

# The Canadian obesity epidemic, 1985–1998

Peter T. Katzmarzyk

Obesity is now pandemic, affecting millions of people worldwide.<sup>1</sup> In rich countries, between 10% and 20% of people are obese, and the problem is not unknown even in poor countries.<sup>1</sup> In the United States, the National Institutes of Health and the surgeon general have acknowledged the importance of the problem and are developing public health strategies to curb the epidemic.<sup>2,3</sup>

Obesity is a condition of excessive body fat that results from a chronic energy imbalance whereby intake exceeds expenditure. Excess body fat increases an individual's risk of premature death from chronic diseases such as coronary heart disease, stroke, type 2 diabetes mellitus, gallbladder disease and some cancers.<sup>2</sup> The direct medical costs attributable to adult obesity in Canada are estimated to have been \$1.8 billion in 1997, or 2.4% of total direct medical

costs.<sup>4</sup> Thus, the public health burden of obesity and related disorders is great.

The World Health Organization recommends the continued surveillance of the population prevalence of obesity using body mass index (BMI, calculated as kg/m<sup>2</sup>) as the indicator.

There is recent evidence that there have been large increases in the national prevalence of overweight and obesity in Canadian children and adults over the last 2 decades, similar to the increases observed in other industrialized nations.<sup>5,6</sup> Although the causes of this are not well defined, lack of physical activity may be an important factor.<sup>7</sup>

The purpose of this report is to present obesity surveillance maps for Canadian adults (aged ≥ 20 years) from 1985 to 1998 in an effort to describe the dramatic increases in the

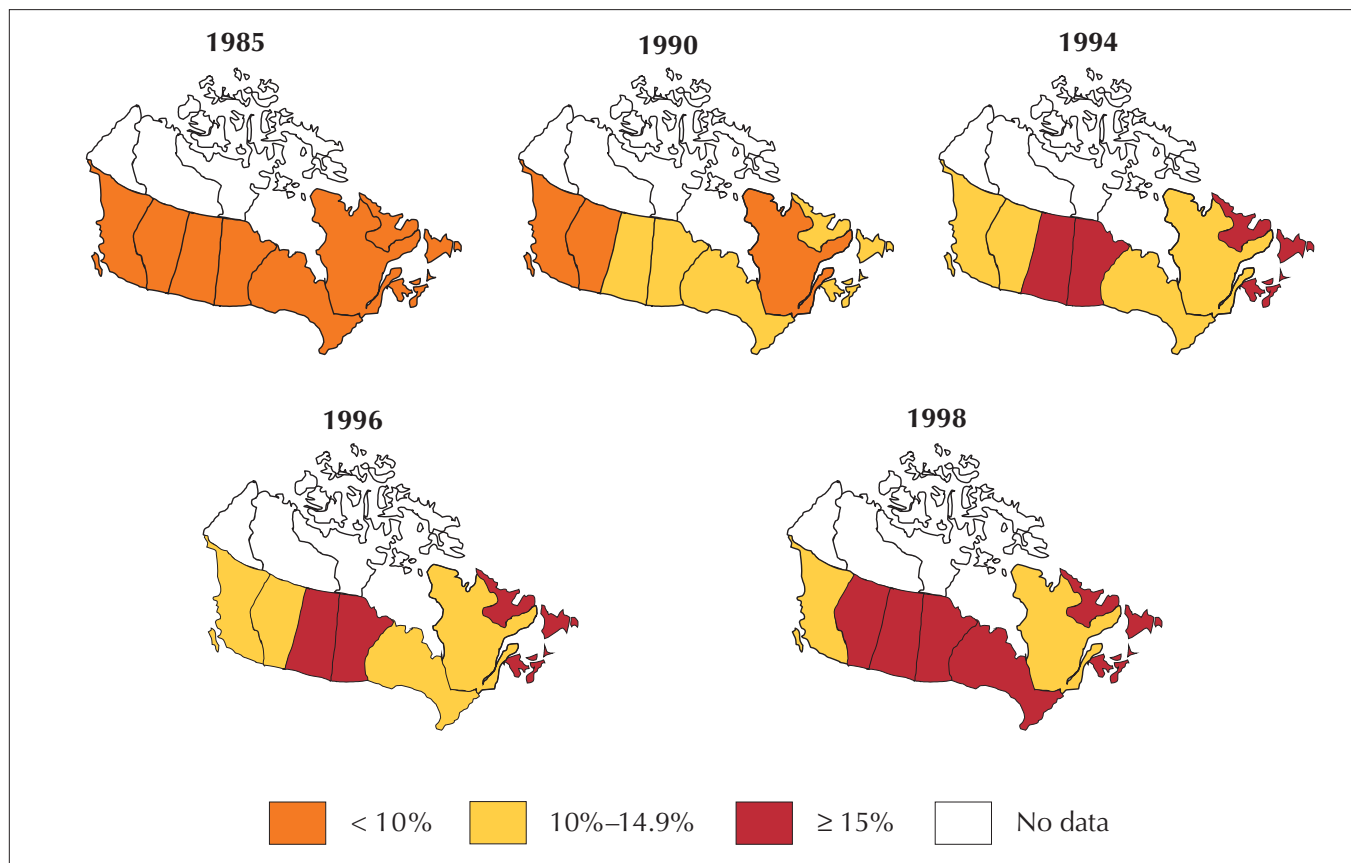


Fig. 1: Prevalence of obesity among Canadian adults in 1985, 1990, 1994, 1996 and 1998. Weighted prevalences were calculated from self-reported heights and weights from the 1985 and 1990 Health Promotion Surveys and the 1994, 1996 and 1998 National Population Health Surveys.<sup>8–12</sup> According to recent guidelines,<sup>1,2</sup> adults are classified as being of normal weight with a body mass index (BMI) of 18.5–24.9 kg/m<sup>2</sup>, overweight with a BMI of 25.0–29.9 kg/m<sup>2</sup> and obese with a BMI ≥ 30 kg/m<sup>2</sup>.

prevalence of obesity that have occurred at both the national and provincial levels. Data concerning BMI were obtained from a series of 5 population surveys that collected self-reported heights and weights. The surveys included the 1985 and 1990 Health Promotion Surveys and the 1994, 1996 and 1998 National Population Health Surveys.<sup>8-12</sup> The prevalence of adult obesity in each of the samples was computed (defined as BMI  $\geq 30$  kg/m<sup>2</sup>) and weighted to be representative of the Canadian population for the year each survey was conducted. Given that individuals (particularly obese individuals) tend to underreport their body weights,<sup>13</sup> the prevalences of obesity reported here should be considered conservative.

Canadian obesity surveillance maps developed from the survey data are presented in Fig. 1. The overall national prevalence of obesity increased across the surveys, more than doubling over the 13-year period: 5.6%, 9.2%, 13.4%, 12.7% and 14.8% for the years 1985, 1990, 1994, 1996 and 1998 respectively. In 1998, the adult population of Canada was 22.2 million;<sup>14</sup> thus, the prevalence of obesity in that year translates into 3.3 million obese Canadians. The maps clearly show the progression of the obesity epidemic across the country. Over the 13-year span considered here, all provinces experienced increases in the prevalence of obesity. By 1998, only Quebec and British Columbia had prevalences below 15%, although they were not far behind — both had a prevalence of obesity of 12%. Unfortunately, data for the territories are lacking in the surveys used for this report (Fig. 1). North American Aboriginal populations have an increased risk of obesity and associated disorders;<sup>15</sup> thus, obesity surveillance in Northern Canada is a research priority.

Similar obesity surveillance maps have been developed for the United States using self-reported data from the Behavioral Risk Factor Surveillance System (BRFSS).<sup>16,17</sup> The prevalence of obesity in the United States increased from 12% in 1991 to 17.9% in 1998.<sup>16</sup> As was the case in Canada, the prevalence of obesity increased in all regions of the United States. A more recent analysis from the BRFSS indicates that the prevalence of obesity among US adults was 19.8% in 2000, demonstrating a continued increase.<sup>17</sup>

In summary, Canada has recently experienced a major epidemic of obesity, with the population prevalence more than doubling between 1985 and 1998. In 1998, the problem of obesity was nationwide, because it did not appear to be limited to one province or region. Continued population surveillance of obesity is necessary to determine the extent of the problem and to estimate its impact on the present and future health of Canadians.

This article has been peer reviewed.

Dr. Katzmarzyk is with the School of Kinesiology and Health Science, York University, Toronto, Ont.

Competing interests: None declared.

## References

1. World Health Organization. *Obesity: preventing and managing the global epidemic*. Geneva: The Organization; 2000. Technical report series no 894.
2. National Institutes of Health. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. Bethesda (MD): National Institutes of Health; 1998. Available: [www.nhlbi.nih.gov/guidelines/obesity/ob\\_home.htm](http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm) (accessed 2002 Mar 7).
3. US Department of Health and Human Services. The surgeon general's call to action to prevent and decrease overweight and obesity. Rockville (MD): US Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001. Available: [www.surgeongeneral.gov/sgooffice.htm](http://www.surgeongeneral.gov/sgooffice.htm) (accessed 2002 Mar 7) (Note: after reaching this site, select Overweight/obesity from the Special Topics menu).
4. Birmingham CL, Muller JL, Palepu A, Spinelli JJ, Anis AH. The cost of obesity in Canada. *CMAJ* 1999;160(4):483-8. Available: [www.cmaj.ca/cgi/reprint/160/4/483](http://www.cmaj.ca/cgi/reprint/160/4/483)
5. Tremblay MS, Willms JD. Secular trends in the body mass index of Canadian children [published erratum appears in *CMAJ* 2001;164(7):970]. *CMAJ* 2000;163(11):1429-33. Available: [www.cmaj.ca/cgi/content/full/163/11/1429](http://www.cmaj.ca/cgi/content/full/163/11/1429)
6. Tremblay MS, Katzmarzyk PT, Willms JD. Temporal trends in overweight and obesity in Canada, 1981-1996. *Int J Obes*. In press.
7. Andersen RE. The spread of the childhood obesity epidemic. *CMAJ* 2000;163(11):1461-2. Available: [www.cmaj.ca/cgi/content/full/163/11/1461](http://www.cmaj.ca/cgi/content/full/163/11/1461)
8. Rootman I, Warren R, Stephens T, Peters L, editors. *Canada's health promotion survey: technical report*. Ottawa: Health and Welfare Canada; 1988. p. 155-68.
9. Stephens T, Graham DF, editors. *Canada's health promotion survey 1990: technical report*. Ottawa: Health and Welfare Canada; 1993. p. 139-50.
10. Health Statistics Division, Statistics Canada. *National population health survey public use microdata files - cycle 1, 1994-1995*. Ottawa: Statistics Canada; 1996. Available: [www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm](http://www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm) (accessed 2002 Mar 13).
11. Health Statistics Division, Statistics Canada. *National population health survey public use microdata files - cycle 2, 1996-1997. Health institutions component*. Ottawa: Statistics Canada; 1998. Available: [www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm](http://www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm) (accessed 2002 Mar 13).
12. Health Statistics Division, Statistics Canada. *National population health survey public use microdata files - cycle 3, 1998-1999. Household component*. Ottawa: Statistics Canada; 2000. Available: [www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm](http://www.chass.utoronto.ca/datalib/codebooks/cstldi/nphs.htm) (accessed 2002 Mar 13).
13. Rowland ML. Self-reported weight and height. *Am J Clin Nutr* 1990;52:1125-33.
14. *Annual demographic statistics, 2000*. Ottawa: Statistics Canada; 2001. Cat no 91-213-XPB.
15. Hanley AJ, Harris SB, Gittelsohn J, Wolever TM, Saksvig B, Zinman B. Overweight among children and adolescents in a Native Canadian community: prevalence and associated factors. *Am J Clin Nutr* 2000;71:693-700.
16. Mokdad AH, Serdula MK, Dietz WH, Bowman BA, Marks JS, Koplan JP. The spread of the obesity epidemic in the United States, 1991-1998. *JAMA* 1999;282:1519-22.
17. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the United States. *JAMA* 2001;286:1195-200.

**Correspondence to:** Dr. Peter T. Katzmarzyk, School of Kinesiology and Health Science, York University, 4700 Keele St., Toronto ON M3J 1P3; fax 416 736-5774; [katzmarz@yorku.ca](mailto:katzmarz@yorku.ca)