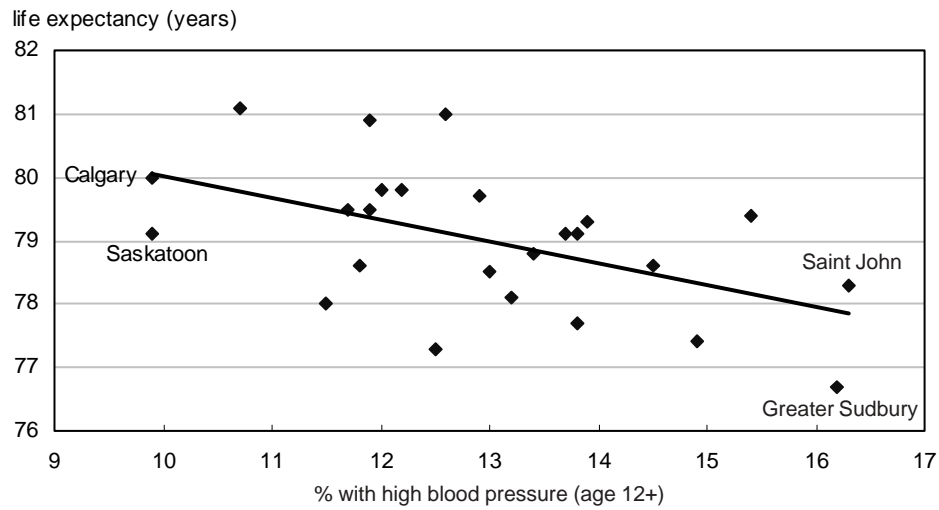


% with high blood pressure (age 12+)

Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Canadian Community Health Survey (2000/01), age-standardized.

**Figure 13: Life expectancy and percent with post secondary education**
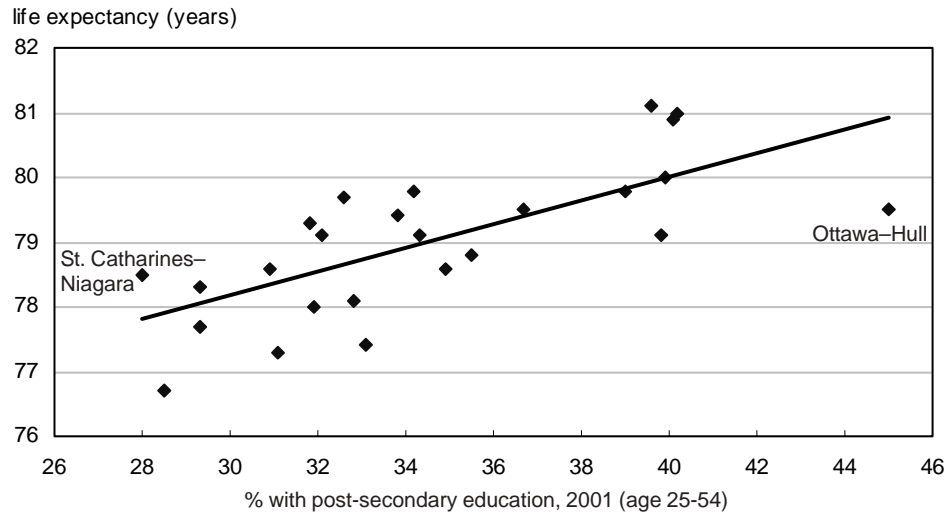
life expectancy (years)



% with post-secondary education, 2001 (age 25-54)

Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Census 2001.

**Figure 14: Life expectancy and average family household income**
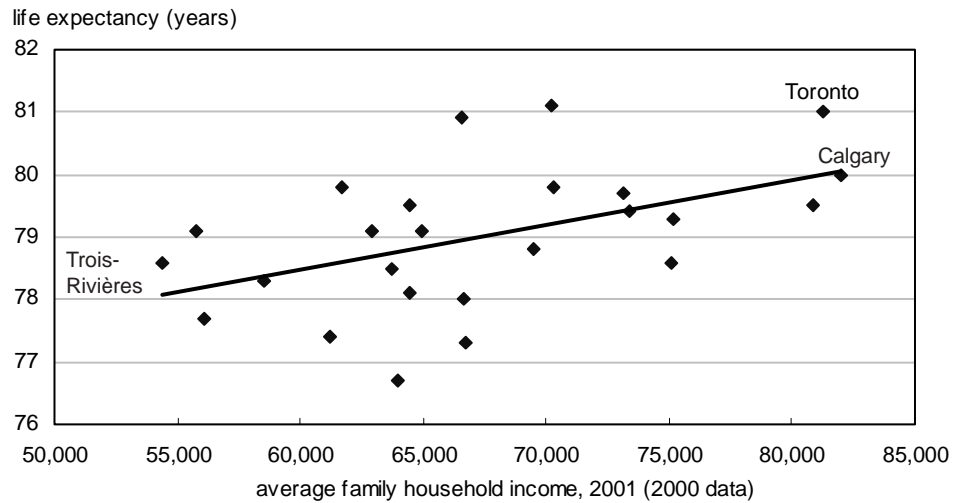
life expectancy (years)



average family household income, 2001 (2000 data)

Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Census 2001.

**Figure 15: Life expectancy and proportion of immigrant population**

life expectancy (years)



% of population w ho are immigrants, 2001

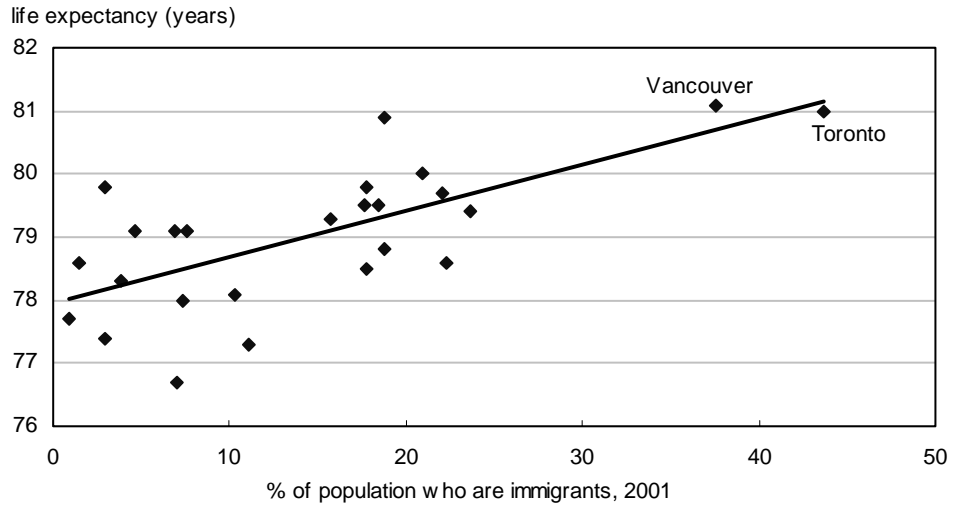Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Census 2001.

# Chapter 9

## Conclusion

**T**his report uses data from the 2000/2001 Canadian Community Health Survey, as well as some other data sources, to provide an overview of health at the Census Metropolitan Area (CMA) level. The conclusions reflect the diversity of health conditions across Canadian metropolitan areas.

There are two main themes that have arisen from this analysis. One theme is that there are notable differences among CMAs in health outcomes like life expectancy and rating one's health as good or better. It is well known that countries differ widely in their life expectancy, however, this study shows that Canada's metropolitan areas are just as diverse in this regard. The range in life expectancy among Canadian CMAs is nearly as large as the range among 22 OECD countries.

The other theme is that many of Canada's largest urban areas differ in their health-related lifestyles and behaviours, their health conditions and their health care needs/availability. This study examines several indicators of health and the health system, and finds these to vary among CMAs. While interesting in their own right, these indicators can also be used in future studies to help better understand differences in health outcomes among CMAs in Canada.

A basic analysis of the relationship between some health indicators and CMA-level health outcomes is included in this report to help understand these large differences in health outcomes across CMAs. The data show that CMA life expectancy is negatively correlated with CMA smoking rates, heavy drinking rates, obesity rates and high blood pressure rates, and positively correlated with the share of the population that is a post-secondary graduate, the average family household income in the CMA and the share of the population that were recent immigrants. Note that this is not to say that other factors are not important determinants of health, only that they were not found to be correlated with life expectancy measured at the CMA level in Canada.

**Appendix A: Comparison of Canada and CMAs, selected characteristics**

| | Health outcomes | | Lifestyle factors | | | Health conditions | | Psycho-social factors | | Health system |
|---|---|---|---|---|---|---|---|---|---|---|
| | Life expectancy | Good or better self-rated health | Smoker (age 12+) | Heavy drinker (age 12+) | Physical inactivity (age 12+) | Obesity (BMI>30.0) (age 20-64) | High blood pressure (age 12+) | Depression (age 12+) | Life stress (age 18+) | Unmet health needs (age 12+) |
| | (years) | % | % | % | % | % | % | % | % | % |
| **CANADA** | **79.4** | **88.0** | **24.0** | **15.4** | **49.1** | **14.9** | **12.6** | **7.1** | **26.4** | **12.5** |
| Vancouver | 81.1 ↑ | 87.7 | 15.5 ↑ | 12.0 ↑ | 37.7 ↑ | 10.1 ↑ | 10.7 ↑ | 7.1 | 21.1 ↑ | 10.3 ↑ |
| Toronto | 81.0 ↑ | 88.3 | 19.2 ↑ | 10.8 ↑ | 53.3 ↓ | 12.1 ↑ | 12.6 | 6.5 | 23.0 | 10.0 ↑ |
| Victoria | 80.9 ↑ | 88.0 | 17.8 ↑ | 17.0 | 35.5 ↑ | 9.8 ↑ | 11.9 | 10.2 | 21.5 | 13.4 |
| Calgary | 80.0 ↑ | 90.4 | 22.5 | 14.5 | 42.8 ↑ | 14.7 | 9.9 | 8.9 | 23.3 | 15.1 |
| Edmonton | 79.8 | 88.1 | 25.7 | 16.1 | 41.8 ↑ | 14.4 | 12.2 | 9.5 | 24.2 | 12.5 |
| Québec | 79.8 | 91.6 ↑ | 25.9 | 16.7 | 50.5 | 10.4 ↑ | 12.0 | 5.1 | 33.0 ↓ | 7.6 ↑ |
| Kitchener | 79.7 | 87.6 | 25.1 | 17.0 | 57.3 ↓ | 17.4 | 12.9 | 7.4 | 23.9 | 15.1 |
| Ottawa– Hull | 79.5 | 88.0 | 23.3 | 14.4 | 47.0 | 14.7 | 11.7 | 7.2 | 23.4 | 14.4 |
| Montréal | 79.5 | 89.3 | 25.2 | 13.5 | 54.3 ↓ | 11.6 ↑ | 11.9 | 5.8 | 28.9 ↓ | 13.4 |
| Hamilton | 79.4 | 86.8 | 24.3 | 16.1 | 47.9 | 17.9 | 15.4 ↓ | 8.3 | 26.2 | 13.0 |
| Oshawa | 79.3 | 86.4 | 26.4 | 16.5 | 50.1 | 18.1 | 13.9 | 7.0 | 21.9 | 10.5 |
| Saskatoon | 79.1 | 87.9 | 24.3 | 17.8 | 45.9 | 19.1 | 9.9 | 9.6 | 26.0 | 12.9 |
| Sherbrooke | 79.1 | 89.2 | 26.4 | 16.4 | 60.2 ↓ | 10.0 | 13.8 | 6.5 | 27.8 | 12.9 |
| Halifax | 79.1 | 87.9 | 25.6 | 19.9 | 50.5 | 17.3 | 13.7 | 8.4 | 19.7 | 14.1 |
| London | 78.8 | 90.0 | 20.7 | 15.9 | 51.4 | 16.7 | 13.4 | 6.7 | 27.2 | 12.7 |
| Windsor | 78.6 | 84.6 | 24.0 | 16.8 | 49.9 | 19.3 | 14.5 | 7.4 | 23.5 | 18.7 ↓ |
| Trois-Rivières | 78.6 | 90.4 | 30.4 | 16.6 | 55.8 | 13.4 | 11.8 | 6.4 | 25.0 | 10.0 |
| St. Catharines– Niagara | 78.5 ↓ | 88.2 | 24.4 | 16.7 | 49.1 | 17.2 | 13.0 | 8.3 | 24.9 | 15.2 |
| Saint John | 78.3 ↓ | 87.3 | 21.7 | 15.1 | 48.6 | 16.4 | 16.3 | 8.9 | 22.4 | 16.4 |
| Winnipeg | 78.1 ↓ | 88.1 | 23.1 | 16.8 | 47.6 | 16.2 | 13.2 | 7.6 | 24.1 | 12.8 |
| Regina | 78.0 ↓ | 87.4 | 27.0 | 19.6 | 49.2 | 17.9 | 11.5 | 7.2 | 24.0 | 11.5 |
| Chicoutimi–Jonquière | 77.7 ↓ | 90.6 | 29.2 | 20.9 | 60.0 ↓ | 10.7 | 13.8 | 6.5 | 23.2 | 12.6 |
| St. John's | 77.4 ↓ | 87.7 | 26.7 | 22.5 ↓ | 57.3 ↓ | 16.4 | 14.9 | 4.9 | 16.4 ↑ | 12.4 |
| Thunder Bay | 77.3 ↓ | 84.2 | 25.5 | 21.1 ↓ | 39.8 ↑ | 19.8 | 12.5 | 7.2 | 24.5 | 17.1 |
| Greater Sudbury | 76.7 ↓ | 83.2 | 31.1 | 22.8 ↓ | 49.1 | 17.9 | 16.2 | 8.5 | 21.4 | 15.1 |

Sources: Statistics Canada, Vital Statistics (2000) (special tabulations) and Canadian Community Health Survey (2000/01).
Note: The ordering of CMAs is based on life expectancy, from highest to lowest.  All estimates based on CCHS data have been age-standardized.
↑ Indicates that the estimate is significantly better than the Canadian estimate.
↓ Indicates that the estimate is significantly worse than the Canadian estimate.

# Appendix B

## Relationship of health-related factors

**H**ow might we account for the differences in health outcomes between CMAs within Canada? Do these differences reflect underlying socio-economic differences or differences in the provision of health care in these regions?

The World Health Organization (WHO), as part of its *Healthy Cities Project*, has recommended that the health of cities be examined in a framework that consists of, among other things, an examination of demography, health status, socio-economic conditions, inequality and public health policies and services (see Figure B1).[21] Social and economic circumstances have been widely recognized in research as key elements to the health of a population.[2,22,23,24] These and other studies also recognize that certain health risk behaviours and even some health system characteristics may play a role in a communities' level of health.

Building on studies that examine the impacts of these health-related factors on health outcomes (both at a national and sub-national level), this study examines how Canadian CMAs differ in these various factors. The factors are as follows:

**Socio-economic characteristics** include proportion of population aged 25-54 with post-secondary graduation, unemployment rate for the population aged 15 and over, average family income and median share of income.

**Socio-demographic characteristics** include proportion of immigrants, proportion of Aboriginals.

**Lifestyle and health conditions** include current smokers, heavy drinking, having been diagnosed with high blood pressure, physical inactivity during leisure time and the proportion of the population aged 20-64 with a Body Mass Index (BMI) of 30 or more (i.e., WHO's classification of obese) .

**Psycho-social factors** include depression and high life stress among the population aged 18 and over.

**Health system characteristics** include self-perceived unmet health care needs, general practitioners/family practitioners per 100,000 population, and medical specialists per 100,000 population.

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21. World Health Organization. Regional Office for Europe. *City Health Profiles – how to report on health in your city.* Document Number ICP/HSIT/94/01 PB 02. Unpublished report available on-line at www.who.dk/document/wa38094ci.pdf Copenhagen: WHO Regional Office for Europe.
22. Wilkinson, Richard and Michael Marmot (eds.). 2003. *Social Determinants of Health: The Solid Facts.* Copenhagen: WHO Regional Office for Europe.
23. Wunch, G., J. Duchenne, E. Thiltges and M. Sahli. 1996. "Socioeconomic differences in mortality: a life course approach." *European Journal of Population,* 12(2): 167-185.
24. Van Oers, J.A. and N.F. Reelick. 1992. "Quantitative indicators for a healthy city." *International Journal of Epidemiology and Community Health,* 46: 293-296.

**Figure B1: A simple health of cities framework**
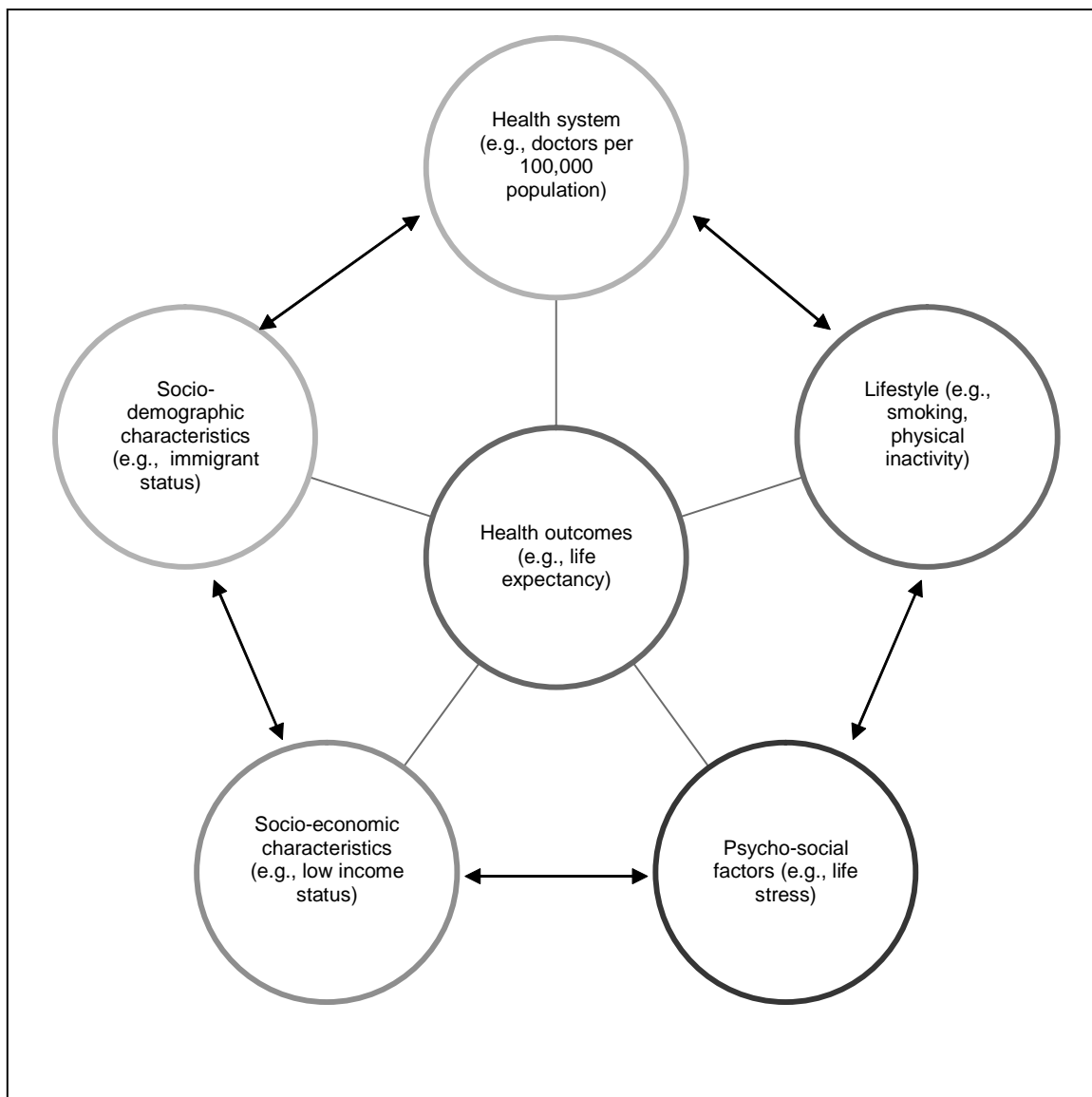
# Appendix C

## Definitions

**Life expectancy (2001):** The number of years a person would be expected to live, starting from birth, on the basis of the mortality statistics for a given observation period (Vital Statistics, special tabulations).

**Good or better self-rated health (2000/01):** Population aged 12 and over who rate their own health status as good, very good or excellent. In this paper, the term "good self-rated health" is interchangeable with the term "good or better self-rated health". (Canadian Community Health Survey – CCHS).

**Smoking (2000/01):** Proportion of the population aged 12 and over who reported being a smoker on either a daily or occasional basis (CCHS).

**Heavy drinking (2000/01):** Proportion of the population aged 12 and over who are current drinkers and who reported drinking 5 or more drinks on at least one occasion in each of the past 12 months (CCHS).

**Physical inactivity (2000/01):** Proportion of the population aged 12 and over reporting an inactive level of physical activity, based on their responses to questions about their frequency, duration and intensity of their participation in leisure-time physical activity (CCHS).

**Obesity (2000/01):** Body mass index (BMI) of 30.0 or higher, as calculated by self-reported weight in kilograms divided by self-reported height in metres squared. Among those aged 20 to 64. (CCHS).

**High blood pressure (2000/01):** Population aged 12 and over who report that they have been diagnosed by a health professional as having high blood pressure (CCHS).

**Life stress (2000/01):** Proportion of the population aged 18 and over who reported their level of life stress as "quite a bit" (CCHS).

**Depression (2000/01):** Population aged 12 and over who show symptoms of depression, based on their responses to a set of questions that establishes the probability of suffering a "major depressive episode" during the previous 12 months (CCHS).

**Self-perceived unmet health care needs (2000/01):** Proportion of the population aged 12 and over who felt that they had an unmet health care need within the previous 12 months (CCHS).

**Doctors and medical specialists (2001):** The number of family practitioners and general practitioners or medical specialists working within a given geographic area, per 100,000 population. The data do not differentiate between full-time and part-time status or between research doctors and practicing doctors (Southam Medical Database).

**Post-secondary graduates (2001):** Proportion of the population aged 25 to 54 who have obtained a post-secondary certificate, diploma or degree (Census).

**Unemployment rate (2001):** The population aged 15 and over who did not have a job during the reference period as a proportion of the labour force. The labour force consists of people who are currently employed and people who are unemployed but were available for work in the reference period and had looked for work in the past four weeks (Labour Force Survey).

**Average family household income (2001; 2000 data):** The average income (pre-tax, post-transfer) of a census family household for persons aged 15 and over who reported income (Census).

**Median share of income (2001; 2000 data):** The proportion of income (from all sources, pre-tax, post-transfer) held by households whose incomes fall below the median household income. A proportion of 50% would represent no inequality (Census, special tabulations).

**Immigrants (2001):** Proportion of the population born outside of Canada who were not Canadian citizens at the time of birth (Census).

**Aboriginals (2001):** The population identifying with at least one Aboriginal group and/or those who reported being a Treaty Indian or a Registered Indian as defined by the Indian Act and/or those who were members of an Indian Band or First Nation as a proportion of the total population (Census).

*Note on survey data:* All data that come from the Canadian Community Health Survey (CCHS 2000/ 01)—which include smoking, heavy drinking, self-rated health, physical activity, obesity, high blood pressure, depression and life stress—are presented here after having been age-adjusted. That is to say, all differences in age distribution between CMAs have been adjusted as if all CMAs had the same age distribution as the whole Canadian population. Calculations were done for both unadjusted and age-education adjusted data, but there were very few differences in the results compared with the age-adjusted rates. As a result, the unadjusted and age-education adjusted data are not presented here.

Also, the geography used in the CCHS is based on 1996 Census geography.  As such, there are only 25 CMAs used in this analysis, even though beginning in 2001 there are 27 CMAs (Kingston, Ontario and Abbotsford, B.C. are the others).

The Census data are based on 2001 geography, and therefore there may be slight differences in the 1996 geographic boundaries of these CMAs and their respective 2001 geographic boundaries.