Obesity Statistics in Canada

Public Health Agency of Canada
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Publication date: September 2024

Cat.: HP35-188/2024E-PDF
ISBN: 978-0-660-72778-3
Pub.: 240369

Acknowledgements

The report was prepared by the following people (currently and formerly) in the Centre for Surveillance and Applied Research (CSAR) at the Public Health Agency of Canada (PHAC): Farah Barakat, Julie Bates, Marisol Betancourt, Alexandria Melvin, Karen C Roberts, Margot Shields, Calum Thompson, Wendy Thompson, Stephanie Toigo, Ron Wall, Chinchin Wang, and Danisha Zaman.

We would also like to acknowledge the contributions of the following who provided valuable review and input to the development of this report: Mary Sue Devereaux, Didier Garriguet, Margaret de Groh, Blair Jones, Alison Lake, Sarah MacKinnon, Shaila Rodrigues, and Eric Vallières.

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Executive Summary

Introduction (and Health Risks)

The term “obesity” describes a medical condition where excess body fat threatens health. Individuals with excess body fat have an elevated risk of chronic diseases such as cardiovascular disease and diabetes, some types of cancers, and various mental health condition (1,2). Among children, high body mass index (BMI) has been associated with the early onset of diseases including type 2 diabetes, hypertension, and a range of cancers (3,4). Evidence also suggests that a high BMI in childhood can have adverse psychosocial impacts, such as depression, lower self-esteem, and behavioral disorders (5,6). As well, obesity in childhood and adolescence is strongly associated with obesity in adulthood (7,8).

Purpose of this report

The purpose of this report is to promote awareness and give the most up-to-date information and data on the prevalence of obesity among adults, children, and adolescents in the Canadian context. This report aims to inform stakeholders, policymakers, and healthcare professionals when developing programs and policies concerning the prevalence of obesity in Canada. This report discusses obesity and how it is measured in addition to identifying the population groups more affected by obesity.

The information and data portrayed in this report are drawn from the Canadian Community Health Survey (CCHS) years 2000 to 2021, the Canadian Health Measures Survey (CHMS) cycle 1 (2007–2009) to cycle 6 (2018–2019), and the CCHS-Nutrition Focus (CCHS-Nutrition) from 2004 and 2015. The statistical analysis of the data allows for prevalence breakdowns of obesity according to different variables (where available) such as: age and sex, household income and education, Indigenous status, regional variation, as well as temporal and forecasted projections.

How is obesity measured?

BMI is the indicator most used by surveillance systems to track excess body fat within a population. BMI is a measure of an individual's weight in relation to their height (weight divided by height squared—weight (kg)/height (m^2)) (9).

For adults

Among adults, BMI estimates calculated from self-reported data are often biased, because adults' self-reports underestimate weight and overestimate height (10). Correction equations for adjusting BMI based on self-reported height and weight have been developed for use on adults in the CCHS. In this report, BMI_{AdjSR} refers to BMI based on self-reported values that have been adjusted to correct for biases. For adults, only BMI from measured data and adjusted BMI are presented in the report.

For children and youth

Children and youth grow at varying rates, therefore the World Health Organization age- and sex-specific cut-points are applied to classify BMI (11–13). For 5- to 17-year-olds, there are four BMI categories (thin, normal weight, overweight, and obesity). For children younger than 5 years, an "at risk of overweight" category is also used to lessen the likelihood that they will be classified in the obesity category during a period of rapid growth. Among children and youth, self- and parent-reported height and weight often result in substantial misclassification of BMI, for which no correction equations have been established in Canada (14,15). Consequently, only measured data for children and youth are used in this report.

Key Findings

Adult Obesity

- In 2021, 29.5% of Canadian adults had a BMI_{AdjSR} classified as obesity. An additional 35.5% had a BMI_{AdjSR} classified as overweight. Therefore, 65% of Canadian adults are classified in the combined overweight and obesity category.
- Men were more likely than women to have a BMI_{AdjSR} in the overweight range (39.7% versus 31.3%).
- The lowest prevalence of obesity was among the youngest (18 to 34 years) and oldest (80 years or older) age groups: 22.5% and 21.2%, respectively.
- Among women, low household income was associated with a significantly higher prevalence of obesity than the highest household income group (30.8% versus 26.6%).
- For both sexes, the lowest prevalence of obesity was among those in the highest household education group (post-secondary graduate).
- Obesity was significantly more common among adults in rural areas (33.6%) than in urban ones (28.6%).
- Between 2000–2001 and 2019–2020, the prevalence of obesity among adults based on self-reported data rose from 20.6% to 28.2%. A significant upward trend in the prevalence of obesity (based on adjusted BMI) was observed among adults in all age groups, all household income quintiles, and all levels of household education. The impact of COVID-19 has yet to be determined.

Child and youth obesity

- In 2015, 12.4% of Canadian children and youth aged 5 to 17 years had a BMI that placed them in the obesity category, and another 19.4% were in the overweight range. As a result, close to one out of three children and youth (31.8%) were classified in the combined overweight and obesity category.
- A larger percentage of boys than girls were in the obesity category (14.9% versus 9.9%).
- The prevalence of combined overweight/obesity was higher at ages 12 to 17 years than at ages 5 to 11 years (35.6% versus 28.4%).
- In 2004, the prevalence of obesity among children and youth (12.9%) was double the rate observed in 1978–1979.
- There is an indication of child and youth obesity and overweight/obesity rates plateauing in recent decades, with some exceptions. Among 5- to 11-year-olds, both obesity and combined overweight/obesity prevalence in 2014–2019 were lower than in 2004 (13.3% versus 10.4%, and 35.9% versus 26.6%). Among 12- to 17-year-olds, no significant differences in obesity or combined overweight/obesity were observed. Among girls (but not boys) aged 2 to 4 years, the prevalence of combined overweight/obesity decreased between 2004 and 2015 (11.1% versus 4.1%).

Concluding remarks

For adults, the prevalence of obesity from 2021 appears to be higher than previous years, but additional data is required to determine if the increase is larger than would have been expected based on recent trends. Ongoing surveillance could help to monitor the trends of obesity in the context of a pandemic in the long term. We are awaiting nationally representative measured data for children and youth collected since the COVID-19 pandemic. Further research is needed to fully understand the impact COVID-19 had on health behaviours (e.g. movement, dietary patterns) of children (5–11 years) and youth (12–17 years) in Canada (16). Ongoing research will help determine if obesity prevalence in children and youth remains at a plateau or if an increase will be observed following the COVID-19 pandemic.

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The term “obesity” describes a medical condition where excess body fat threatens health.

01.

What is obesity and how is it measured?

Key points

- The most used indicator of excess body fat is the body mass index (BMI), which is a measure of an individual's weight in relation to their height.
- The Canadian Guidelines for Body Weight Classification in Adults classify individuals aged 18 years or older into six BMI categories, each representing a different level of health risk.
- The World Health Organization (WHO) recommends age- and sex-specific categories for calculating BMI for children and youth.
- A population-based surveillance of BMI can provide information on trends over time and assist in the development and evaluation of intervention programs.

What is obesity?

The term "obesity" describes a medical condition where excess body fat threatens health (17). Individuals with excess body fat have an elevated risk of diseases such as hypertension, coronary heart disease, type 2 diabetes, stroke, osteoarthritis and several types of cancer (2,18), and mental health conditions such as depression (1,18).

How is obesity measured?

BMI is the indicator most used by surveillance systems to track excess body fat within a population. It is a measure of an individual's weight in relation to their height (weight divided by height squared—weight (kg)/height (m^2)) (19).

There are six BMI categories that classify people aged 18 years or older. Each represent a different level of health risk: underweight, normal weight, overweight, obesity class I, obesity class II, and obesity class III (see *Box 1. BMI classification for adults*). These categories are based on Canadian Guidelines for Body Weight Classification in Adults (20), and are aligned with those of the WHO (21).

Box 1. BMI classification for adults

Classification	BMI category (kg/m^2)	Risk of developing health problems
Underweight	< 18.5	Increased
Normal weight	18.5 to < 25.0	Least
Overweight	25.0 to < 30.0	Increased
Obesity	≥ 30.0	
Class I	30.0 to < 35.0	High
Class II	35.0 to < 40.0	Very high
Class III	≥ 40.0	Extremely high

Some articles have been discussing the need to review the BMI cut-off points or the way BMI is measured since it does not consider age, gender, ethnicities and indigenous status, but recommendations by the WHO have yet to be emitted (22–26). At the present, these BMI cut-offs remain the best measure for obesity at a population level.

This report uses the Canadian Guidelines to classify adults aged 18 years or older (excluding pregnant women) according to BMI (20).

Since children and youth grow at varying rates, WHO recommends age- and sex-specific cut-points. These cut-points are employed to calculate BMI for these groups (see *Box 2. BMI classification for children and youth*). For 5- to 17-year-olds, there are four classification categories (thin, normal weight, overweight, and obesity); for children younger than 5 years, an additional "at risk of overweight" category is used. For this report, the WHO cut-offs were used to classify children and youth aged 17 or younger (215 months or less) (11–13). Although the WHO cut-offs extend to age 19 years, for those aged 18 years or older (216 months or older), the adult classification was applied.

Box 2. BMI classification for children and youth

BMI calculation for children and youth is the same as for adults (weight divided by height squared). However, due to varying growth rates, cut-points are age- and sex-specific. The Public Health Agency of Canada calculates prevalence estimates of overweight and obesity based on BMI categories specified by the WHO (9,11).

In 2006, the WHO released international growth standards for children younger than 5 years (60 months or younger) (21). These standards are based on a cohort of children raised in desirable conditions that include breastfeeding, a good diet and a non-smoking mother, conditions considered optimal for healthy growth (11). In 2007, the WHO produced growth references for 5- to 19-year-olds. (61 to 228 months) (12). By 2010, several Canadian professional associations had recommended to employ the WHO references to monitor children's growth (27).

The WHO categories for classifying children younger than 5 years (60 months or younger) as having a BMI in the overweight or obesity category differ from those for children aged 5 years or older (61 months or older) (13). For both age groups, classification is based on growth charts specifying mean BMIs and standard deviations (SDs) by age in months. The approach for children younger than 5 years includes an "at risk of overweight" category, which lessens the likelihood that they will be classified in the obesity category during a period of rapid growth (13). Because of the difference in classification categories, the WHO does not recommend combining the younger and older age groups.

The following categories and SD values (based on the WHO cut-offs and SDs) (11–13) are used in the classification systems for children aged 60 months or younger and children aged 61 months or older:

BMI category	60 months or younger	61 months or older
Thin	≥ 2 SD below the mean	≥ 2 SD below the mean
Normal weight	< 2 SD below the mean and ≤ 1 SD above the mean	< 2 SD below the mean and ≤ 1 SD above the mean
At risk of overweight	> 1 SD above the mean and ≤ 2 SD above the mean	Category not applicable
Overweight	> 2 SD above the mean and ≤ 3 SD above the mean	> 1 SD above the mean and ≤ 2 SD above the mean
Obesity	> 3 SD above the mean	> 2 SD above the mean

SD=standard deviation from the age-/sex-specific WHO growth chart mean

Other measures of excess body fat

BMI does not distinguish between body fat and lean body mass (muscle), and it gives no information about the distribution of body fat or body shape (19,28). Abdominal obesity, a measure of body fat distribution, has shown to be associated with all-cause mortality and cardiovascular disease mortality (29–34). Measures of abdominal obesity may provide added discriminatory power in predicting obesity-related disease (29–34). Even among individuals whose BMI is in the normal weight category, abdominal fat has been associated with cardiovascular disease risk-factors (35). For clinical settings, it is recommended that waist circumference be measured as well as BMI, particularly for people with a BMI in the normal, overweight, or obese class I categories (36). Among adults with a BMI in obese class II and class III categories, waist circumference measurements are nearly all in the high health risk waist circumference group. For people aged 18 years or older, the WHO (37), Health Canada (38), and Obesity Canada (36) classify waist circumference into three health-risk categories (39) (see *Box 3. Waist circumference health-risk categories for adults).*

Several techniques for measuring body fat are more accurate than BMI such as underwater weighing (densitometry), dual energy X-ray absorptiometry, and magnetic resonance imaging (19,28). These procedures are complex, expensive, and not practical for clinical settings or for surveillance. They confirm the accuracy of simpler methods, such as BMI, in research studies. BMI has been found to be strongly correlated with body fat as measured by these more complex methods (which are considered to be the "gold standard"), but does have its limitations (7,19,28).

Box 3. Waist circumference health-risk categories for adults

	Waist circumference measurement	
Waist circumference health-risk	**Men**	**Women**
Low-risk	< 94.0 cm	< 80.0 cm
Increased-risk	94.0 to < 102.0 cm	80.0 to < 88.0 cm
High-risk	≥ 102.0 cm	≥ 88.0 cm

Although these supplemental techniques (e.g., waist circumference, densitometry, and magnetic resonance imaging) provide valuable insights, BMI remains the preferred measure for population surveillance and epidemiologic studies, owing to its simplicity, cost-effectiveness, and the ease with which it can be estimated.

Health risks associated with elevated BMI

Among adults, obesity (BMI ≥ 30 kg/m^2) has been associated with increased risk of type 2 diabetes, cardiovascular disease, asthma, gallbladder disease, osteoarthritis, chronic back pain, and several types of cancer (2). As well, a BMI in the overweight category (BMI 25.0–29.9 kg/m^2) has been associated with a higher likelihood of these diseases (2). Research has also revealed relationships between excess body fat and mental health conditions such as mood disorders, post-traumatic stress disorder, binge eating disorder, and schizophrenia (1).

Severe obesity (BMI ≥ 40 kg/m^2, as defined by Health Canada and WHO guidelines (38) presents the greatest health risk, particularly for type 2 diabetes (5.1 times the risk compared to normal BMI) and cardiovascular disease (2.53 to 3.14 times the risk compared to normal BMI) (40,41). Although the prevalence of severe obesity is low, the associated health care expenditures are disproportionately high (42).

The association between BMI and mortality is less conclusive. Some studies (43–48) have found that that people with a BMI in the overweight category are at ***decreased*** risk of all-cause mortality, compared with a BMI in the normal weight category. The obesity paradox describes this counterintuitive relationship. Methodological shortcomings in the research reporting these results, such as reverse causation and failure to account for confounding variables, are likely at the root of this unexpected association. This relationship is further complicated by BMI failing to distinguish between body fat and fat-free, lean muscle mass. The BMI "overweight" category includes individuals whose BMI value results from higher levels of body fat but also individuals whose BMI value results from higher fat-free, lean muscle mass (49). Misclassification through lean muscle mass is most common in certain clinical populations (50), and individuals with physical fitness requirements (e.g., soldiers (51) or athletes (52)). See *Appendix A: BMI, mortality, and the obesity paradox*.

Among children, the earlier onset of diseases—including type 2 diabetes, coronary heart disease, hypertension, and a range of cancers—has been associated with high BMI (3,4). Evidence also suggests that a high BMI in childhood can have psychosocial impact, such as depression, lower self-esteem, and behavioral disorders (5,6). As well, obesity in childhood and adolescence is strongly associated with obesity in adulthood (7,8).

Estimates for the direct (i.e., costs associated with treatment and condition management) and indirect costs (i.e., costs associated with life years lost to premature death and short- or long-term disability) of obesity are high (53). A recent Organisation for Economic Co-operation and Development (OECD) report found that, on average, countries would spend 8.4% of total health expenditures treating the consequences of overweight and obesity between 2020 and 2050 (53). OECD predicted average spending associated with management of obesity and overweight is approximately double the estimated healthcare costs of overweight and obesity in 2006 of 4.1% (54). Obesity and its health consequences are associated with economic effects such as decreased work productivity and workforce participation. As mentioned in the OECD report, at a macroeconomic level, such an impact on the labour market affects the GDP of a country and increases fiscal pressure (53).

Surveillance

Regular surveillance of BMI trends over time is essential for understanding populations at risk, identifying areas for intervention, and evaluating the effectiveness of policies and programs.

BMI remains the preferred measure for population surveillance and epidemiologic studies, owing to its simplicity, cost-effectiveness, and the ease with which it can be estimated.

At the national level, several Statistics Canada surveys routinely provide surveillance data for BMI calculation. However, because height and weight data are not collected in the same way, different surveys yield different estimates. See *Section 4: Data Sources and Methods* for more information.

Self-reported versus measured BMI

BMI may be calculated using information from surveys that ask respondents to self-report their height and weight, or from surveys with interviewers trained to take precise measurements. To estimate BMI for children, surveys may ask parents to report their child's height and weight. However, the accuracy of BMI estimates based on parent-reported data has been questioned (55).

Adults' self-reports underestimate weight and overestimate height (10). Consequently, prevalence estimates of overweight and obesity calculated from self-reported data are significantly lower than estimates based on measured data. Researchers in Canada have sought to establish equations that correct such self-reports to obtain more accurate estimates of BMI from self-reported data. See *Appendix B: Correction equations for adjusting BMI in the CCHS based on self-/parent-reported height and weight.* In this report, BMI_{AdjSR} refers to BMI based on self-reported values that have been adjusted to correct for biases.

Similar to adults, BMI classification of youth, based on self-reported height and weight, underestimates the prevalence of overweight and obesity (14,15). For youth, however, females underestimate their weight more than males. Furthermore, for both sexes, those with a BMI classified as in the overweight/obesity range underestimate their weight more than youth with a BMI in the normal weight category (15). More work is required to determine if developing correction equations for youth is feasible.

For children, self- and parent-reported height and weight often result in substantial misclassification of BMI (55). Moreover, while misclassification of BMI based on adults' self-reported height and weight tends to be consistent and predictable, this is not true for children's BMI based on parent-reported height and weight (55). This inconsistency has thwarted attempts to devise correction equations to adjust BMI based on parent reports.

Regular surveillance of BMI trends over time is essential for understanding populations at risk, identifying areas for intervention, and evaluating the effectiveness of policies and programs

02.
Adult Obesity

Key points

- In 2021, based on adjusted self-reported height and weight, 29.5% of Canadian adults had a BMI_{AdjSR} classified as obesity.
- An additional 35.5% had a BMI_{AdjSR} classified as overweight.
- An estimated 3.7% of adults had a BMI_{AdjSR} that placed them in obesity class III, the category associated with extremely high health risk.
- Although there was no difference in the proportion of men compared to women with a BMI_{AdjSR} in the obesity range, men were more likely than women to have a BMI_{AdjSR} in the overweight range (39.7% versus 31.3%).
- The lowest prevalence of obesity was among the youngest (18 to 34 years) and oldest (80 years or older) age groups: 22.5% and 21.2%, respectively.
- Among women, low household income was associated with a significantly higher prevalence of obesity than the highest household income group (30.8% versus 26.6%). Among men, no significant differences were seen across the different household incomes.
- For both sexes, the lowest prevalence of obesity was among those in the highest household education group (post-secondary graduate): 28.3% versus 36.7% and 35.1% among those with only secondary school graduation, or less than secondary school graduation).
- Obesity was significantly more common among adults in rural areas (33.6%) than in urban ones (28.6%).
- Between 2000–2001 and 2019–2020, the prevalence of obesity among adults based on self-reported data rose from 20.6% to 28.2%; increases were similar among men and women.
- A significant upward trend in the prevalence of obesity was observed among adults in all age groups, all household income quintiles, and all levels of household education.
- The prevalence of obesity class III among adults doubled from 2000–2001 to 2019–2020.
- Initial results from 2021 show increases in the prevalence of obesity during the COVID-19 pandemic, however more data is required to determine trends.

Reminder: **BMI_{AdjSR} refers to BMI based on self-reported values that have been adjusted to correct for biases.**

Box 4. Data sources

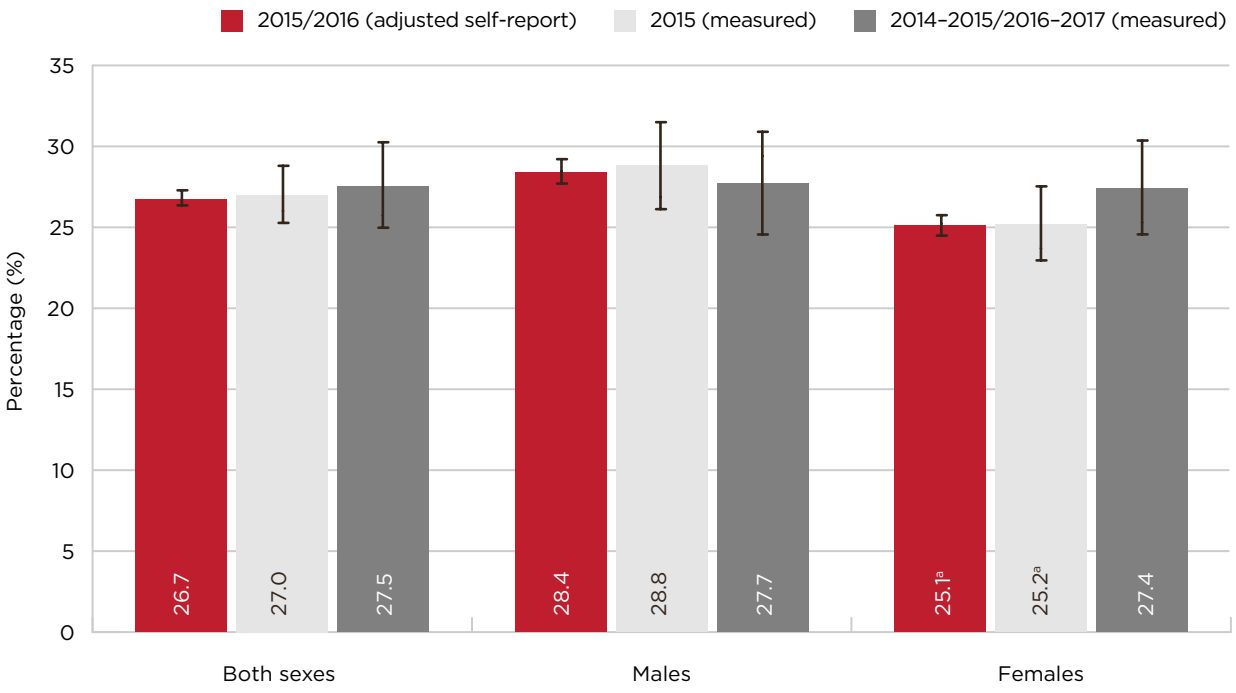
Recent estimates of adult BMI are available from three national surveys:

1. The Canadian Community Health Survey (CCHS) collects *self-reported* height and weight on adults aged 18 and over. The most recent, complete cycle, 2021, provides estimates for Canada, excluding the territories. The 2019–2020 CCHS provides the most recent data for the provinces *and* the territories.
2. The Canadian Health Measures Survey (CHMS) collects *measured* height, weight, and waist circumference on adults aged 18 to 79. The most recent cycles (4, 5 and 6) were conducted in 2014–2015, 2016–2017, and 2018–2019. For this report, results from these three cycles (combined 2014–2019) were combined to report more stable estimates.
3. The CCHS-Nutrition Focus (CCHS-Nutrition), which was conducted in 2004 and 2015, includes *measured* height and weight on adults aged 18 and over.

Most estimates in this section are based on *adjusted self-reported* BMI data (BMI_{AdjSR}) from the 2021 CCHS. See *Appendix B: Correction equations for adjusting BMI in the CCHS based on self-/parent-reported height and weight*. CCHS 2019–2020 data were used for the analyses of provincial *and* territorial variations.

Although measured BMI data are available from the CHMS, adjusted self-reported data from the CCHS survey are used instead to obtain the largest sample, allowing for detailed granular estimates. The extent to which adjusted self-reported estimates align with estimates based on physical measurements is indicated in Figure 2.1, which presents estimates of the prevalence of obesity among adults aged 18 to 79 years from three surveys with comparable time frames: the combined 2015–2016 CCHS, the 2015 CCHS-Nutrition, and the 2014–2015/2016–2017 CHMS. Estimates from the 2015–2016 CCHS were adjusted (BMI_{AdjSR}) to correct for the bias in BMI derived from self-reported data. For both men and women, estimates from the three surveys are similar.

Figure 2.1: Prevalence of adjusted self-reported and measured obesity by sex, household population aged 18 to 79 years, Canada excluding territories, (selected years)



DATA SOURCES: 2015/2016 Canadian Community Health Survey (share file), 2015 Canadian Community Health Survey—Nutrition (share file), 2014–2015/2016–2017 Canadian Health Measures Survey (Cycles 4 and 5). Significance testing done.

[a] Significantly different from males ($p<0.05$).

Prevalence of obesity and overweight among adults

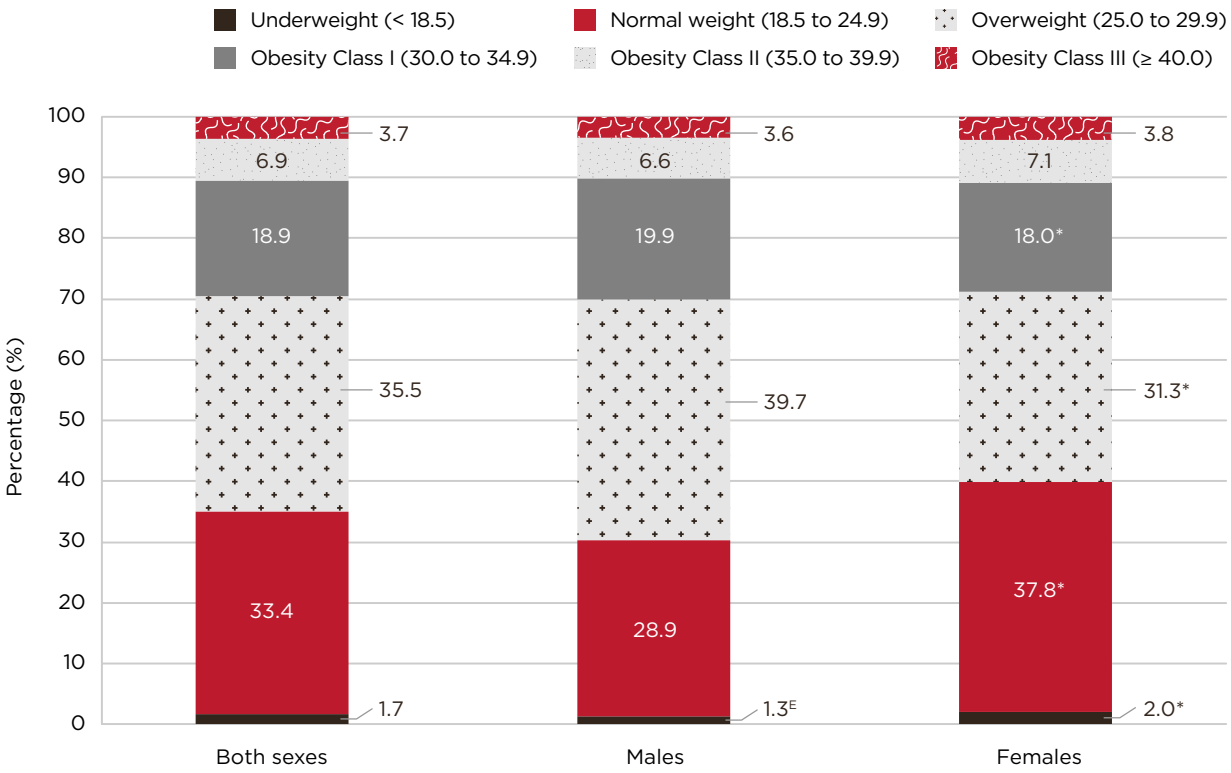
In 2021, 29.5% of Canadian adults were classified as having a BMI_{AdjSR} that set them in the obesity category (see Table A2.2 in Appendix C). An estimated 18.9% had a BMI_{AdjSR} in obesity class I (high risk); 6.9%, in class II (very high risk); and 3.7%, in class III (extremely high risk) (see Figure 2.2). See *Box 1. BMI classification for adults* in Section 1 for details regarding the categories.

Age and sex

In 2021, for both sexes, 65.0% had a BMI_{AdjSR} classified as overweight/obese while 29.5% were classified in the obesity category and 35.5% were classified in the overweight category. When comparing men and women, there were significantly more men than women in the overweight/obesity category: 69.8% versus 60.1% (see Table A2.2 in Appendix C). For the BMI_{AdjSR} in the

obesity range, there were no differences between men and women. However, more men than women were in the overweight category: 39.7% versus 31.3%. Another significant difference that can be observed between men and women is for the obesity class I where a higher percentage of men than women are classified in that category (19.9% versus 18.0%) (see Figure 2.2).

Figure 2.2: Percentage distribution of household population aged 18 years or older, by sex and adjusted self-reported body mass index (BMI) category, Canada excluding territories, 2021



DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from males ($p<0.05$)

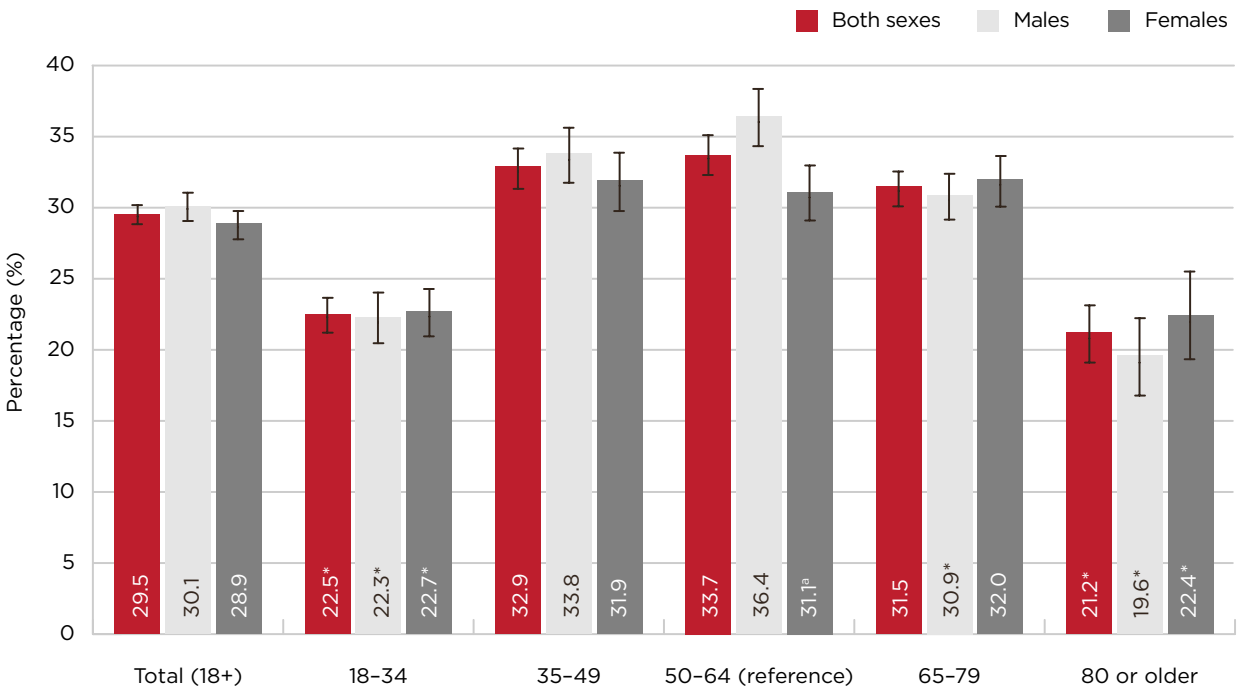
E Coefficient of variation between 15.0% and 35.0%, interpret with caution

NOTE: The percentages are based on records with a valid value for BMI. Excluded from the total population counts are pregnant women (n=284, estimated population 278.2 thousand) and individuals with a missing value for BMI (n=828 for males, estimated population 613.9 thousand; n=1,138 for females, estimated population 812.9 thousand)

Overall, the prevalence of adjusted self-reported obesity is significantly lower for those aged between 18 and 34 years (22.5%) and 80 years or older (21.2%) (see Figure 2.3). The same observation can be made when looking at men and women separately. For men specifically, the prevalence of obesity was lower for those in the 65 to 79 age group when compared to the 50 to 64 age group (30.9% versus 36.4%). For women, those age groups had similar obesity prevalence. Among men, the prevalence of obesity was significantly higher than women between the ages of 50 and 64 years: 36.4% versus 31.1%. For more information, see Table A2.3 in Appendix C.

The low prevalence of obesity among the elderly (21.2%) should be interpreted cautiously. As people age, they tend to lose muscle mass, which is often replaced with fat (56,57). Therefore, even if an individual's BMI does not change, increases in fat may raise their health risk.

Figure 2.3: Prevalence of adjusted self-reported obesity by sex and age group, household population aged 18 years or older, Canada excluding territories, 2021



DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

Waist circumference

Based on CHMS data from 2014 to 2019, 41.9% of adults aged 18 to 79 years had a waist circumference in the high-risk range (see Table 2a). An additional 21.9% were in the increased-risk category. Overall, 63.8% of adults had a waist circumference associated with high health risk. In all age categories, significantly more women had a high-risk waist circumference compared to men: 29.5% versus 21.9% for age 18 to 34; 50.1% versus 31.6% for age 35 to 49; 61.3% versus 39.5% for age 50 to 64; and 66.5% versus 50.3% for age 65 to 79.

Measures of central obesity can be helpful in assessing health risk at older ages (19,28,47). Waist circumference data from the CHMS show that the prevalence of high-risk measurements rose with age. The percentage of men with a high-risk waist circumference increased from 21.9% at ages 18 to 34 years to 50.3% at ages 65 to 79 years (the oldest age group in the CHMS); among women, percentages were higher, rising from 29.5% at ages 18 to 34 years to 66.5% at ages 65 to 79 years (see Table 2a).

Table 2a: Prevalence of waist circumference health risk by sex and age group, household population aged 18 to 79 years, Canada excluding territories, 2014 to 2019

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18–79)									
Low-risk WC	36.2		(33.4, 39.0)	42.6		(39.9, 45.2)	29.8	*	(25.6, 34.0)
Increased-risk WC	21.9		(20.3, 23.5)	23.6		(21.2, 26.1)	20.1	*	(17.8, 22.3)
High-risk WC	41.9		(38.5, 45.3)	33.8		(30.5, 37.1)	50.1	*	(45.8, 54.5)
Age 18–34									
Low-risk WC	56.7	a	(52.1, 61.2)	62.4	a	(56.8, 67.9)	50.6	a*	(42.4, 58.9)
Increased-risk WC	17.7	a	(14.7, 20.7)	15.7	a	(12.5, 19.0)	19.8		(14.4, 25.3)
High-risk WC	25.6	a	(22.1, 29.1)	21.9	a	(17.4, 26.5)	29.5	a*	(23.6, 35.5)
Age 35–49 (reference)									
Low-risk WC	36.2		(31.0, 41.4)	42.7		(36.8, 48.7)	29.7*	*	(23.1, 36.2)
Increased-risk WC	22.9		(20.3, 25.5)	25.7		(21.4, 29.9)	20.2		(16.7, 23.6)
High-risk WC	40.9		(35.5, 46.2)	31.6		(25.3, 37.9)	50.1*	*	(43.9, 56.4)

Table 2a continued on next page

Continuation of **Table 2a**

Age 50–64									
Low-risk WC	24.5	a	(21.4, 27.7)	31.2	a	(26.5, 35.9)	17.8	a*	(14.2, 21.3)
Increased-risk WC	25.2		(22.3, 28.0)	29.4		(24.6, 34.1)	21.0	*	(16.4, 25.5)
High-risk WC	50.3	a	(46.3, 54.4)	39.5	a	(33.6, 45.3)	61.3	a*	(56.7, 65.8)
Age 65–79									
Low-risk WC	19.8a	a	(16.5, 23.2)	25.1	a	(20.3, 30.0)	14.8	a*	(10.5, 19.1)
Increased-risk WC	21.6		(18.7, 24.6)	24.6		(20.4, 28.8)	18.8	*	(15.6, 21.9)
High-risk WC	58.5a	a	(54.0, 63.1)	50.3	a	(44.9, 55.7)	66.5	a*	(61.4, 71.5)

DATA SOURCES: 2014–2015, 2016–2017, and 2018–2019 Canadian Health Measures Survey (Cycles 4, 5, and 6). Significance testing done.

* Significantly different from males ($p<0.05$).

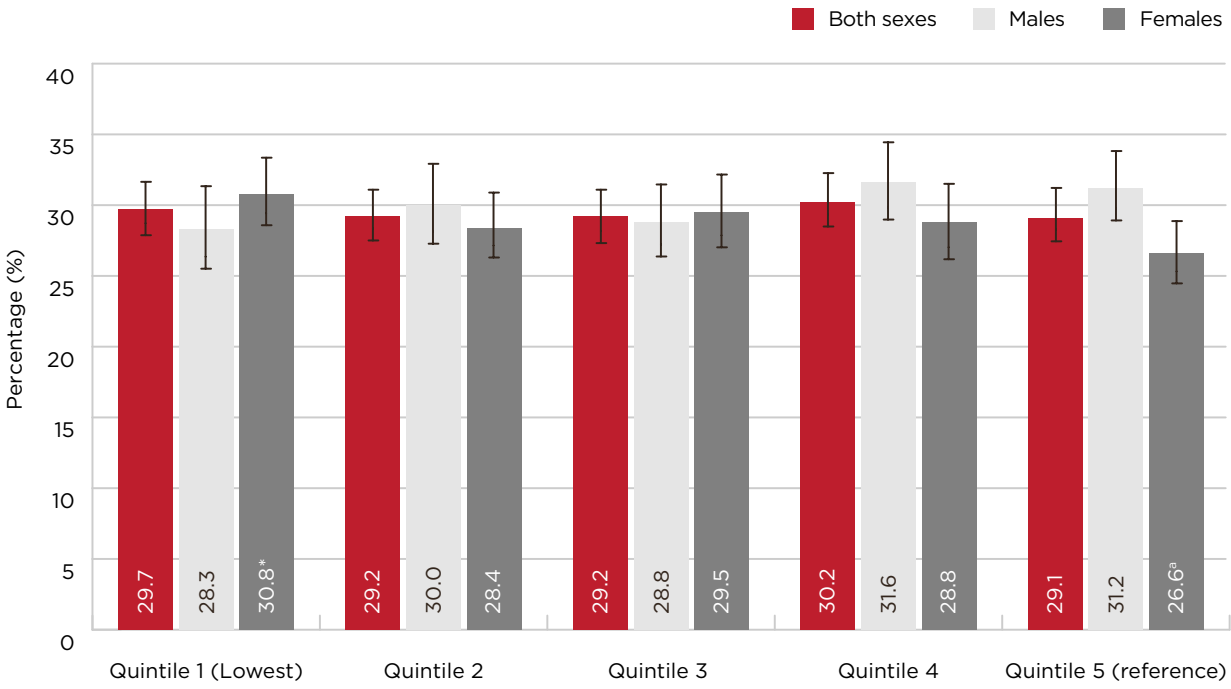
[a] Significantly different from reference (age 35–49, $p<0.05$).

WC=waist circumference.

Household income and education

Associations between household income and obesity differed for men and women (see Figure 2.4). Women in the lowest income quintiles had the *highest* prevalence of obesity (30.8%), which was significantly higher than women in the highest income quintile (26.6%). The prevalence varied relatively little among women in quintiles two to four (ranging from 28.4% to 29.5%). By contrast, men in the highest income quintile have a significantly higher prevalence of obesity than women in the same quintile (31.2% versus 26.6%). Among men, no differences in the distribution of BMI_{AdjSR} appeared across income quintiles. For information on the confidence intervals (CI), see Table A2.4 in Appendix C.

Figure 2.4: Prevalence of adjusted self-reported obesity by sex and household income quintile, household population aged 18 years or older, Canada excluding territories, 2021



DATA SOURCE: 2021 Canadian Community Health Survey (share file).

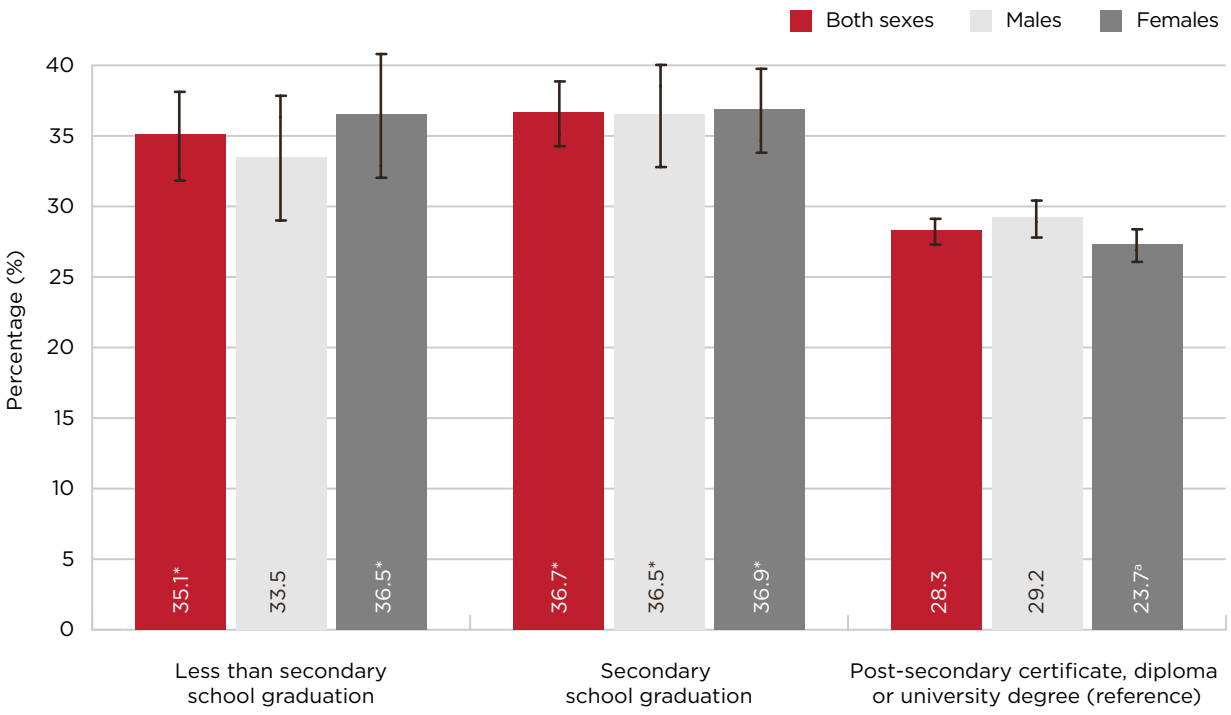
Significance testing done.

* Significantly different from reference ($p<0.05$)

[a] Significantly different from males ($p<0.05$)

For both sexes, the lowest prevalence of obesity was among those in the highest household education group (post-secondary graduate): 28.3% versus 36.7% (only secondary school graduation) and 35.1% (less than secondary school graduation). See Table A2.5 in Appendix C or look at Figure 2.5 below. Significantly more men than women with a post-secondary degree, were classified in the obesity category: 29.2% versus 27.3%.

Figure 2.5: Prevalence of adjusted self-reported obesity by sex and highest level of education in the household, household population aged 18 years or older, Canada excluding territories, 2021



DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$)

ª Significantly different from males ($p<0.05$)

Box 5. International Surveillance

International surveillance has revealed a negative association between socioeconomic status (SES) and BMI in higher-income countries, but a positive association in lower-income countries. This is called the "reversal hypothesis," for which several explanations have been proposed. In affluent countries, the higher prevalence of obesity among those with low SES may be due to lack of funds to buy healthy foods. In poorer countries, the lower prevalence of obesity among those with low SES may reflect limited access to *any* food (58). As well, in higher-income countries, cultural values about the desirability of being thin may motivate high-SES individuals to avoid weight gain. By contrast, in lower-income countries, excess weight may be seen as a status symbol (58).

Regional variations

In 2019–2020, the prevalence of adult obesity varied across provinces and territories, ranging from 23.2% in British Columbia to 40.4% in Newfoundland and Labrador (see Table 2b). Provincial prevalence estimates of obesity were similar when differences in the age-distribution between provinces were taken into consideration (see Table A2b in Appendix C).

Table 2b: Prevalence of adjusted self-reported obesity by sex and province/territory, household population aged 18 years or older, Canada, 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18+)	**28.2**		**(27.7, 28.7)**	**28.7**		**(28.0, 29.5)**	**27.7**	[a]	**(26.9, 28.4)**
Province									
Newfoundland and Labrador	40.4	*	(37.4, 43.4)	41.2	*	(37.0, 45.4)	39.5	*	(35.6, 43.4)
Prince Edward Island	36.2	*	(32.4, 40.1)	34.6		(28.9, 40.2)	37.9	*	(33.0, 42.9)
Nova Scotia	34.8	*	(32.2, 37.4)	35.2	*	(31.0, 39.4)	34.5	*	(31.4, 37.5)
New Brunswick	37.3	*	(34.7, 39.9)	34.4		(30.5, 38.4)	40.2	* [a]	(36.6, 43.7)
Quebec	26.2	*	(25.1, 27.4)	26.9		(25.3, 28.4)	25.6	*	(24.1, 27.1)
Ontario	28.3		(27.3, 29.2)	28.4		(27.0, 29.8)	28.1		(26.9, 29.4)
Manitoba	32.7	*	(30.5, 34.9)	32.0		(28.7, 35.2)	33.5	*	(30.5, 36.4)
Saskatchewan	35.6	*	(33.2, 37.9)	37.0	*	(33.5, 40.5)	34.0	*	(30.7, 37.4)
Alberta	29.7		(28.2, 31.2)	31.5		(29.3, 33.8)	27.8	[a]	(25.8, 29.9)
British Columbia	23.2	*	(21.8, 24.6)	24.4	*	(22.4, 26.5)	22.0	*	(20.1, 23.8)
Yukon	33.3		(27.8, 38.9)	32.6		(24.0, 41.3)	34.0		(26.3, 41.8)
Northwest Territories	36.7		(30.4, 43.0)	34.7		(27.3, 42.0)	39.0		(29.7, 48.2)
Nunavut	33.2		(24.5, 41.8)	23.0	[E]	(11.3, 34.8)	46.6	[E] [a]	(31.1, 62.1)

DATA SOURCE: 2019–2020 Canadian Community Health Survey (share file).

Significance testing done.

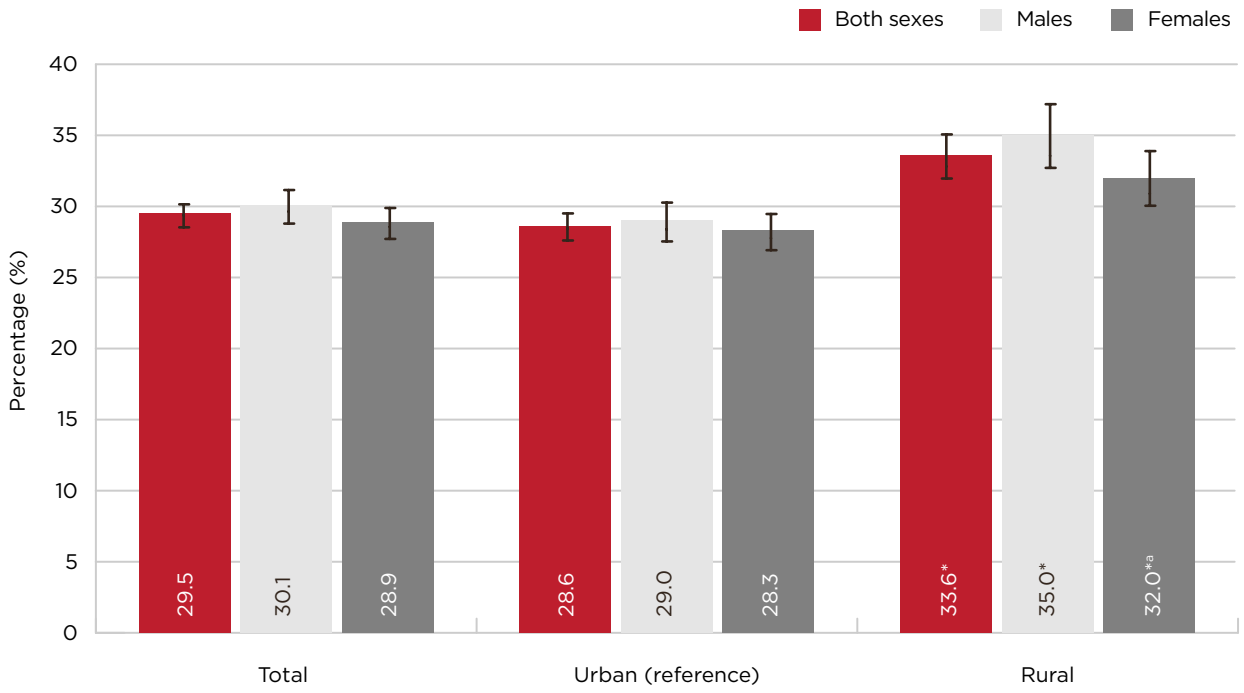
* Significantly different from overall total ($p<0.05$, adjusted for multiple comparisons)

[a] Significantly different from males ($p<0.05$)

[E] Coefficient of variation between 15.0% and 35.0%, interpret with caution

In 2021, obesity was more common among adults in rural areas (33.6%) than in urban centres (28.6%). For both sexes, the observation was the same, males: 35.0% versus 29.0%; females: 32.0% versus 28.3% (see Table A2.6 in Appendix C or look at Figure 2.6 below). Furthermore, in rural areas, the prevalence of self-reported obesity is significantly higher in men than women.

Figure 2.6: Prevalence of adjusted self-reported obesity by sex and urban/rural, household population aged 18 years or older, Canada excluding territories, 2021



DATA SOURCE: 2021 Canadian Community Health Survey (share file).

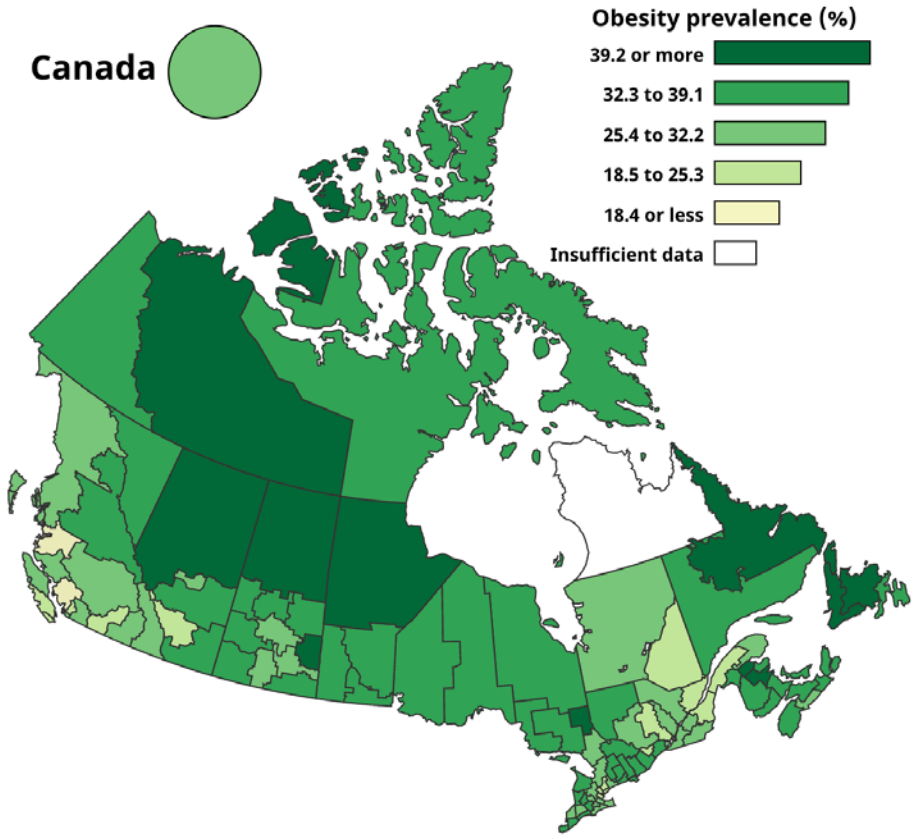
Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

The Canadian Risk Factor Atlas (CRFA) examines the prevalence of obesity and overweight in all provinces, territories, health regions, census metropolitan areas, and large census agglomerations in Canada. To allow for information to be presented at a range of geographic levels, including distributions by age, sex, income and education, data from four cycles of the CCHS (2015–2018) were combined (59). Figure 2.7 shows the distribution of obesity by health region among adults, using data from the CRFA tool. For additional information, see Table A2.7 in Appendix C.

Figure 2.7: Prevalence (%) of obesity (self-reported, adjusted BMI), among Canadian adults aged 18 years and older, by health regions, both sexes, crude rates, 2015–2018



DATA SOURCES: 2015–2018 Canadian Community Health Survey.

NOTES: Prevalence of obesity, as measured by adjusted self-reported BMI, among Canadian adults (aged 18 years and older) of both sexes, by health region. Data from the Canadian Risk Factor Atlas (2015–2018).

Indigenous status

The CCHS lacks data collection among First Nations living on-reserve and Inuit living in Inuit Nunangat. Although CCHS provides information for self-identified First Nations living off-reserve, Inuit living outside of Inuit Nunangat, and Métis peoples, this data is known to have limitations. Table A2.16 in Appendix C presents the available CCHS data on Indigenous Peoples. However, it is recognized that the estimates provided do not deliver a full picture and do not address the wider needs for Indigenous peoples, primarily closing health gaps between Indigenous and non-Indigenous persons, as per the Truth and Reconciliation Calls to Action report (60). This report acknowledges the data gaps associated with obesity in Indigenous Peoples in addition to the lack of data on risk factors such as socioeconomic factors and the effects of colonialization.

Additional information on the prevalence of obesity among Indigenous peoples can be found in the *Key Health Inequalities in Canada: A National Portrait—2018* (61). This report sought to estimate the scale of inequality between Indigenous Peoples and the non-Indigenous population using data from 1) the 2008–2010 *First Nations Regional Longitudinal Health Survey (RHS)* for First Nations people living on-reserve and 2) the 2010–2014 CCHS for the non-Indigenous population and for First Nations people living off-reserve, Inuit living outside of Inuit Nunagat and Métis peoples. The First Nation Information Governance Centre (FNIGC) provided the analysis and data on health inequalities with respect to First Nations living on reserve (61). New data on measured obesity in Indigenous Peoples aged 18 to 79 years old is available in the Health Inequalities Data Tool (62), which combines the recent CHMS Cycles (2014 to 2019).

Other social determinants of health

The Health Inequalities Data Tool (62) presents data on over 100 indicators, including obesity, stratified by life course stage and by a range of social and economic characteristics. These socioeconomic determinants include, but are not limited to sexual orientation, cultural/racial background, employment status, occupation, etc. For adults, self-reported and measured obesity are presented by combining CCHS cycles (2015 to 2018) and CHMS cycles (2016 to 2019), respectively. The Health Inequalities Data Tool also provides rate ratios, to show the strength of the association, and rate differences, to show excess risk among groups.

Trends over time

According to a 2016 report from the NCD Risk Factor Collaboration, from 1975 to 2014, the global age-standardized prevalence of adult obesity rose from 3.2% to 10.8% among men and from 6.4% to 14.9% among women (17,63). Compared with other OECD nations, the prevalence of obesity in Canada is high, however Canada's rate of growth is one of the slowest among OECD countries (64).

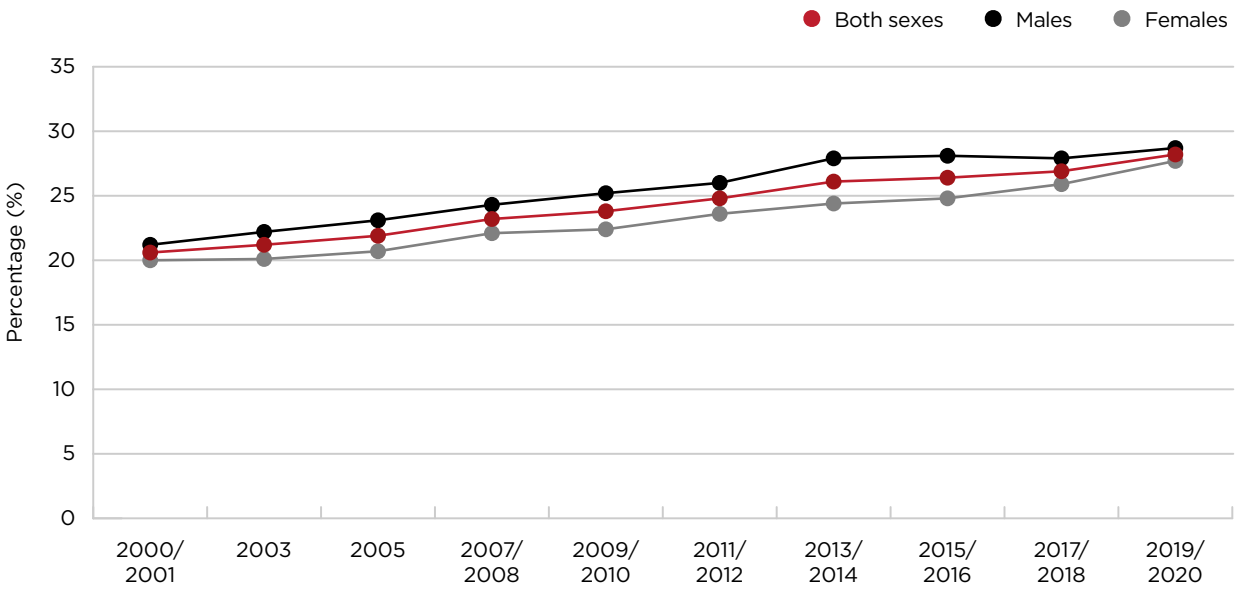
For the first time since 1978–1979, the 2004 CCHS-Nutrition provided nationally representative BMI estimates using measured height and weight data. Based on these data, a significantly higher percentage of adults were classified in the obesity category in 2004 (23.1%) than in 1978–1979 (14%) (65).

Trends since 2000

Based on self-reported height and weight

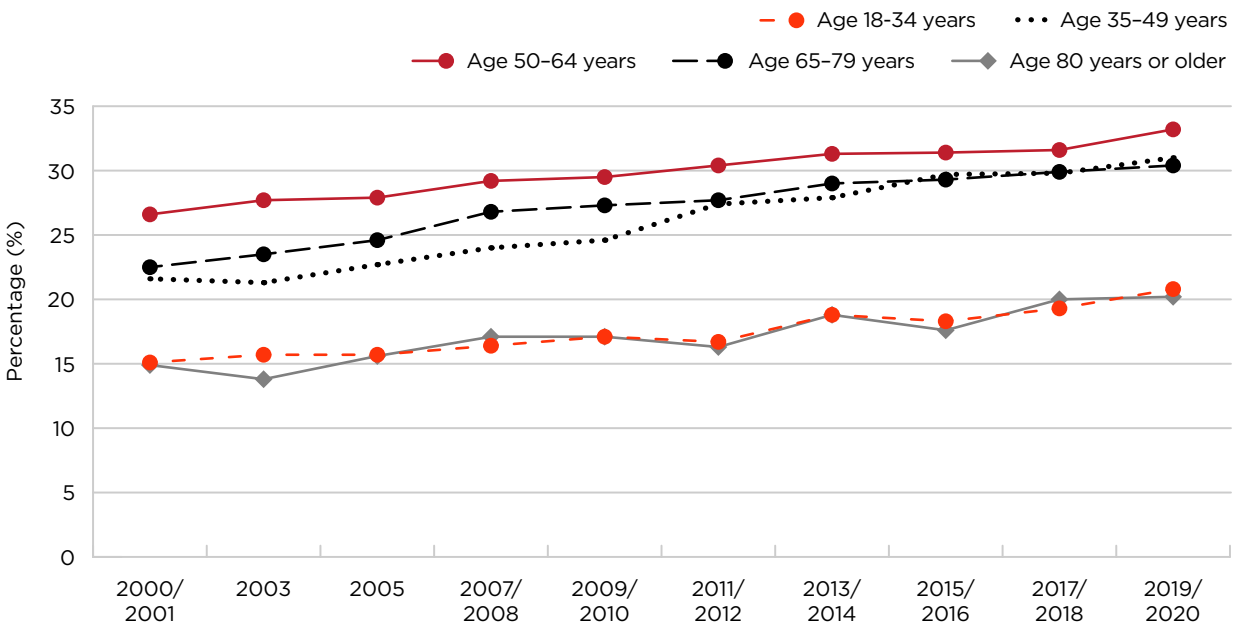
At the time of publication, data from 2021–2022 were not available, as such, trend estimation ranges from 2000–2001 to 2019–2020. Adjusted self-reported data (BMI_{AdjSR}) from the CCHS surveys show that between 2000–2001 and 2019–2020, the prevalence of obesity among adults rose steadily from 20.6% to 28.2% (see Figure 2.8). For more details, see Table A2.8a in Appendix C. Increases were similar among men and women: from 21.2% to 28.7% and from 20.0% to 27.7%, respectively. For both sexes, a significant upward trend was observed for all age groups (see Figure 2.9), household income quintiles (see Figure 2.10), and household education levels (see Figure 2.11). Their corresponding tables (Table A2.9, A2.10 and A2.11) can be found in Appendix C. Canadians aged between 35 and 49 years old show the largest increase in obesity prevalence with a rise of 9.4%: 21.6% in 2000–2001 to 31.0% in 2019–2020. For household income quintiles, the largest increase in the prevalence of self-reported obesity is seen in those in the highest income quintile (19.8% in 2000–2001 to 27.7% in 2019–2020). Regarding the household education levels, obesity prevalence increased by 11% between 2000 and 2020 (21.3% in 2000–2001 versus 32.3% in 2019–2020) for households where the highest level of education was secondary school graduation.

Figure 2.8: Prevalence of adjusted self-reported obesity by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020



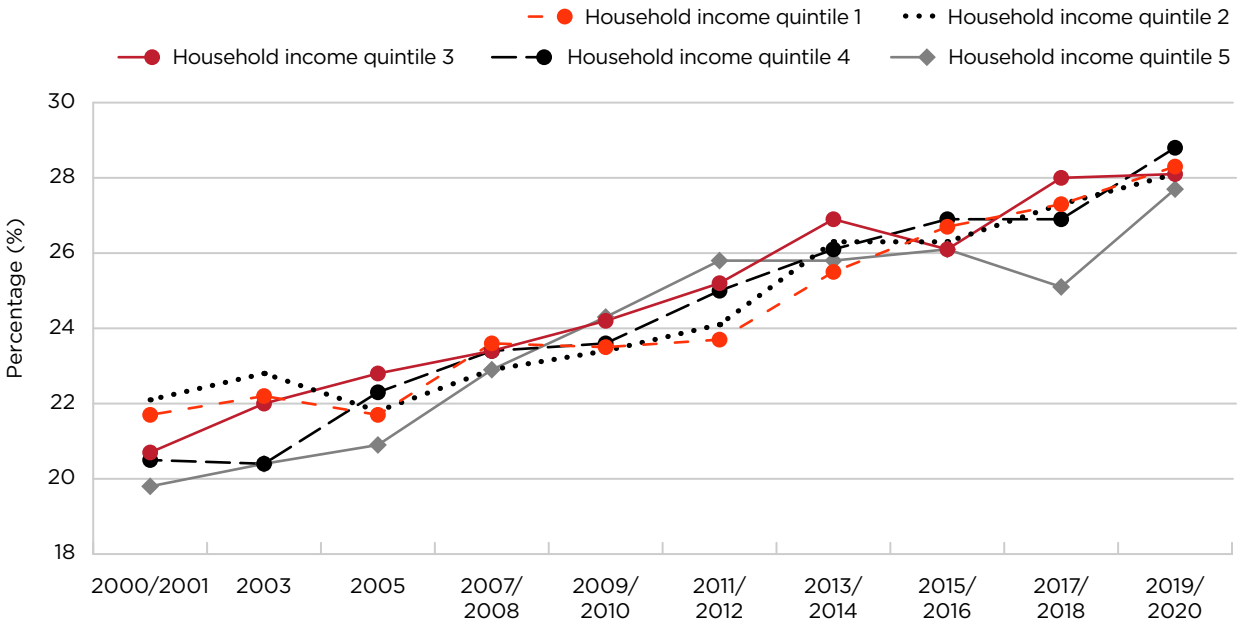
DATA SOURCES: 2000/2001–2019/2020 Canadian Community Health Survey (share files).
NOTE: Significance labels included in Table A2.8a.

Figure 2.9: Prevalence of adjusted self-reported obesity by age group, household population aged 18 years or older, Canada 2000–2001 to 2019–2020



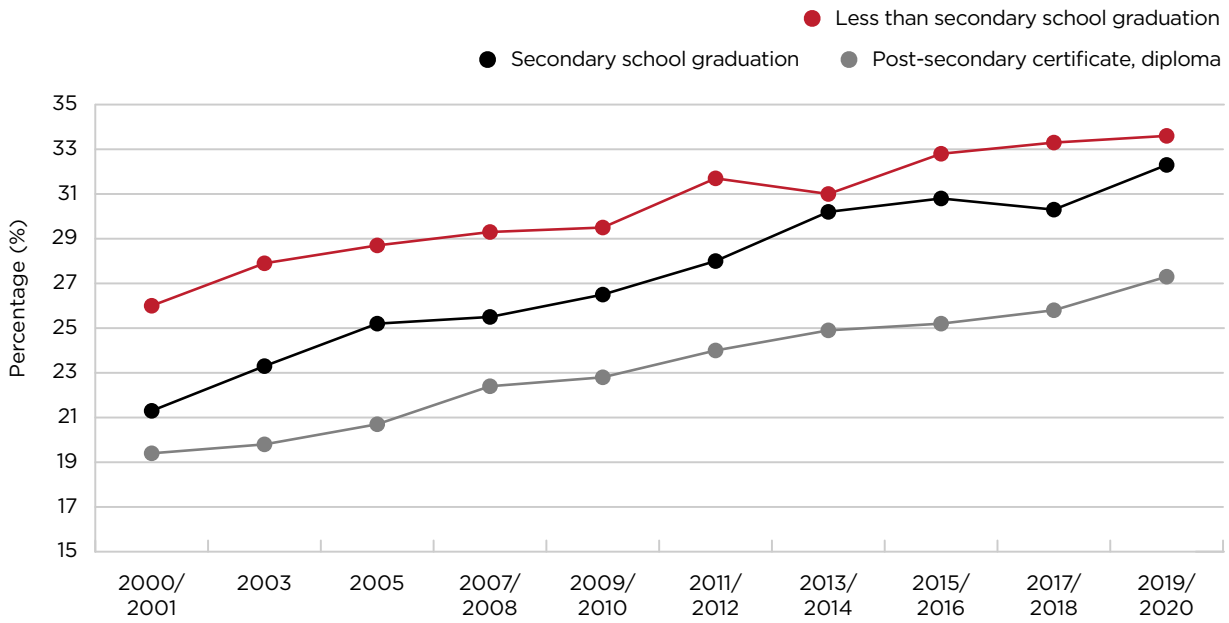
DATA SOURCES: 2000/2001–2019/2020 Canadian Community Health Survey (share files).
NOTE: Significance labels included in Table A2.9.

Figure 2.10: Prevalence of adjusted self-reported obesity by household income quintile, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020



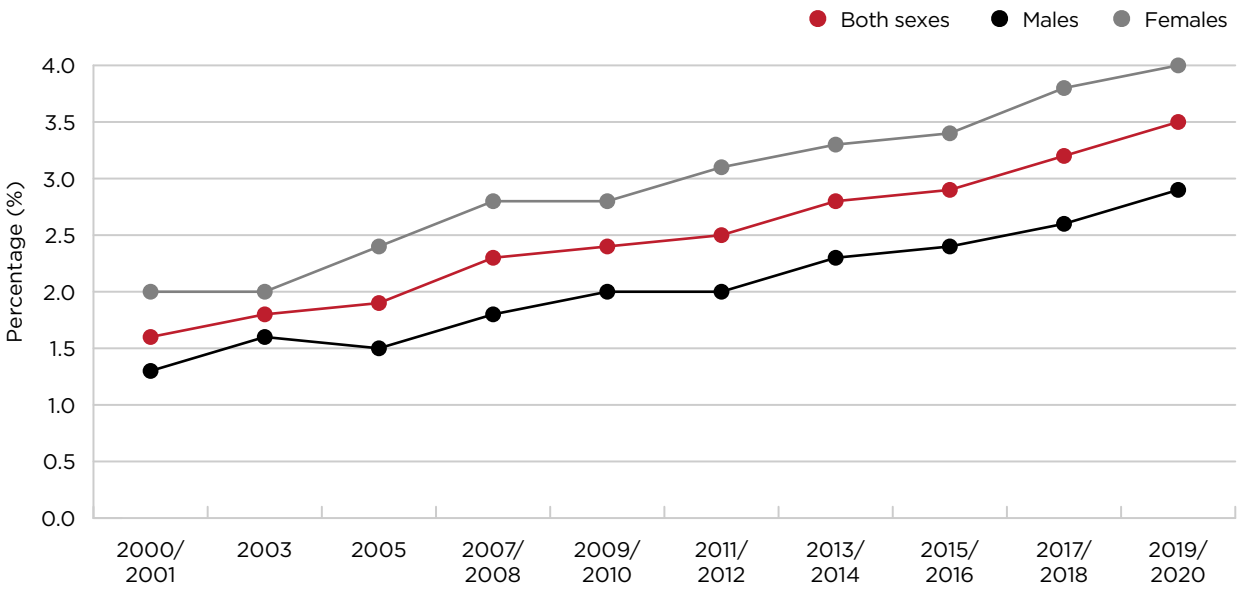
DATA SOURCES: 2000/2001–2019/2020 Canadian Community Health Survey (share files).
NOTE: Significance labels included in Table A2.10.

Figure 2.11: Prevalence of adjusted self-reported obesity by highest level of education in the household, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020



DATA SOURCES: 2000/2001–2019/2020 Canadian Community Health Survey (share files).
NOTE: Significance labels included in Table A2.11.

Figure 2.12: Prevalence of adjusted self-reported class III obesity by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020



DATA SOURCES: 2000/2001–2019/2020 Canadian Community Health Survey (share files).
NOTE: Significance labels included in Table A2.12a.

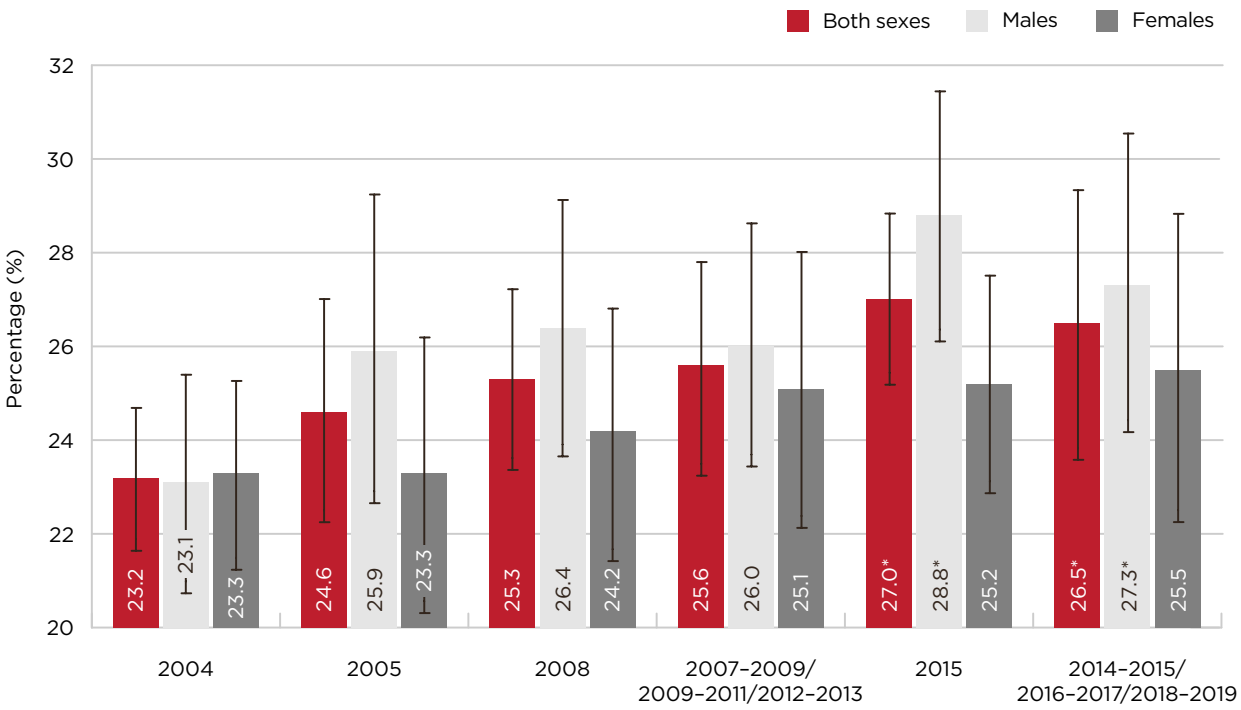
Furthermore, the percentage of adults categorised in obesity class III doubled over this period, (Figure 2.12, for additional information, see Table A2.12a in Appendix C) rising from 1.3% (in 2000–2001) to 2.9% (in 2019–2020) for men, and from 2.0% to 4.0% for women. Age-standardized prevalence estimates of obesity and obesity class III were similar to crude rates (see Tables A2.8b and A2.12b in Appendix C).

Based on physical measurements

Trends in obesity based on physical measurements come from the following surveys: the CCHS-Nutrition (2004 and 2015); the CHMS; and the 2005 and 2008 CCHS (see *Section 4: Data sources and methods*).

Among men aged 18 to 79 years, the prevalence of measured obesity varied depending on the data source: 23.1% in the 2004-CCHS-Nutrition, 28.8% in the 2015-CCHS-Nutrition and 27.3% in the combined 2014–2019-CHMS (see Figure 2.13). Among women, estimates were not statistically different. For additional details, see Table A2.13a in Appendix C.

Figure 2.13: Prevalence of measured obesity by sex, household population aged 18–79 years, Canada excluding territories (selected years)



DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

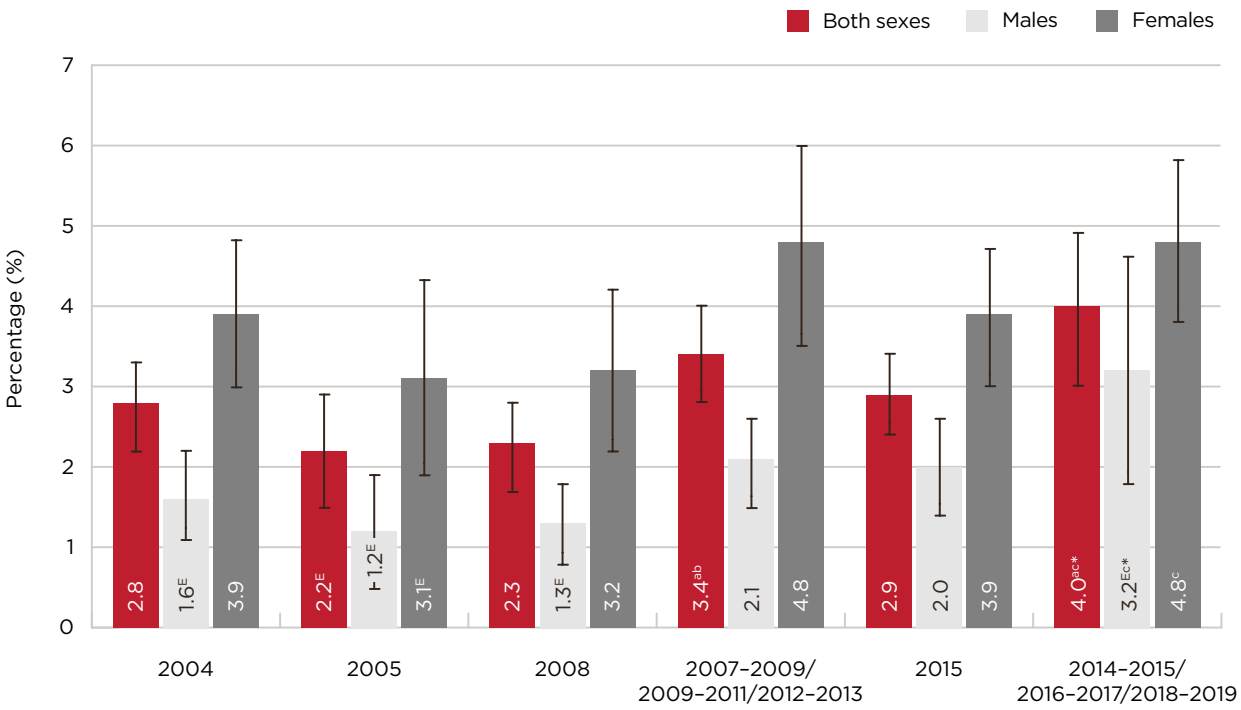
Significance testing done.

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

For obesity class III, the combined 2014–2019 CHMS estimate for men (3.2%) is not significantly different from the estimates from the 2015 CCHS-Nutrition (2.0%), and marginally different from the 2008 CCHS (1.3%) (see Figure 2.14). Among women, the prevalence of obesity class III were similar across the different time periods from 2004 to 2019. For additional details, see Table A2.14a in Appendix C.

Age-standardized prevalence estimates of obesity and obesity class III were similar to crude rates when examined (see A2.13b and A2.14b in Appendix C).

Figure 2.14: Prevalence of measured class III obesity by sex, household population aged 18–79 years, Canada (selected years)



DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

Significance testing done.

[a] Significantly different from time period-1 ($p<0.05$)

[b] Significantly different from time period-2 ($p<0.05$)

[c] Significantly different from time period-3 ($p<0.05$)

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

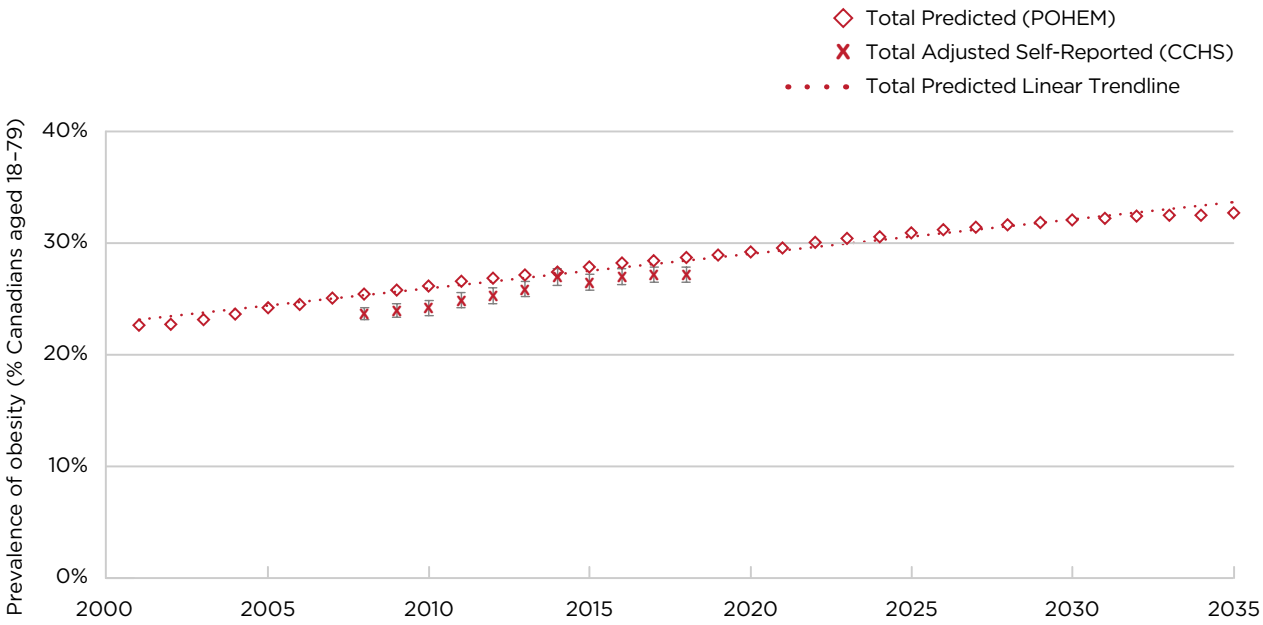
[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

Projections

Forecasting the trajectory of the prevalence of obesity can help in planning and evaluating public health strategies. Statistics Canada's microsimulation Population Health Model (POHEM) uses multiple data sources to simulate the health status of the population over time, by combining the results of individual life course simulations for a large sample (66). See *Section 4: Data sources and methods* for more information regarding POHEM. The model was created to predict the prevalence of obesity, in a way that accounts for interconnected factors such as

socio-demographics and health behaviours (smoking, physical activity levels, chronic diseases) that may be associated with body weight (67). POHEM simulated the annual prevalence of obesity among adults aged 18 to 79 years, by sex, over two periods: 2001-to-2018, which was retrospectively compared with observed estimates, and 2018-to-2035, which was used to project future patterns (see Figure 2.15).

Figure 2.15: Prevalence of adjusted self-reported obesity based on POHEM projections and survey data, household population aged 18–79, Canada, 2001–2035



DATA SOURCES: POHEM projections for 2001 through 2035; 2008 to 2018 Canadian Community Health Survey (share files).

NOTE: POHEM projections for BMI account for age, physical activity, and smoking. The model does not account for diet quality or potential impacts of the COVID-19 pandemic.

POHEM results showed that during the 2001-to-2018 period, the prevalence of obesity in the total adult population rose from 22.7% to 28.7%, an average annual rate of 1.5%. These simulated numbers aligned relatively well with those derived from survey data (see Table A2.8a).

The predicted 2018-to-2035 time-series shows further increases in the prevalence of obesity among adults, but at a much slower annual pace: 0.8% rather than 1.5%. POHEM predictions do not account for all factors associated with BMI, diet being a notable exclusion (68), nor consider the potential impacts of the COVID-19 pandemic. These are important limitations of the model given both the significant influence of diet on body weight and signals that the pandemic may have had lasting effects on behaviours and other factors related to body weight.

Obesity and the COVID-19 pandemic

On March 11th, 2020, COVID-19 was declared a pandemic. Initially, not a lot was known on this virus, but over the past few years, research has helped paint a picture of the association between COVID-19 and obesity.

Foremost, research has demonstrated that obesity is associated with increased severity of COVID-19 (69–72). For those living with obesity, the risk of COVID-19 infection and the severity of symptoms are increased (70). Obesity has been linked to impaired immune function and to a decrease in lung capacity and reserve, which result in difficulties breathing and the increased burden of COVID-19 observed among those living with obesity. (71,72). One review differentiated between overweight and obesity: the first increases the risk of COVID-19-related hospitalisations, but not death; while the second would appear to increase the risk of both COVID-19-related hospitalisations and death (71). However, whether obesity significantly increases mortality remains a debate across studies (73).

Many environmental and social factors, which were impacted by COVID-19 related lockdowns and regulations, are known to be associated with obesity (70,74). For example, social distancing measures and lockdowns have been associated with reduced levels of daily physical activity, increased time spent sedentary, and contributed to feelings of stress and anxiety (75,76). Declines in mental health during the COVID-19 pandemic may have led to weight gain by disrupting sleep habits, releasing stress hormones associated with weight gain, changing dietary patterns, and delaying care seeking (75). Research to understand these wider health impacts of the pandemic is ongoing.

Data is still lacking to say with certainty that the COVID-19 pandemic has increased obesity prevalence, but it certainly exacerbated the risk factors of obesity (74,75). As outlined in the section above, the prevalence of obesity in Canada has been increasing steadily since 2000–2001. Data from 2021 appear to be higher than previous years, but additional data is required to determine if the increase is larger than would have been expected based on recent trends. Ongoing surveillance will help determine the trends of obesity in the context of a pandemic in the long term.

Accurate estimates of BMI among Canadian children and youth rely on direct measurements of height and weight.

03.
Child and Youth Obesity

Key points

- In 2015, 12.4% of Canadian children and youth aged 5 to 17 years had a BMI that placed them in the obesity category, and another 19.4% were in the overweight range. As a result, close to 1 out of 3 children and youth (31.8%) were classified as having excess weight.
- A larger percentage of boys than girls were in the obesity category (14.9% versus 9.9%), while similar percentages of boys and girls were classified in the overweight range (19.6% and 19.1%).
- The prevalence of combined overweight/obesity was higher at ages 12 to 17 years than at ages 5 to 11 years (35.6% versus 28.4%).
- Among children aged 2 to 4 years, the prevalence of obesity was 3.4%. An additional 4.6% were classified as overweight, and 26.8%, "at risk of overweight."
- In 2004, the prevalence of obesity among children and youth (12.9%) was double the rate observed in 1978–1979. However, there is an indication of child and youth obesity and overweight/obesity rates plateauing in recent decades, with some exceptions.
  - Among 5- to 11-year-olds, both obesity and combined overweight/obesity prevalence in 2014–2019 were lower than in 2004 (13.3% versus 10.4%, and 35.9% versus 26.6%).
  - Among 12- to 17-year-olds, no significant differences in obesity or combined overweight/obesity were observed.
  - Among girls (but not boys) aged 2 to 4 years, the prevalence of combined overweight/obesity decreased between 2004 and 2015 (11.1% versus 4.1%).

Box 6. BMI Estimates in Canadian Children and Youth

Accurate estimates of BMI among Canadian children and youth rely on direct measurements of height and weight. The use of self- or parent-reported data can result in significant misclassification (55). Studies based on adolescents and adults have found that the use of self-reported height and weight to calculate BMI yields a lower prevalence of obesity compared to estimates based on measured data (55). To explore this finding, data from the 2007 to 2009 CHMS where parent-reported height and weight of children aged 6 to 11 (n=854) was analysed.

On average, parents underestimated the height (by 3.3 cm) and weight (by 1.1 kg) of their children. Estimates of the prevalence of obesity were significantly higher when based on parent-reported versus measured values for children aged 6 to 8; while the two collection methods yielded similar estimates of obesity for children aged 9 to 11. For children in both age groups, misclassification errors for BMI categories were substantial when based on parent-reported values. It consequently weakened associations between obesity and health indicators such as aerobic fitness and systolic blood pressure. The variance explained by factors associated with the bias in parent-reported height and weight was small, particularly for height. The use of correction equations based on variables associated with the bias resulted in a very modest reduction in misclassification errors. Bias associated with parental reports of children's height and weight results in misclassification errors for obesity that affect relationships with other variables. Efforts to establish correction equations to adjust for this bias were unsuccessful. Direct measures are required to accurately calculate obesity estimates and their relationships with health indicators in children (55) (See *Appendix B: Correction equations for adjusting BMI in the CCHS based on self-/parent-reported height and weight*).

Reminder: For children and youth, measured height and weight is used to calculate BMI (versus adults where self-reported data was used).

Box 7. Data sources

Two recent national surveys collected measured height and weight data for children and youth:

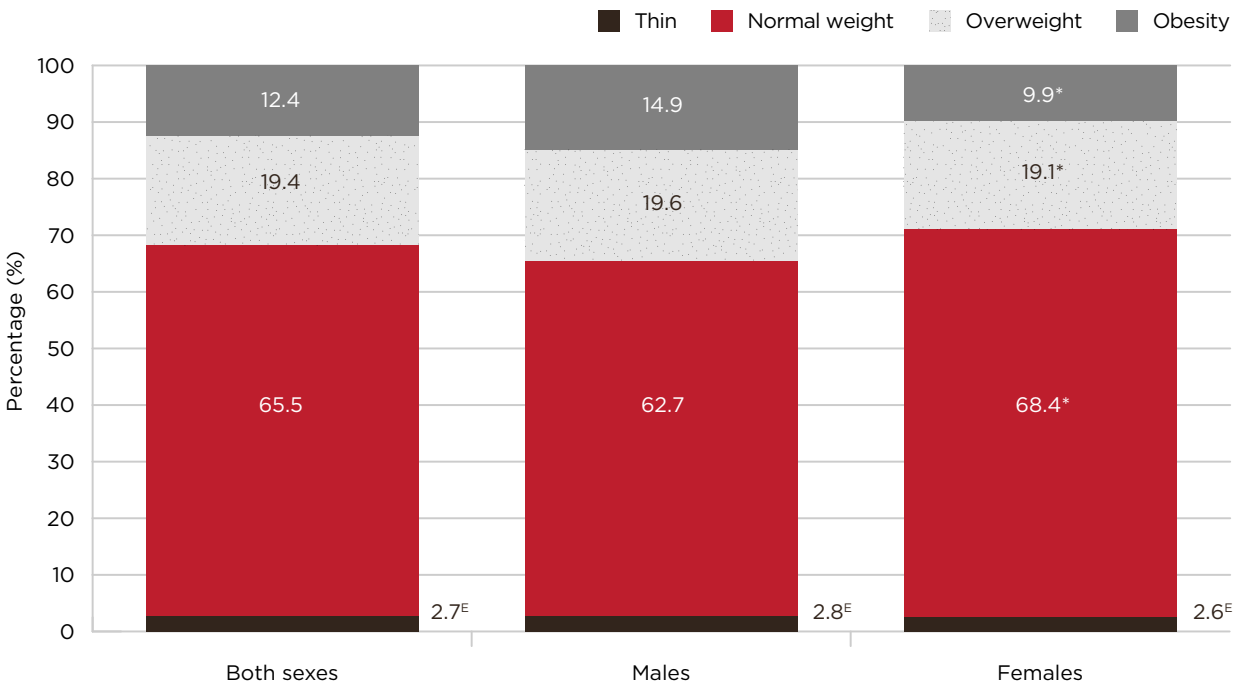
- The CHMS measures the height and weight of 3- to 17-year-olds. The most recent cycles were conducted in 2014–2015, 2016–2017, and 2018–2019.
- The CCHS-Nutrition, which took place in 2004 and 2015, included *measured* height and weight for 2- to 17-year-olds.

Estimates of obesity among children and youth aged 5 to 17 years can be calculated with data from either survey (see Table A3.1a and A3.1b in Appendix C). However, for children aged 3 to 4 years, CHMS sample sizes are too small to produce reliable estimates of overweight and obesity; therefore data for this age group are available only from the CCHS-Nutrition. For children and youth aged 5 to 17 years, the two surveys yield similar prevalences of obesity and of combined overweight/obesity (see Table A3.1a and A3.1b in Appendix C). Prevalence estimates of normal weight differed significantly between the CHMS and CCHS-Nutrition cycle. For consistency with the estimates for younger children, and since CCHS-Nutrition estimates have higher reliability (lower variance), most data in this chapter are from that survey.

Prevalence of obesity and overweight among children and youth

In 2015, 12.4% of Canadian children and youth aged 5 to 17 years had a BMI that placed them in the obesity category, and another 19.4% were classified as overweight (see Figure 3.1). As a result, 31.8% of children and youth had excess weight. Boys were more likely than girls to be in the obesity category (14.9% versus 9.9%), but similar percentages of boys and girls were classified in the overweight range (19.6% and 19.1%, respectively).

Figure 3.1: Percentage distribution of household population aged 5–17 years, by sex and measured body mass index (BMI) category, Canada excluding territories, 2015



DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share file).
Significance testing done.

* Significantly different from males ($p<0.05$).

E Coefficient of variation between 16.6% and 33.3%, interpret with caution.

The prevalence of combined overweight/obesity was higher at ages 12 to 17 years than at ages 5 to 11 years (35.6% versus 28.4%). The difference was statistically significant among girls (34.0% versus 24.6%), but not among boys (37.1% versus 32.1%).

At ages 2 to 4 years, the prevalence of obesity was 3.4%. An additional 4.6% were classified as overweight, and 26.8%, "at risk of overweight." The prevalence of combined overweight/obesity was significantly higher among boys than girls: 12.6% versus 4.1%.

Household income and education

For children and youth aged 5 to 17 years, the association between household income quintile and prevalence of obesity was not as clear as in adults, and no differences can be observed (see Table 3a).

Table 3a: Prevalence of measured obesity and overweight/obesity, by sex and household income quintile, household population aged 5 to 17 years, Canada excluding territories, 2015

HOUSEHOLD INCOME QUINTILE	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Obesity									
Total ages 5–17	**12.4**		**(10.7, 14.1)**	**14.9**		**(12.1, 17.6)**	**9.9**	[a]	**(7.8, 12.0)**
Quintile 1 (Lowest)	13.5		(9.4, 17.6)	17.7	[E]	(11.1, 24.2)	9.7	[E]	(4.7, 14.6)
Quintile 2	16.0	*	(11.9, 20.1)	17.8	[E]	(11.6, 24.0)	14.2	[E] *	(8.7, 19.6)
Quintile 3	10.1		(7.0, 13.1)	11.4	[E]	(6.6, 16.3)	8.6	[E]	(4.9, 12.2)
Quintile 4	12.6		(8.6, 16.6)	15.1	[E]	(9.2, 21.1)	9.6	[E]	(4.9, 14.4)
Quintile 5 (reference)	9.5	[E]	(5.7, 13.2)	12.1	[E]	(5.5, 18.6)	7.0	[E]	(3.5, 10.4)
Overweight/Obesity									
Total ages 5–17	**31.8**		**(29.4, 34.1)**	**34.5**		**(30.9, 38.0)**	**29.0**	[a]	**(25.5, 32.5)**
Quintile 1 (Lowest)	31.8		(26.4, 37.2)	33.7		(25.8, 41.7)	30.0		(21.8, 38.3)
Quintile 2	38.6	*	(32.8, 44.4)	41.1		(33.2, 49.1)	36.0	*	(27.7, 44.3)
Quintile 3	31.1		(26.5, 35.7)	33.7		(26.6, 40.8)	28.2		(21.7, 34.7)
Quintile 4	28.2		(22.9, 33.5)	31.1		(23.7, 38.5)	24.7		(17.5, 31.9)
Quintile 5 (reference)	28.5		(22.8, 34.2)	32.4		(24.1, 40.7)	24.7		(17.5, 32.0)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

Among girls, the prevalence of obesity was significantly lower in households where the highest level of education was post-secondary graduation, compared with girls in households where the highest level of education was secondary graduation or less: 8.3% versus 17.2% (see Table 3b). For boys, the distribution of measured BMI was similar across the different levels of household education. When comparing boys to girls, the latter had significantly lower prevalence of obesity, as well as obesity and overweight combined, when they came from households where the highest level of education for the parents was post-secondary graduation (8.3% versus 14.3%, and 26.9% versus 33.4%, respectively).

Table 3b: Prevalence of measured obesity and overweight/obesity, by sex and highest level of education in household, household population aged 5 to 17 years, Canada excluding territories, 2015

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Obesity									
Total ages 5–17	**12.4**		**(10.7, 14.1)**	**14.9**		**(12.1, 17.6)**	**9.9**	[a]	**(7.8, 12.0)**
Secondary school graduation or less	17.6	*	(12.6, 22.6)	18.0	[E]	(11.6, 24.3)	17.2	[E] *	(10.4, 24.1)
Post-secondary certificate, diploma or university degree (reference)	11.4		(9.6, 13.1)	14.3		(11.3, 17.2)	8.3	[a]	(6.3, 10.3)
Overweight/Obesity									
Total ages 5–17	**31.8**		**(29.4, 34.1)**	**34.5**		**(30.9, 38.0)**	**29.0**		**(25.5, 32.5)**
Secondary school graduation or less	39.6	*	(32.9, 46.2)	39.9		(31.0, 48.8)	39.2	*	(29.2, 49.2)
Post-secondary certificate, diploma or university degree (reference)	30.2		(27.7, 32.7)	33.4		(29.5, 37.3)	26.9	[a]	(23.4, 30.4)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

Regional variations

In 2015, the prevalence of obesity and combined overweight/obesity among children and youth was generally similar by province (see Table 3c). The exception was Newfoundland and Labrador, where rates of combined overweight/obesity for children and youth exceeded rates for Canada overall (46.1% versus 31.8%).

Table 3c: Prevalence of measured obesity and overweight/obesity by sex and province, household population aged 5 to 17 years, Canada excluding territories, 2015

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Obesity									
Total ages 5–17	**12.4**		**(10.7, 14.1)**	**14.9**		**(12.1, 17.6)**	**9.9**	[a]	**(7.8, 12.0)**
Newfoundland and Labrador	22.0	[a]	(15.5, 28.5)	23.6	[E]	(14.7, 32.5)	20.6	[E]	(12.4, 28.9)
Prince Edward Island	17.2	[E]	(11.6, 22.8)	23.1	[E]	(14.1, 32.2)	10.7	[E a]	(4.8, 16.6)
Nova Scotia	16.2	[E]	(9.8, 22.6)	13.6	[E]	(5.0, 22.2)	19.1	[E]	(10.5, 27.7)
New Brunswick	16.8	[E]	(11.3, 22.2)	16.2	[E]	(8.4, 24.0)	17.4	[E]	(10.0, 24.8)
Quebec	10.4		(7.2, 13.6)	11.0	[E]	(7.0, 15.0)	9.6	[E]	(4.7, 14.6)
Ontario	12.2		(9.2, 15.2)	17.6		(12.4, 22.8)	7.1	[E a]	(3.7, 10.5)
Manitoba	11.9	[E]	(7.1, 16.8)	13.4	[E]	(6.3, 20.5)	10.1	[E]	(3.7, 16.5)
Saskatchewan	19.8		(14.0, 25.6)	18.8	[E]	(10.7, 26.9)	20.8	[E]	(12.3, 29.4)
Alberta	13.1	[E]	(8.3, 17.9)	14.0	[E]	(7.3, 20.6)	12.2	[E]	(5.9, 18.5)
British Columbia	11.3		(7.7, 15.0)	12.8	[E]	(7.9, 17.6)	9.7	[E]	(4.8, 14.6)

Table 3c continued on next page

Continuation of **Table 3c**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Overweight/obesity									
Total ages 5–17	**31.8**		**(29.4, 34.1)**	**34.5**		**(30.9, 38.0)**	**29.0**	[a]	**(25.5, 32.5)**
Newfoundland and Labrador	46.1	*	(37.1, 55.1)	45.2		(33.0, 57.4)	46.9	*	(35.8, 57.9)
Prince Edward Island	32.8		(25.8, 39.8)	34.3		(24.1, 44.6)	31.2		(21.8, 40.5)
Nova Scotia	38.6		(29.9, 47.4)	41.3		(29.8, 52.9)	35.6	[E]	(23.9, 47.2)
New Brunswick	31.9		(24.0, 39.8)	31.4	[E]	(20.5, 42.3)	32.5	[E]	(21.8, 43.2)
Quebec	31.5		(26.9, 36.2)	28.7		(22.6, 34.8)	34.8		(26.8, 42.7)
Ontario	31.4		(26.9, 35.9)	39.1		(31.8, 46.5)	24.1	[a]	(18.0, 30.2)
Manitoba	39.2		(31.9, 46.5)	39.2		(27.7, 50.8)	39.2		(30.6, 47.7)
Saskatchewan	32.4		(25.4, 39.5)	30.2	[E]	(20.1, 40.2)	34.8		(24.4, 45.2)
Alberta	33.3		(27.7, 38.9)	33.7		(26.4, 41.0)	32.9		(24.8, 41.1)
British Columbia	26.2		(21.0, 31.4)	29.4		(21.8, 36.9)	22.6		(15.7, 29.5)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

When looking at urban and rural settings, there is no significant differences in obesity among children and youth. However, the prevalence of combined overweight/obesity among children and youth was higher in rural areas than in population centres: 36.5% versus 30.7% (see Table 3d). In urban settings, the prevalence of obesity and combined overweight/obesity is significantly lower in girls compared to boys (9.7% versus 14.3%; 27.5% versus 33.8%).

Table 3d: Prevalence of measured obesity and overweight/obese by sex and urban/rural, household population aged 5 to 17 years, Canada excluding territories, 2015

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Obesity									
Total ages 5–17	**12.4**		**(10.7, 14.1)**	**14.9**		**(12.1, 17.6)**	**9.9**	[a]	**(7.8, 12.0)**
Urban (reference)	12.0		(10.1, 14.0)	14.3		(11.3, 17.4)	9.7	[a]	(7.2, 12.1)
Rural	14.1		(10.4, 17.8)	17.1	[E]	(11.3, 22.9)	10.8	[E]	(6.7, 14.8)
Overweight/obesity									
Total ages 5–17	**31.8**		**(29.4, 34.1)**	**34.5**		**(30.9, 38.0)**	**29.0**	[a]	**(25.5, 32.5)**
Urban (reference)	30.7		(28.0, 33.4)	33.8		(29.7, 37.9)	27.5	[a]	(23.6, 31.4)
Rural	36.5	*	(31.6, 41.3)	37.1		(30.7, 43.6)	35.8		(28.1, 43.4)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

Indigenous Status

The CCHS and the CCHS-Nutrition cycle lacks data collection among First Nations living on-reserve and Inuit living in Inuit Nunangat, but does provide data for Indigenous peoples living off reserve. As mentioned earlier (see *Section 2: Adult Obesity; Indigenous Status*) health information on Indigenous peoples can be found in *the Key Health Inequalities in Canada: A National Portrait—2018* (61). New data on measured obesity in Indigenous Peoples aged 5 to 17 years old is also available in the Health Inequalities Data Tool (62), which combines the recent CHMS Cycles (2014 to 2019).

The focus of this report is to provide statistics and data where estimates are based on adjusted self-reported BMI data from the 2021 CCHS. Table A3.6 in Appendix C presents the available CCHS data on Indigenous children and youth. It is recognized that the estimates provided do not deliver a full picture of obesity in Indigenous Peoples and that data gaps continue to exist on risk factors such as SES and the effects of colonization.

Other social determinants of health

The Health Inequalities Data Tool provides crude prevalence rates of measured and self-reported obesity among school-aged children (grades 6–10), which can be stratified by a number of sociodemographic and economic factors (62). The Health Inequalities Data Tool (62) presents data on over 100 indicators, including obesity, stratified by life course stage and by a range of social and economic characteristics. The Health Inequalities Data Tool also provides rate ratios, to show the strength of the association, and rate differences, to show excess risk among groups. The self-reported data comes from two cycles of the Health Behaviours in School-aged Children Survey (2009–2010, 2013–2014) and the CCHS (2015–2018) (62). The measured data for children and youth comes from CHMS cycles 4, 5 and 6 (2014–2019).

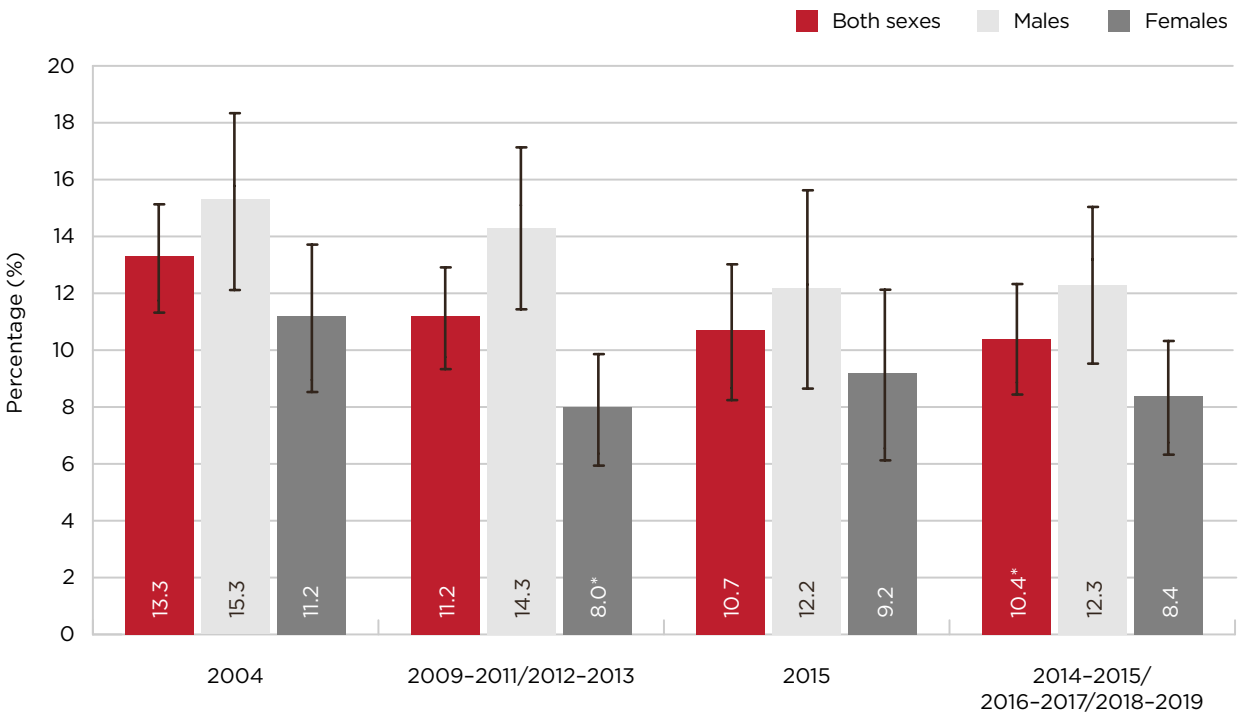
Given the lack of a correction equation for children and youth, caution must be taken when interpreting the prevalence of obesity with self-reported rates in that population, as there is likely substantial misclassification.

Trends over time

Between 1975 and 2016, the global prevalence of obesity among boys aged 5 years and older rose from 0.9% to 7.8%, and among girls, from 0.7% to 5.6% (77). Several reports have suggested some plateauing of BMI rates among children and adolescents in high-income countries in recent years (63,77–79).

Similar trends in the prevalence of obesity in Canada have been observed, although the overall prevalence is higher in Canadian children. In 2004, 12.9% of Canadian children and youth aged 5 to 17 years had a BMI in the obesity category, double the percentage in 1978/1979 when using WHO cut-points (80). With the CCHS and CHMS data, since 2004, estimates of obesity among children and youth have tended to be stable (see Table A3.2 in Appendix C). Nevertheless, 5- to 11-year-olds are an exception since the prevalence of obesity decreased between 2004 and 2014–2019 (from 13.3% to 10.4%; see Figure 3.2).

Figure 3.2: Prevalence of measured obesity by sex, household population aged 5 to 11 years, Canada excluding territories (selected years)



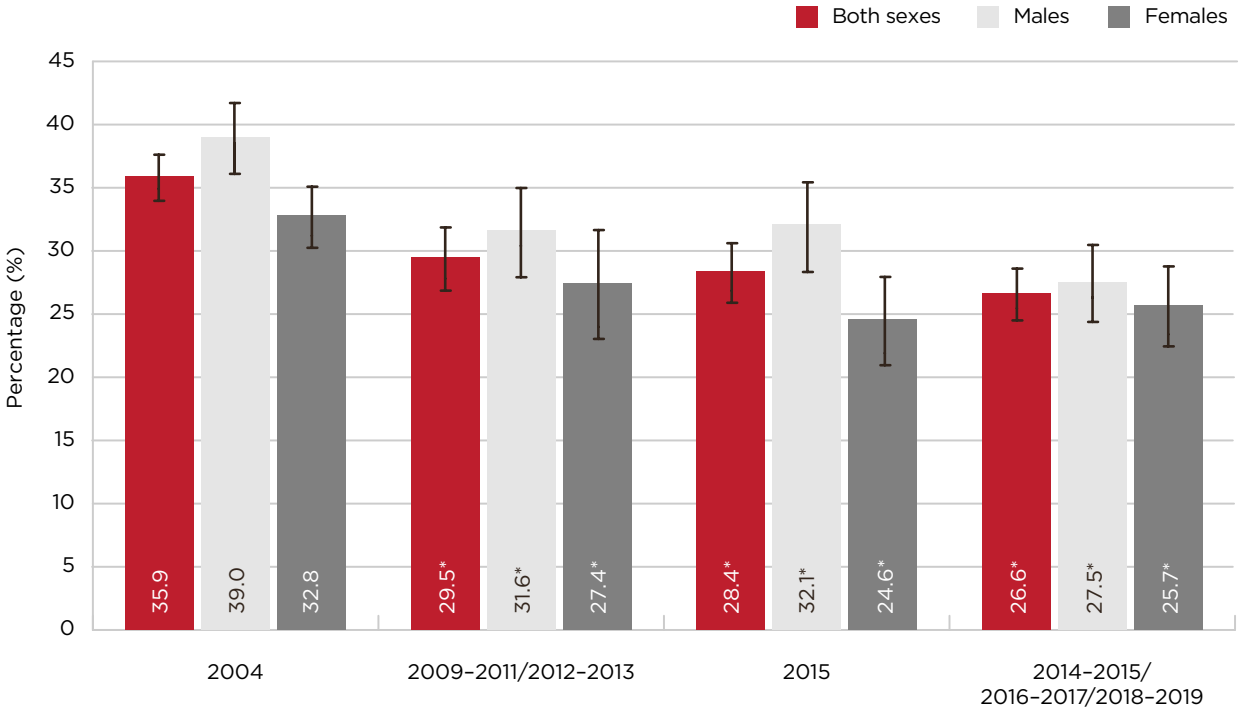
DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

Over the same period, the prevalence of combined overweight/obesity among 5- to 11-year-olds also declined significantly from 35.9% to 26.6%. Combined overweight/obesity prevalence at ages 5 to 11 years decreased among boys from 39.0% to 27.5%, and from 32.8% to 25.7% among girls between 2004 and 2014–2019 (see Figure 3.3, for additional information, see Table A3.3 in Appendix C). The prevalence of combined overweight/obesity also decreased significantly among 2- to 4-year-old girls from 11.1% to 4.1% between 2004 and 2015. Among 12- to 17-year-olds, no significant differences in the prevalence of either obesity or combined overweight/obesity were apparent, between 2004 and 2014–2019.

Figure 3.3: Prevalence of measured overweight/obesity by sex, household population aged 5 to 11 years, Canada excluding territories (selected years)



DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

We are awaiting nationally representative measured data for children and youth collected since the COVID-19 pandemic. Research is needed to fully understand the impact COVID-19 had on the health and movement behaviours of children (5–11 years) and youth (12–17 years) in Canada (16). The 2022 ParticipACTION Report Card on Physical Activity for Children and Youth highlights the many ways in which the pandemic had an impact on overall physical activity in children and youth: daily behaviours, physical literacy, school environment, active travel, etc. The negative consequence of that, combined with socioeconomic data and eating behaviours, would likely have an impact on children and youth obesity prevalence post-COVID-19. Ongoing research will help determine if obesity prevalence in children and youth remains at a plateau or if an increase will be observed following the COVID-19 pandemic.

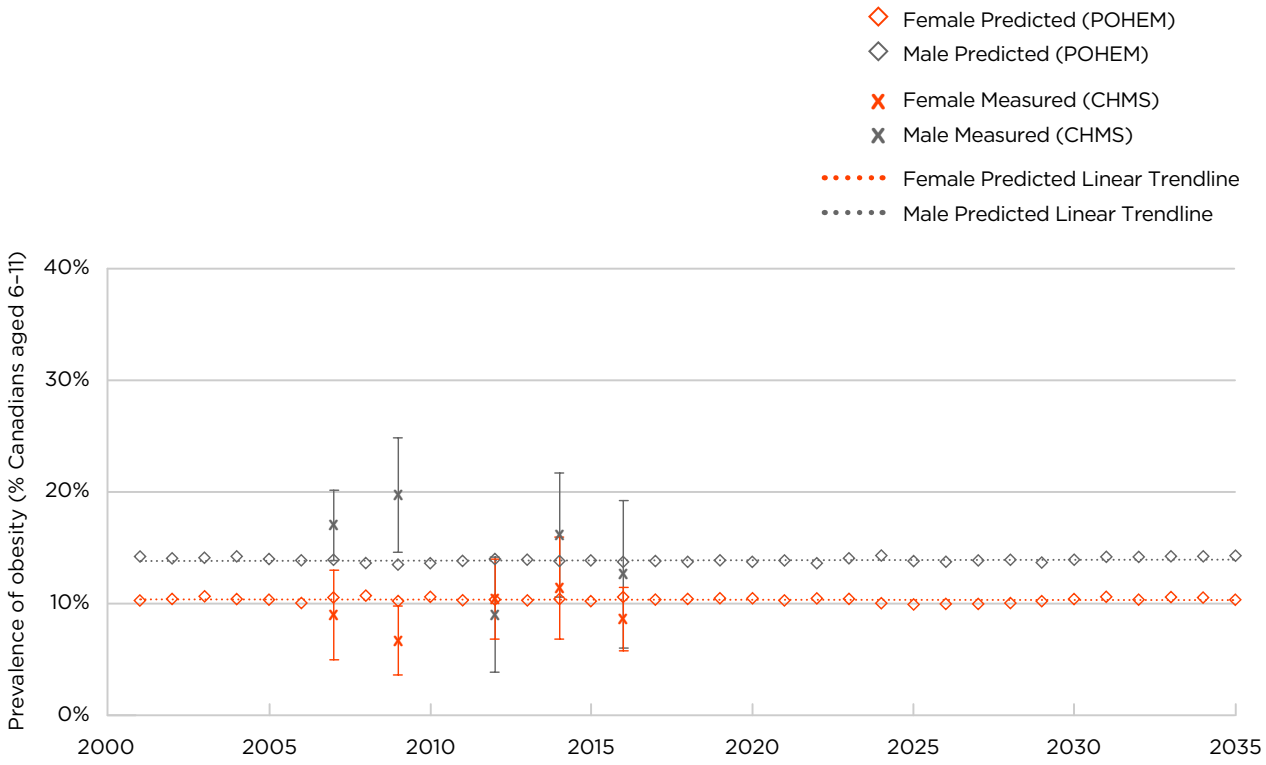
Projections

As described in the *Adult Obesity* section, modelling techniques that account for numerous interconnected factors associated with an individual's health can project future levels of obesity. Statistics Canada's microsimulation POHEM (see *Section 4: Data sources and methods*) simulated the annual prevalence of obesity for three age groupings of children and youth (6 to 17 years, 6 to 11 years, and 12 to 17 years), by sex, over two periods: 2001-to-2018, which was used to retrospectively compare predicted and observed estimates, and 2018-to-2035, which was used to project future patterns (66).

POHEM results showed that during the 2001-to-2018 period, the prevalence of obesity among 6- to 17-year-olds decreased slightly from 11.6% to 11.3%, which represented an annual rate of change of 0.2% (see Figure 3.4 and 3.5). When children and youth were examined separately, the prevalence of obesity was stable among children aged 6 to 11 years (12.2%). A small decline from 10.8% to 10.2% for youth aged 12 to 17 years was the result of a drop from 13.9% to 12.0% among males. These simulated numbers align relatively well with those observed in survey data (see Table A3.2 in Appendix C).

The projected 2018-to-2035 time series for children and youth shows a stable trend, with a statistically insignificant annual rate of change—0.06%. However, POHEM predictions do not consider all factors associated with BMI, diet being a notable exclusion (68), or the potential impacts of the COVID-19 pandemic. These are important limitations of the model given both the significant influence of diet on body weight and signals that the pandemic may have had lasting effects on behaviours and other factors related to body weight.

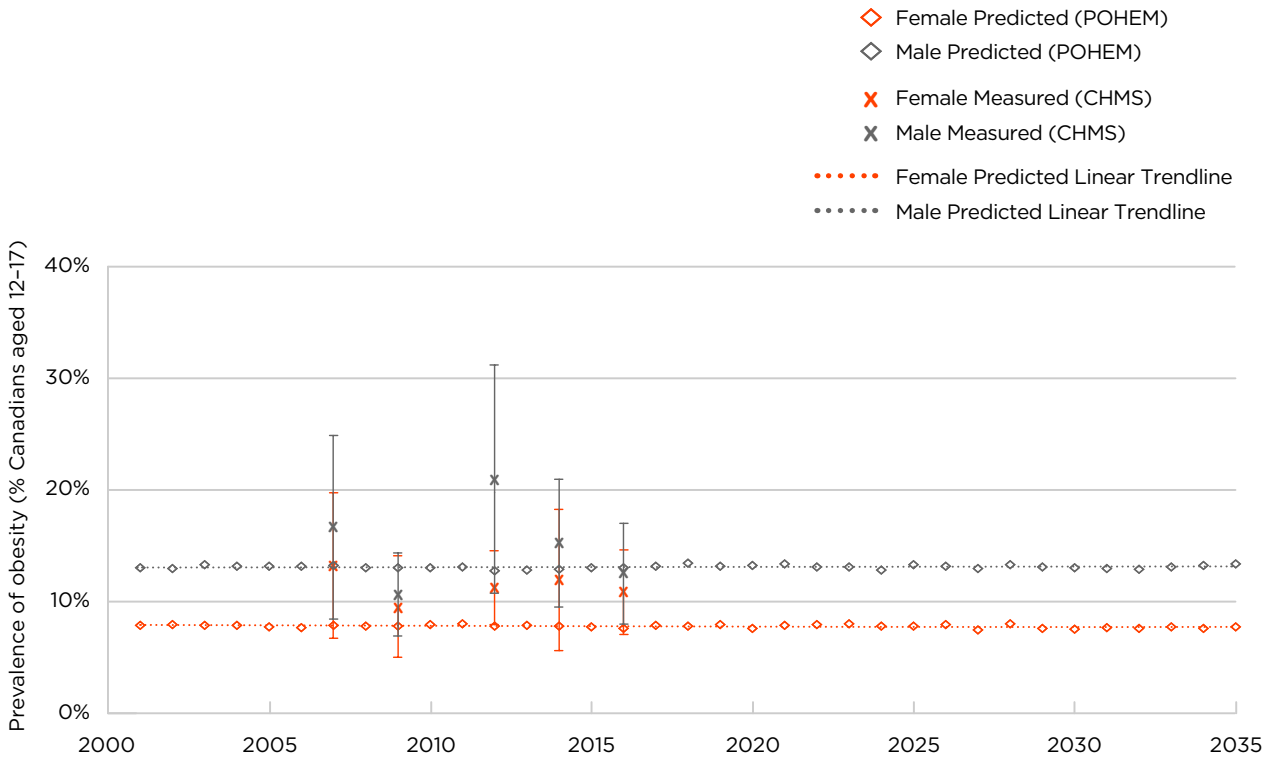
Figure 3.4: Prevalence of measured obesity based on POHEM projections and survey data, household population aged 6–11, by sex, Canada excluding the territories, 2001–2035



DATA SOURCES: POHEM projections for 2001 through 2035; 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017 Canadian Health Measures Survey (Cycles 1 to 5).

NOTE: POHEM projections for BMI account for age, physical activity, and smoking. The model does not account for diet quality or potential impacts of the COVID-19 pandemic.

Figure 3.5: Prevalence of measured obesity based on POHEM projections and survey data, household population aged 12–17, by sex, Canada excluding the territories, 2001–2035



DATA SOURCES: POHEM projections for 2001 through 2035; 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017 Canadian Health Measures Survey (Cycles 1 to 5).

NOTE: POHEM projections for BMI account for age, physical activity, and smoking. The model does not account for diet quality or potential impacts of the COVID-19 pandemic.

At the national level, several Statistics Canada surveys routinely provide surveillance data for BMI calculation.

04.
Data Sources and Methods

Data sources

The Statistics Canada surveys used in this report collected data that can produce prevalence estimates and examine trends in excess weight. The target population for these surveys is household residents, excluding residents of reserves and other Aboriginal settlements, full-time members of the Canadian Forces, and institutionalized populations.

Canadian Community Health Survey (CCHS)

The CCHS, first conducted in 2000–2001, is an ongoing survey that provides comprehensive health data at the national level (81). The CCHS 2022 and 2023 have been collected, however the data was not available at the time this report was completed. CCHS 2024 is currently in the field. The CCHS covers the population aged 12 years or older, including residents of the three territories. The height and weight of a subsample of respondents (approximately 5,000) were measured in 2005 and 2008. With these data, it was possible to develop correction equations that could be applied to adults' self-reported height and weight data collected in these and other CCHS cycles (82,83). (See *Appendix B: Correction equations for adjusting BMI in the CCHS based on self-/parent-reported height and weight*). Throughout this report, the term "adjusted self-reported" is employed to indicate that data have undergone this correction.

Limitations of the CCHS: BMI estimates are based on self-reported height and weight. This bias can be corrected for adults, but not for youth. The CCHS underwent a major redesign in 2015. Therefore, care is warranted when making comparisons pre-/post-2015 (84). Additionally, response rates have declined over time, from 84.7% in 2000–2001 to 41.0% in 2019–2020 (see Table A4a in Appendix C).

Strengths of the CCHS: Because of large sample sizes, characteristics such as age group and SES variables can be examined and trends for obesity class III can be tracked. CCHS response rates are higher than those for surveys that take direct physical measurements.

In this report, the *profile* of obesity among adults aged 18 years or older by socio-demographic characteristics is based on adjusted self-reported BMI (BMI_{AdjSR}) from the 2021 CCHS (data for the territories are not included in the single-year CCHS files).

Trends in the prevalence of obesity among adults aged 18 years or older are based on adjusted self-reported BMI, using two-year grouping of CCHS data for the 10 provinces (for example, 2007–2008, 2009–2010, 2017–2018) (82). Two-year data was used to methodologically add power to the trend estimation. Data from 2022 was not available at the time of this report, as such, a 2021–2022 file could not be create to examine more recent trends. Trend estimation ranges from 2000–2001 to 2019–2020. To examine trends over time in the prevalence of excess weight among adults and youth, estimates based on measured data from the 2005 and 2008 subsamples were used.

CCHS-Nutrition

The CCHS has supplementary components that focus on special topics every few years. In 2004 and 2015, the topic was Nutrition (85). The CCHS-Nutrition covered the population aged 1 year or older in the 10 provinces. It included measurements taken by trained interviewers of the height and weight of a sample of the population aged 2 years or older.

Limitations of the CCHS-Nutrition: The data are not collected regularly, and they exclude the territories. Response rates are 76.5% and 61.6% for the 2004 and 2015 CCHS-Nutrition cycles (see Table A4b in Appendix C). The height and weight measurements may be less accurate than those taken for the CHMS by kinesiologists using more precise (less portable) equipment.

Strengths of the CCHS-Nutrition: These data include measurements of height and weight for children and youth aged 2 years or older. Because sample sizes are large, subpopulations can be analyzed.

This report uses data from the 2015 CCHS-Nutrition to provide an up-to-date profile of excess weight among children and youth by socio-demographic characteristics. Estimates from both the 2004 and 2015 Nutrition cycles were also used to examine measurement-based BMI over time for adults, children, and youth.

Canadian Health Measures Survey (CHMS)

The CHMS, which began in 2007–2009, is an ongoing survey, collected over a period of two years, designed to provide comprehensive measured data at the national level (86). Six cycles have been conducted: 2007–2009, 2009–2011, 2012–2013, 2014–2015, 2016–2017 and 2018–2019. Cycle 7 began in fall 2022 and will end in fall 2024. Each cycle collected height and weight data measured by kinesiologists. The CHMS covers the population aged 3 to 79 years, excluding residents of the territories; except for cycle 1 which covered the population aged 6 to 79 years.

Limitations of the CHMS: Response rates are low, ranging from 45.9% (2018–2019) to 55.5% (2009–2011) (Table A4b in Appendix C). The territories are not included. Because of the high cost of collecting these data, the sample size for each cycle is small and highly clustered. Therefore, the CHMS is of limited value for reporting obesity trends by characteristics such as age group and socioeconomic variables.

Strengths of the CHMS: The CHMS includes height and weight measurements; it collects

data on children and youth aged 2 years or older; and it is conducted regularly.

The CHMS estimates in this report are based on cycles 1 to 3 combined (2007–2009/2009–2011/2012–2013) and cycles 4, 5 and 6 combined (2014–2015/2016–2017/2018–2019).

Prevalence estimates of excess weight using CHMS data are presented for adults aged 18 to 79 years, children aged 5 (61 months) to 11 years, and adolescents aged 12 to 17 years. Sample size was insufficient to calculate estimates for younger children.

Tables A4a and A4b show the responding sample sizes for BMI for all three surveys. Response rates for the self-reported CCHS have fallen from 84.7% in 2000–2001 to 41.0% in 2019–2020, while response rates for the CHMS and CCHS-Nutrition have remained consistently low. Critically, this may reduce the generalizability of the sample, and impact researcher's ability to estimate prevalence rates for certain sub-groups or higher risk populations.

Variable definitions

In addition to age, sex, and province, the following variables were used in the analyses.

In Section 1, *BMI*: *BMI Classification for adults* and *BMI classification for children and youth* explains how weight categories were derived for adults, youth, and children. BMI was not calculated for adults whose height was less than 0.91 metres (three feet) or more than 2.13 metres (7 feet), or for females who reported they were pregnant or who did not answer the question on pregnancy.

Indigenous Peoples: The variable refers to First Nations living off reserve, Inuit, and Métis. It is based on the question, "Are you an Aboriginal person, that is First Nations, Métis, or Inuk (Inuit)? First Nations includes Status and Non-Status Indians."

Household income quintiles: This variable was derived based on household income adjusted by Statistics Canada's low-income cut-offs, which are specific to the number of individuals in the household, the size of the community, and the survey year (87).

Highest level of education in household: This variable reflects the highest level of education attained by any household member. The education questions in the CCHS and CHMS were revised in 2015; therefore, caution should be exercised in examining trends by household education.

Population (urban) centre or rural residence: Individuals were classified as residing in *population (urban) centres* if they lived in an area with a population of 1,000 or more; otherwise, they were classified as *rural* residents.

Analyses

Descriptive analyses were used to estimate the prevalence of obesity and overweight among adults, children and youth, by sociodemographic characteristics. To account for the complex sampling designs of the CCHS and the CHMS, all estimates were based on weighted data. Weights were created by Statistics Canada to ensure that the data are representative of the population living in the 10 provinces when the survey was conducted. Variance estimates and 95% confidence intervals (CIs) were calculated, and significance testing was conducted, using the bootstrap technique to account for the complex designs of the surveys (88). The test for trends across time was based on logistic regression, using time as a continuous variable, and controlling for age group. The age-standardized estimates of excess weight among adults by province and over time, which are presented in the appendix, were standardized to the Canadian population in 2011 (based on Census data), using age groups 18 to 34 years, 35 to 49 years, 50 to 64 years, and 65 years or older.

Limitations of survey data

Although all estimates were based on weighted data that account for survey non-response, some limitations related to non-response should be noted (Tables A4a and A4b show response rates to the self-reported and measured datasets used in this report). An adjustment to the measured CCHS and CHMS data was made to compensate for those whose height and weight were not measured because of non-response. For self-reported CCHS data, no adjustment was made for non-response to height and weight since respondents with missing values were excluded from estimates. Table A4a shows the number of respondents with a missing value for self-reported BMI. If these respondents were more (or less) likely to have excess body weight, estimates would be biased.

Caution is necessary when interpreting trends if survey response rates changed over time. A 2015 Statistics Canada data quality study reported steady declines in CCHS response rates from 2000 to 2012 (89). The characteristics of respondents and non-respondents differed, and these differences cannot be fully corrected via weighting. As a result, trends may be affected by uncorrected biases.

All estimates from the CCHS in this report are based on "share files." CCHS respondents were asked for permission to share their information with Statistics Canada's partners, which included the Public Health Agency of Canada (Tables A4a and A4b). An adjustment was made to account for respondents who declined to share.

For the CHMS, the percentage agreeing to share was sufficiently high that share files were not created, and the CHMS response rates incorporate agreement to share.

Comparing estimates across surveys

Caution is necessary when comparing measured estimates from different surveys. The content and methodology of the three surveys varied considerably.

Before they agreed to participate, potential CHMS respondents were told that they would visit a mobile clinic where physical measurements, including height and weight, would be taken to evaluate their health. They were also told that they would receive a report of the results. For potential CCHS-Nutrition respondents, they were told that they would have to answer questions about their eating habits and other factors that may relate to health and nutritional well-being. They were not aware that physical measurements would be taken at the end of the interview. If the introduction to the surveys affected the likelihood that a person with obesity would participate, comparisons of estimates from the datasets would be less meaningful.

People with obesity might not respond to the CCHS-Nutrition because they knew they would be asked about their eating habits, but they might respond to the CHMS because they knew they would get a report about their health. Differences in the prevalence of obesity may reflect these differential non-response biases, but more research is needed to understand the impact of these biases.

As well, the data based on physical measurements are from surveys with small sample sizes, making it less likely that statistically significant differences between estimates will emerge.

If the nature of the bias in BMI based on self-reported height and weight had changed over time, this would have an impact on the trends based on adjusted self-reported BMI.

Microsimulation Population Health Model (POHEM)

Statistics Canada's microsimulation POHEM uses multiple sources of microdata to simulate longitudinal profiles of health status and its determinants for a large sample of synthetic persons (66). Population health outcomes are the aggregates of these microsimulations.

The Public Health Agency of Canada collaborated with Statistics Canada to develop the POHEM BMI model from height and weight data self-reported in the first seven cycles of the longitudinal National Population Health Survey (68). Longitudinal change in individual BMI is sensitive to sociodemographic characteristics and health behaviours (68). Bancej et al. (2015) used POHEM to simulate the trajectory of obesity for adults (aged 19 to 79 years) and youth (aged 6 to 12 years) (67). Ongoing quality assurance by Statistics Canada, Public Health Agency of Canada, and academic researchers ensures the predictive validity of POHEM against objective estimates of self-reported and measured obesity.

People whose BMI is in the normal range have the lowest risk of disease.

Appendixes

APPENDIX A: BMI, mortality and the obesity paradox

Studies of associations between BMI and *incident disease* (newly diagnosed cases) typically find a J-shaped relationship (2,40,41). People whose BMI is in the normal range have the lowest risk of disease; individuals whose BMI is in the underweight or overweight range have an increased risk; and those in the obesity range have the highest risk, with incremental increases over the three obesity classes.

By contrast, studies of associations between BMI and *mortality* have found a U-shaped relationship, known as the "obesity paradox." Individuals with a BMI in the overweight range have the lowest risk of mortality. The risk for people in obesity class I is similar to, or even lower, than that for people with a BMI in the normal range. This U-shaped relationship has been reported by studies based on the general population (90), and by studies examining people diagnosed with diseases such as stroke (46), coronary artery disease (47), chronic heart failure (45), type 2 diabetes (44), and cancer (48).

It has been suggested that the paradox is real, and that excess weight might create a metabolic or nutrition reserve that may be protective from mortality and cardiovascular disease events after the onset of a chronic disease (91,92).

More plausibly, methodological shortcomings, notably, reverse causation and failure to account for confounding variables, may be responsible for the obesity paradox.

Reverse causation (44,91,92) occurs when an underlying illness results in weight loss due to the disease process itself or to a conscious effort to lose weight after a diagnosis (wake-up call). If the baseline BMI measurement is taken after this weight loss, individuals in the normal weight range could be diverse, consisting of people who have always been lean and those who lost weight owing to disease. The latter group is at a substantially higher risk of mortality. To untangle this complication, it is recommended that analyses exclude patients who had already been diagnosed with obesity-related diseases at baseline or who died early in the follow-up period (92).

Failure to account for confounding variables such as cardiorespiratory fitness, nutrition and smoking can also distort associations between BMI and mortality (44,91,92). Smoking is of particular concern owing to smokers' higher likelihood of having a BMI in the normal range, but at the same time, a higher likelihood of premature mortality. Because the adverse effects of smoking are so strong, it has been suggested that studies of associations between BMI and mortality stratify the analysis by smoking status; simply controlling for smoking status in statistical models is not adequate (92).

A meta-analysis of 230 cohort studies with a total of 30.3 million participants demonstrated this conundrum (93). When the analysis was performed on the total population, a U-shaped association emerged between BMI and mortality, similar to that observed in a previous meta-analysis (43). However, when the analysis was restricted to never-smokers, the relationship was J-shaped, with the lowest mortality risk for BMIs of 23–24 kg/m^2 (within the normal range). When the analysis was further restricted to healthy never-smokers, the lowest risk was among BMIs of 22–23 kg/m^2, and when restricted to never-smokers with long follow-up (≥ 20 years), the lowest risk was for BMIs of 20–22 kg/m^2. This final restriction reduces potential confounding due to weight loss associated with pre-diagnosed conditions. By contrast, among current-, former- and ever-smokers, a U-shaped association emerged between BMI and mortality.

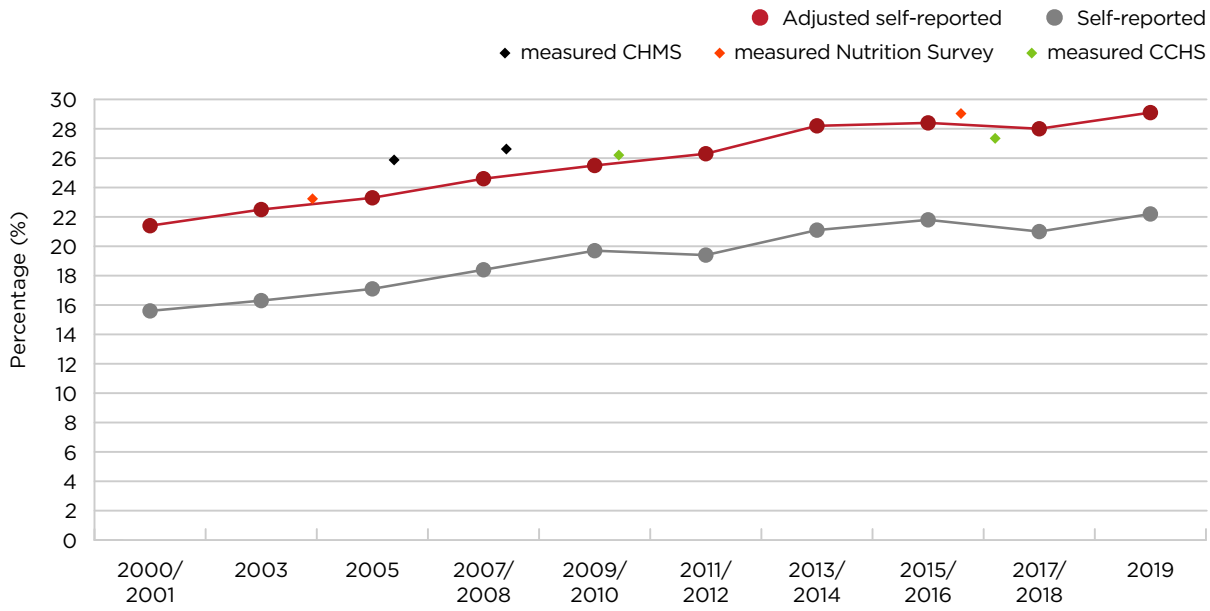
Other large-scale studies also "debunked" the obesity paradox and found that people classified in the obesity category were at a higher risk of all-cause mortality and cardiovascular disease events (41,94,95).

APPENDIX B: Correction equations for adjusting BMI in the CCHS based on self-/parent-reported height and weight in the CCHS

A study based on the CCHS-Nutrition, which collected both self-reported and measured height and weight, found that correction factors could be generated to adjust adults' self-reports to yield more accurate BMI estimates (82). These correction factors were successfully applied to self-reported values from the 2008 CCHS, and have since been applied to BMI estimates derived from the annual CCHS (83).

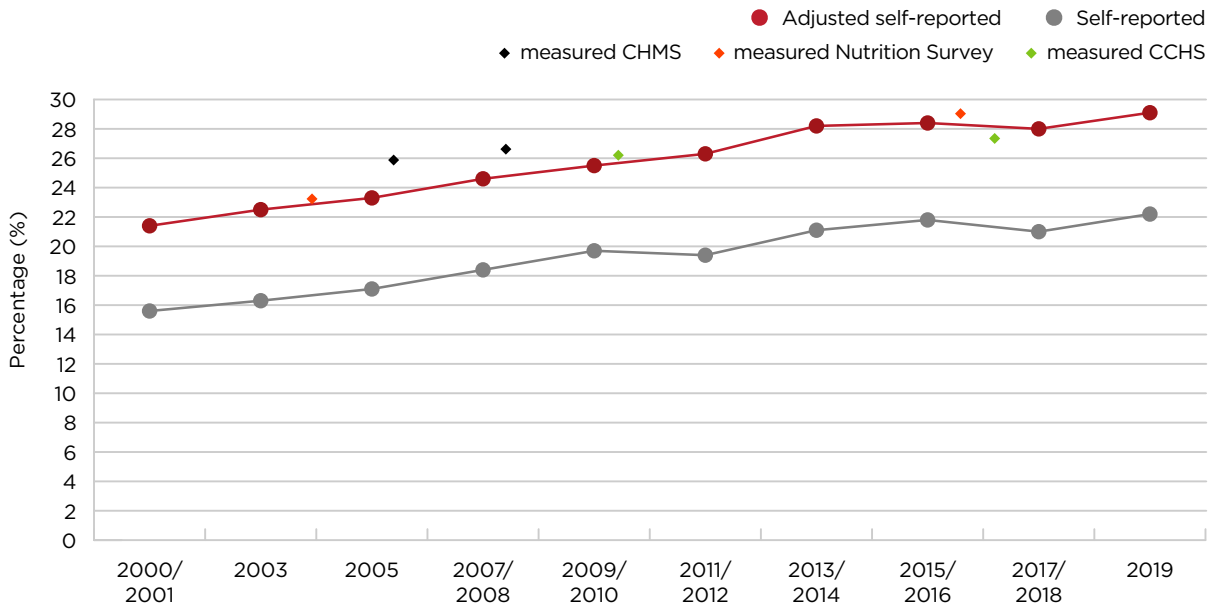
Figures 4.1 and 4.2 incorporate data from all available cycles of the CCHS, the CCHS-Nutrition, and the CHMS to show Canadian trends in obesity among men and women based on self-reported data, adjusted self-reported data, and measured data. For the most recent years, BMI estimates for both sexes based on adjusted self-reported data (BMI_{AdjSR}) are similar to estimates based on measured data.

Figure 4.1: Prevalence of self-reported, adjusted self-reported and measured obesity, male household population aged 18 to 79 years, Canada 2000–2001 to 2019



DATA SOURCES: 2000/01–2019 Canadian Community Health Survey (share files); 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

Figure 4.2: Prevalence of self-reported, adjusted self-reported and measured obesity, female household population aged 18 to 79 years, Canada 2000–2001 to 2019



DATA SOURCES: 2000/01–2019 Canadian Community Health Survey (share files); 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

Care must be exercised when applying these correction factors to datasets other than the CCHS. The bias in self-reported data can be affected by factors such as data collection method, study population, and survey context. Additionally, the bias may change over time. Future research may seek to examine such changes.

Survey context may influence the extent of bias in a survey. For example, the bias in BMI based on self-reported values was similar in the 2005 and 2008 CCHS. In both surveys, respondents did not know that height and weight would subsequently be measured (83). The bias was much smaller in the 2007–2009 CHMS—when respondents self-reported their height and weight, they knew that they would later be measured (83). It may not be appropriate to apply correction factors derived from a survey of respondents who knew that they would subsequently be measured to data from a survey that relied solely on self-reports.

Some studies suggest that the bias in self-reported height and weight can change over time. Based on Canadian data collected in 1986–1992 and 2005, biases in BMI increased because of growing tendencies for women to underreport their weight and for men to over report their height (96).

Additional work is needed to create correction factors to adjust adolescents' (aged 12 to 17 years) self-reported height and weight (82).

A study of obesity estimates for children aged 6 to 11 years based on parent-reported and measured data found that correction equations for parent-reported values could not be successfully developed (55).

As national surveys move toward online data collection, it will be important to re-evaluate correction factors.

APPENDIX C: Accompanying data tables

Table A2.2: Percentage distribution of household population aged 18 years or older, by sex and adjusted self-reported body mass index (BMI) category, Canada excluding territories, 2021

	BOTH SEXES				MALES				FEMALES			
	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval
Adults aged 18 years or older Adjusted BMI category (range kg/m²)												
Total	28,425.8				14,249.4				14,176.4			
Underweight (< 18.5)	472.6	1.7		(1.4, 1.9)	185.9	1.3	E	(0.9, 1.7)	286.7	2.0	*	(1.6, 2.4)
Normal weight (18.5 to 24.9)	9,488.9	33.4		(32.5, 34.2)	4,124.2	28.9		(27.7, 30.1)	5,364.7	37.8	*	(36.7, 39.0)
Overweight (25.0 to 29.9)	10,084.0	35.5		(34.6, 36.4)	5,652.1	39.7		(38.3, 41.0)	4,431.9	31.3	*	(30.1, 32.4)
Obesity Class I (30.0 to 34.9)	5,385.3	18.9		(18.3, 19.6)	2,832.8	19.9		(18.9, 20.9)	2,552.5	18.0	*	(17.1, 18.9)
Obesity Class II (35.0 to 39.9)	1,952.0	6.9		(6.4, 7.3)	945.1	6.6		(6.0, 7.3)	1,006.9	7.1		(6.5, 7.7)
Obesity Class III (≥ 40.0)	1,042.9	3.7		(3.3, 4.0)	509.2	3.6		(3.1, 4.1)	533.7	3.8		(3.4, 4.2)
Obesity (≥ 30.0)	8,380.2	29.5		(28.6, 30.3)	4,287.1	30.1		(28.9, 31.3)	4,093.1	28.9		(27.8, 30.0)
Overweight/ Obesity (≥ 25.0)	18,464.2	65.0		(64.1, 65.8)	9,939.2	69.8		(68.5, 71.0)	8,525.0	60.1	*	(58.9, 61.3)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from males ($p<0.05$).

E Coefficient of variation between 15.0% and 35.0%, interpret with caution.

NOTE: The percentages are based on records with a valid value for BMI. Excluded from the total population counts are pregnant women (n=284, estimated population 278.2 thousand and individuals with a missing value for BMI (n=828 for males, estimated population 613.9 thousand; n=1,138 for females, estimated population 812.9 thousand).

Table A2.3: Prevalence of adjusted self-reported obesity by sex and age group, household population aged 18 years or older, Canada excluding territories, 2021

AGE GROUP (IN YEARS)	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18+)	**29.5**		**(28.6, 30.3)**	**30.1**		**(28.9, 31.3)**	**28.9**		**(27.8, 30.0)**
18–34	22.5	*	(20.7, 24.3)	22.3	*	(19.8, 24.8)	22.7	*	(20.3, 25.2)
35–49	32.9		(31.1, 34.6)	33.8		(31.3, 36.3)	31.9		(29.7, 34.1)
50–64 (reference)	33.7		(32.1, 35.3)	36.4		(34.0, 38.8)	31.1	[a]	(28.9, 33.3)
65–79	31.5		(30.1, 32.8)	30.9	*	(28.8, 32.9)	32.0		(30.1, 33.8)
80 or older	21.2	*	(18.7, 23.7)	19.6	*	(15.9, 23.3)	22.4	*	(19.0, 25.9)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference (p<0.05).

[a] Significantly different from males (p<0.05).

Table A2.4: Prevalence of adjusted self-reported obesity by sex and household income quintile, household population aged 18 years or older, Canada excluding territories, 2021

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18+)	**29.5**		**(28.6, 30.3)**	**30.1**		**(28.9, 31.3)**	**28.9**		**(27.8, 30.0)**
Household income quintile									
Quintile 1 (Lowest)	29.7		(27.8, 31.5)	28.3		(25.4, 31.2)	30.8	*	(28.5, 33.2)
Quintile 2	29.2		(27.4, 31.0)	30.0		(27.2, 32.8)	28.4		(26.2, 30.7)
Quintile 3	29.2		(27.3, 31.0)	28.8		(26.3, 31.4)	29.5		(26.9, 32.0)
Quintile 4	30.2		(28.4, 32.1)	31.6		(28.9, 34.3)	28.8		(26.1, 31.4)
Quintile 5 (reference)	29.1		(27.4, 30.9)	31.2		(28.8, 33.6)	26.6	[a]	(24.4, 28.8)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference (p<0.05).

[a] Significantly different from males (p<0.05).

Table A2.5: Prevalence of adjusted self-reported obesity by sex and highest level of education in the household, household population aged 18 years or older, Canada excluding territories, 2021

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18+)	**29.5**		**(28.7, 30.3)**	**30.2**		**(29.0, 31.4)**	**28.8**		**(27.8, 29.9)**
Highest level of education in the household									
Less than secondary school graduation	35.1	*	(31.9, 38.2)	33.5		(29.1, 37.9)	36.5	*	(32.1, 40.9)
Secondary school graduation	36.7	*	(34.4, 39.0)	36.5	*	(32.9, 40.1)	36.9	*	(33.9, 39.8)
Post-secondary certificate, diploma or university degree (reference)	28.3		(27.4, 29.2)	29.2		(27.9, 30.5)	27.3	[a]	(26.2, 28.5)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

Table A2b: Prevalence of adjusted self-reported obesity (age-standardized) by sex and province/territory, household population aged 18 years or older, Canada, 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total (18+)	**28.1**		**(27.5, 28.6)**	**28.8**		**(28.0, 29.6)**	**27.4**		**(26.6, 28.1)**
Province									
Newfoundland and Labrador	40.3	*	(36.9, 43.7)	40.9	*	(36.3, 45.4)	39.8	*	(35.3, 44.3)
Prince Edward Island	35.9	*	(31.8, 40.0)	34.4		(28.6, 40.2)	37.1	*	(31.8, 42.3)
Nova Scotia	34.6	*	(31.8, 37.4)	35.4	*	(30.7, 40.1)	33.8	*	(30.6, 37.0)
New Brunswick	36.3	*	(33.4, 39.2)	33.2		(28.9, 37.4)	39.4	*	(35.4, 43.4)
Quebec	25.8	*	(24.6, 27.1)	26.5		(24.9, 28.2)	25.0		(23.5, 26.6)
Ontario	28.2		(27.3, 29.2)	28.5		(27.1, 30.0)	27.9		(26.7, 29.2)
Manitoba	33.2	*	(30.9, 35.5)	33.1	*	(29.7, 36.5)	33.4	*	(30.2, 36.6)
Saskatchewan	35.9	*	(33.4, 38.5)	37.8	*	(34.3, 41.3)	34.0	*	(30.4, 37.7)
Alberta	29.8		(28.3, 31.3)	31.9	*	(29.7, 34.0)	27.4		(25.4, 29.5)
British Columbia	23.2	*	(21.8, 24.6)	24.6	*	(22.5, 26.6)	21.8	*	(19.9, 23.8)
Yukon	32.2		(26.5, 37.8)	32.2		(26.5, 37.8)	33.9		(25.6, 42.3)
Northwest Territories	36.6	*	(30.2, 43.1)	36.6		(28.6, 44.7)	37.9	*	(29.5, 46.2)
Nunavut	32.1	E	(20.1, 44.2)	24.5	E	(10.3, 38.7)	41.8	E	(26.2, 57.5)

DATA SOURCE: 2019–2020 Canadian Community Health Survey (share file).

No formal significance testing done.

* Significantly different from overall total when looking at CIs ($p<0.05$).

E Coefficient of variation between 15.0% and 35.0%, interpret with caution.

NOTE: Rates are age-standardized to the 2011 Canadian population.

Table A2.6: Prevalence of adjusted self-reported obesity by sex and urban/rural, household population aged 18 years or older, Canada excluding territories, 2021

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Total	**29.5**		**(28.6, 30.3)**	**30.1**		**(28.9, 31.3)**	**28.9**		**(27.8, 30.0)**
Urban/rural									
Urban (reference)	28.6		(27.7, 29.6)	29.0		(27.6, 30.4)	28.3		(27.0, 29.5)
Rural	33.6	*	(32.1, 35.1)	35.0	*	(32.8, 37.3)	32.0	*[a]	(30.1, 34.0)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from reference ($p<0.05$)

[a] Significantly different from males ($p<0.05$)

Table A2.7: Prevalence of adjusted self-reported obesity by health regions among Canadians aged 18 years and older, 2015–2018

GEOGRAPHY	PREVALENCE (%)	95% CONFIDENCE INTERVAL
Canada	**26.7**	**(26.3, 27.1)**
Bas-Saint-Laurent	25.3	(22.3, 28.3)
Brant County HU	31.9	(28.3, 35.5)
Calgary Zone	24.2	(22.7, 25.7)
Capitale-Nationale	22.4	(20.4, 24.3)
Central Regional	40.3	(36.8, 43.9)
Central Vancouver Island HSDA	22.9	(20.0, 25.8)
Central Zone	33.6	(31.5, 35.8)
Chatham-Kent HU	37.9	(33.9, 41.9)
Chaudière-Appalaches	22.5	(20.1, 25.0)
City of Hamilton HU	27.2	(23.9, 30.5)
City of Ottawa HU	23.1	(20.9, 25.4)
City of Toronto HU	19.6	(17.9, 21.3)
Côte-Nord	34.9	(31.5, 38.3)
Cypress RHA	36.6	(31.3, 41.9)
Durham Regional HU	29.2	(25.8, 32.5)
East Kootenay HSDA	29.0	(24.3, 33.7)
Eastern Ontario HU	32.6	(28.6, 36.6)
Eastern Regional	38.7	(36.0, 41.3)
Edmonton Zone	27.5	(25.7, 29.4)
Elgin-St Thomas HU	36.6	(33.1, 40.1)
Five Hills RHA	30.0	(25.4, 34.6)
Fraser East HSDA	30.3	(27.1, 33.4)
Fraser North HSDA	21.6	(18.5, 24.6)
Fraser South HSDA	26.3	(23.7, 29.0)
Gaspésie—Îles-de-la-Madeleine	31.0	(28.1, 33.8)
Grey Bruce HU	34.4	(31.0, 37.9)
Haldimand-Norfolk HU	28.7	(25.6, 31.8)
Haliburton, Kawartha, Pine Ridge District HU	34.7	(30.8, 38.5)
Halton Regional HU	23.9	(21.5, 26.4)
Hastings and Prince Edward Counties HU	35.2	(31.4, 38.9)

Table A2.7 continued on next page

Continuation of **Table A2.7**

GEOGRAPHY	PREVALENCE (%)	95% CONFIDENCE INTERVAL
Heartland RHA	35.9	(30.2, 41.7)
Huron County HU	34.1	(29.4, 38.9)
Interlake-Eastern Regional Health	37.9	(34.7, 41.2)
Kelsey Trail RHA	37.6	(30.2, 45.0)
Kingston, Frontenac and Lennox and Addington HU	32.3	(28.5, 36.1)
Kootenay-Boundary HSDA	27.8	(23.9, 31.7)
L'Abitibi-Témiscamingue	34.0	(31.3, 36.7)
L'Estrie	26.4	(24.2, 28.7)
L'Outaouais	27.3	(25.2, 29.4)
Labrador-Grenfell Regional	46.1	(42.3, 49.9)
Lambton HU	30.5	(26.9, 34.1)
Leeds, Grenville and Lanark District HU	34.5	(29.7, 39.4)
Mamawetan/Keewatin/Athabasca	43.9	(35.8, 52.1)
Mauricie et du Centre-du-Québec	29.0	(27.0, 30.9)
Middlesex-London HU	26.5	(23.4, 29.7)
Montérégie	28.2	(26.1, 30.3)
NORTHWEST TERRITORIES	40.2	(36.9, 43.6)
NUNAVUT	33.7	(30.0, 37.5)
Niagara Regional Area HU	29.8	(26.7, 32.8)
Nord-du-Québec	30.4	(26.0, 34.7)
North Bay Parry Sound District HU	31.7	(28.3, 35.0)
North Shore/Coast Garibaldi HSDA	16.0	(12.5, 19.4)
North Vancouver Island HSDA	29.6	(26.4, 32.9)
North Zone	39.2	(36.8, 41.6)
Northeast HSDA	36.8	(31.4, 42.1)
Northern Interior HSDA	32.4	(28.8, 36.0)
Northern RHA	40.3	(36.7, 44.0)
Northwest HSDA	32.1	(27.0, 37.3)
Northwestern HU	36.0	(31.3, 40.7)
Okanagan HSDA	24.9	(21.7, 28.0)
Oxford County HU	37.2	(33.5, 40.8)
Peel Regional HU	23.1	(20.8, 25.4)

Table A2.7 continued on next page

Continuation of **Table A2.7**

GEOGRAPHY	PREVALENCE (%)	95% CONFIDENCE INTERVAL
Perth District HU	35.0	(31.2, 38.8)
Peterborough County-City HU	33.7	(29.0, 38.4)
Porcupine HU	38.8	(34.0, 43.6)
Prairie Mountain Health	37.0	(33.6, 40.4)
Prairie North RHA	32.9	(29.1, 36.6)
Prince Albert Parkland RHA	37.4	(33.0, 41.8)
Prince Edward Island	32.9	(30.8, 35.0)
Regina Qu'Appelle RHA	32.2	(28.8, 35.5)
Région de Lanaudière	28.9	(25.8, 32.0)
Région de Laval	25.2	(22.9, 27.5)
Région de Montréal	20.6	(18.9, 22.3)
Région des Laurentides	24.9	(22.8, 26.9)
Renfrew County and District HU	34.0	(30.0, 38.0)
Richmond HSDA	11.9	(9.8, 14.0)
Saguenay—Lac-Saint-Jean	24.5	(21.8, 27.2)
Saskatoon RHA	30.0	(27.2, 32.8)
Simcoe Muskoka District HU	31.7	(28.3, 35.2)
South Vancouver Island HSDA	19.9	(17.3, 22.4)
South Zone	32.6	(30.2, 35.0)
Southern Health	33.9	(31.0, 36.7)
Sudbury and District HU	33.0	(29.8, 36.2)
Sun Country RHA	34.9	(30.7, 39.1)
Sunrise RHA	41.9	(36.6, 47.1)
The District of Algoma HU	36.3	(33.2, 39.4)
Thompson/Cariboo HSDA	29.2	(26.1, 32.3)
Thunder Bay District HU	35.5	(32.3, 38.7)
Timiskaming HU	41.2	(36.0, 46.4)
Vancouver HSDA	11.6	(9.7, 13.4)
Waterloo HU	29.0	(25.6, 32.3)
Wellington-Dufferin-Guelph HU	29.0	(26.1, 31.9)
Western Regional	44.9	(40.9, 48.9)
Windsor-Essex County HU	32.7	(29.6, 35.8)

Table A2.7 continued on next page

Continuation of **Table A2.7**

GEOGRAPHY	PREVALENCE (%)	95% CONFIDENCE INTERVAL
Winnipeg RHA	26.5	(24.4, 28.5)
Yukon	34.4	(31.7, 37.2)
York Regional HU	19.4	(17.2, 21.7)
Zone 1 (Moncton area)	37.9	(34.3, 41.4)
Zone 1—Western	37.3	(34.4, 40.3)
Zone 2 (Saint John area)	38.2	(34.2, 42.1)
Zone 2—Northern	37.7	(34.4, 41.0)
Zone 3 (Fredericton area)	37.0	(33.3, 40.8)
Zone 3—Eastern	38.7	(35.4, 42.0)
Zone 4 (Edmundston area)	38.3	(33.2, 43.5)
Zone 4—Central	30.5	(28.1, 32.8)
Zone 5 (Campbellton area)	39.7	(32.3, 47.1)
Zone 6 (Bathurst area)	33.2	(29.5, 36.9)
Zone 7 (Miramichi area)	41.2	(35.4, 47.0)

DATA SOURCES: 2015–2018 Canadian Community Health Surveys.

NOTES: Prevalence of obesity, as measured by adjusted self-reported BMI, among Canadian adults (aged 18 years and older) of both sexes, by health region. Data from the Canadian Risk Factor Atlas (2015–2018).

Table A2.8a: Prevalence of adjusted self-reported obesity by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 years or older									
Time period		d			d			d	
2000–2001	20.6		(20.2, 21.0)	21.2		(20.6, 21.7)	20.0		(19.5, 20.5)
2003	21.2	a	(20.8, 21.6)	22.2	a	(21.7, 22.8)	20.1		(19.6, 20.6)
2005	21.9	ab	(21.5, 22.3)	23.1	ab	(22.5, 23.6)	20.7		(20.2, 21.2)
2007–2008	23.2	abc	(22.8, 23.6)	24.3	abc	(23.8, 24.9)	22.1	abc	(21.6, 22.6)
2009–2010	23.8	abc	(23.4, 24.3)	25.2	abc	(24.6, 25.9)	22.4	bc	(21.8, 23.0)
2011–2012	24.8	abc	(24.3, 25.2)	26.0	bc	(25.3, 26.6)	23.6	abc	(22.9, 24.2)
2013–2014	26.1	abc	(25.6, 26.6)	27.9	abc	(27.1, 28.6)	24.4	bc	(23.7, 25.0)
2015–2016	26.4	bc	(26.0, 26.9)	28.1	bc	(27.4, 28.8)	24.8	bc	(24.1, 25.4)
2017–2018	26.9	bc	(26.4, 27.4)	27.9	c	(27.2, 28.6)	25.9	abc	(25.3, 26.6)
2019–2020	28.2	abc	(27.7, 28.7)	28.7		(28.0, 29.5)	27.7	abc	(26.9, 28.4)

Table A2.8a continued on next page

Continuation of **Table A2.8a**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 to 79 years									
Time period		d			d			d	
2000–2001	20.8		(20.4, 21.2)	21.4		(20.8, 21.9)	20.2		(19.7, 20.7)
2003	21.4	a	(21.0, 21.8)	22.5	a	(21.9, 23.0)	20.4		(19.9, 20.9)
2005	22.1	ab	(21.7, 22.5)	23.3	ab	(22.8, 23.9)	20.9		(20.4, 21.4)
2007–2008	23.4	abc	(23.0, 23.8)	24.6	abc	(24.0, 25.2)	22.2	abc	(21.7, 22.8)
2009–2010	24.1	abc	(23.6, 24.5)	25.5	bc	(24.8, 26.2)	22.6	bc	(22.0, 23.2)
2011–2012	25.1	abc	(24.6, 25.6)	26.3	bc	(25.6, 26.9)	23.9	abc	(23.2, 24.6)
2013–2014	26.4	abc	(25.9, 26.9)	28.2	abc	(27.4, 29.0)	24.6	bc	(23.9, 25.2)
2015–2016	26.7	bc	(26.3, 27.2)	28.4	bc	(27.6, 29.1)	25.1	bc	(24.4, 25.7)
2017–2018	27.2	bc	(26.7, 27.7)	28.2	c	(27.5, 28.9)	26.1	abc	(25.4, 26.8)
2019–2020	28.5	abc	(28.0, 29.1)	29.1		(28.3, 29.9)	28.0	abc	(27.2, 28.7)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).

Significance testing done.

[a] Significantly different from time period-1

[b] Significantly different from time period-2

[c] Significantly different from time period-3

[d] Significant increasing trend across time

Table A2.8b: Prevalence of adjusted self-reported obesity (age-standardized) by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 years or older									
Time period									
2000–2001	20.9		(20.6, 21.3)	21.4		(20.8, 21.9)	20.4		(19.9, 20.9)
2003	21.5		(21.1, 21.8)	22.4		(21.8, 22.9)	20.4		(19.9, 20.9)
2005	22.1		(21.7, 22.4)	23.1		(22.6, 23.7)	20.9		(20.3, 21.4)
2007–2008	23.3		(22.9, 23.6)	24.4		(23.8, 25.0)	22.1		(21.5, 22.6)
2009–2010	23.8		(23.4, 24.3)	25.3		(24.6, 25.9)	22.3		(21.7, 22.9)
2011–2012	24.7		(24.2, 25.2)	25.9		(25.3, 26.6)	23.4		(22.8, 24.1)
2013–2014	26.0		(25.5, 26.5)	27.9		(27.1, 28.6)	24.1		(23.4, 24.7)
2015–2016	26.3		(25.8, 26.8)	28.0		(27.3, 28.8)	24.5		(23.9, 25.2)
2017–2018	26.8		(26.3, 27.3)	27.9		(27.2, 28.5)	25.6		(24.9, 26.3)
2019–2020	28.1		(27.5, 28.6)	28.8		(28.0, 29.6)	27.3		(26.6, 28.1)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).

Table A2.9: Prevalence of adjusted self-reported obesity by sex and age group, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 18–34 years									
Time period		d			d			d	
2000–2001	15.1		(14.5, 15.7)	16.3		(15.4, 17.2)	13.8		(13.0, 14.6)
2003	15.7		(15.1, 16.3)	17.5		(16.6, 18.5)	13.7		(12.8, 14.5)
2005	15.7		(15.2, 16.3)	17.2		(16.4, 18.0)	14.1		(13.4, 14.9)
2007–2008	16.4	c	(15.7, 17.0)	17.8	c	(16.9, 18.8)	14.8		(14.0, 15.6)
2009–2010	17.1	bc	(16.3, 17.9)	18.8	b	(17.7, 20.0)	15.2	c	(14.2, 16.2)
2011–2012	16.7		(15.9, 17.5)	17.3		(16.1, 18.5)	16.0	c	(15.0, 17.1)
2013–2014	18.8	abc	(18.0, 19.7)	21.1	abc	(19.7, 22.4)	16.4	c	(15.3, 17.4)
2015–2016	18.3	bc	(17.5, 19.2)	19.2	ab	(17.9, 20.4)	17.4	c	(16.3, 18.5)
2017–2018	19.3	c	(18.4, 20.1)	20.0	c	(18.7, 21.2)	18.5	bc	(17.3, 19.6)
2019–2020	20.8	abc	(19.7, 21.9)	20.8		(19.2, 22.3)	20.9	abc	(19.4, 22.3)
Age 35–49 years									
Time period		d			d			d	
2000–2001	21.6		(20.9, 22.2)	23.0		(22.1, 23.9)	20.1		(19.2, 21.0)
2003	21.3		(20.6, 22.0)	23.1		(22.1, 24.1)	19.4		(18.4, 20.4)
2005	22.7	ab	(22.0, 23.5)	25.4	ab	(24.2, 26.6)	19.9		(19.0, 20.9)
2007–2008	24.0	abc	(23.2, 24.8)	26.1	bc	(24.9, 27.2)	21.9	abc	(20.7, 23.0)
2009–2010	24.6	bc	(23.7, 25.5)	27.3	bc	(25.9, 28.7)	21.8	bc	(20.6, 23.1)
2011–2012	27.4	abc	(26.4, 28.4)	30.3	abc	(28.9, 31.7)	24.3	abc	(22.9, 25.7)
2013–2014	27.9	bc	(26.7, 29.0)	31.3	bc	(29.5, 33.0)	24.3	bc	(22.9, 25.7)
2015–2016	29.7	abc	(28.6, 30.8)	32.9	bc	(31.3, 34.4)	26.4	abc	(25.1, 27.8)
2017–2018	29.8	bc	(28.7, 30.9)	31.3		(29.8, 32.8)	28.3	bc	(26.8, 29.7)
2019–2020	31.0	c	(29.8, 32.2)	32.1		(30.4, 33.8)	29.8	bc	(28.2, 31.4)

Table A2.9 continued on next page

Continuation of **Table A2.9**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 50–64 years									
Time period		d			d			d	
2000–2001	26.6		(25.7, 27.4)	26.5		(25.3, 27.7)	26.7		(25.5, 27.8)
2003	27.7		(26.9, 28.6)	28.0		(26.8, 29.2)	27.4		(26.3, 28.6)
2005	27.9	b	(27.0, 28.7)	28.4	b	(27.2, 29.7)	27.3		(26.1, 28.4)
2007–2008	29.2	abc	(28.3, 30.0)	30.2	abc	(29.0, 31.5)	28.1		(27.0, 29.2)
2009–2010	29.5	bc	(28.4, 30.5)	30.5	bc	(29.0, 32.0)	28.4		(27.1, 29.7)
2011–2012	30.4	bc	(29.4, 31.5)	31.8	c	(30.3, 33.3)	29.1	c	(27.7, 30.6)
2013–2014	31.3	bc	(30.4, 32.3)	32.5	c	(31.1, 33.9)	30.2	bc	(28.9, 31.5)
2015–2016	31.4	c	(30.4, 32.3)	33.6	c	(32.3, 35.0)	29.0		(27.7, 30.3)
2017–2018	31.6		(30.6, 32.6)	33.5		(32.2, 34.8)	29.6		(28.2, 30.9)
2019–2020	33.2	abc	(32.2, 34.3)	34.3		(32.8, 35.8)	32.1	ab	(30.6, 33.6)
Age 65–79 years									
Time period		d			d			d	
2000–2001	22.5		(21.6, 23.5)	20.9		(19.6, 22.3)	23.9		(22.5, 25.2)
2003	23.5		(22.6, 24.5)	22.5		(21.1, 23.9)	24.5		(23.3, 25.7)
2005	24.6	b	(23.7, 25.4)	22.9	b	(21.7, 24.2)	26.0	b	(24.8, 27.2)
2007–2008	26.8	abc	(25.8, 27.8)	26.3	abc	(24.8, 27.8)	27.2	bc	(26.0, 28.5)
2009–2010	27.3	bc	(26.4, 28.2)	26.6	bc	(25.2, 28.1)	27.9	bc	(26.7, 29.2)
2011–2012	27.7	c	(26.7, 28.7)	27.0	c	(25.5, 28.5)	28.2	c	(26.9, 29.6)
2013–2014	29.0	abc	(28.1, 30.0)	29.0	abc	(27.7, 30.4)	29.1	c	(27.8, 30.4)
2015–2016	29.3	bc	(28.3, 30.4)	29.1	bc	(27.7, 30.6)	29.5		(28.1, 31.0)
2017–2018	29.9	c	(28.9, 30.8)	29.6	c	(28.3, 31.0)	30.1		(28.8, 31.4)
2019–2020	30.4	c	(29.5, 31.3)	30.9		(29.4, 32.3)	30.0		(28.8, 31.2)

Table A2.9 continued on next page

Continuation of **Table A2.9**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 80 years or older									
Time period		d			d			d	
2000–2001	14.9		(13.3, 16.4)	12.7		(10.4, 15.0)	16.2		(14.1, 18.3)
2003	13.8		(12.6, 15.1)	12.7		(10.6, 14.8)	14.5		(12.9, 16.0)
2005	15.6		(14.1, 17.1)	13.4		(11.2, 15.5)	17.0	a	(15.0, 18.9)
2007–2008	17.1	bc	(15.6, 18.5)	14.0		(11.7, 16.3)	19.1	bc	(17.2, 21.0)
2009–2010	17.1	c	(15.7, 18.6)	15.6		(13.5, 17.8)	18.0	c	(16.1, 19.9)
2011–2012	16.3		(14.9, 17.7)	15.9		(13.6, 18.2)	16.6		(14.7, 18.4)
2013–2014	18.8	a	(17.3, 20.3)	16.6		(14.5, 18.6)	20.3	a	(18.2, 22.4)
2015–2016	17.6		(16.2, 19.0)	17.4		(15.0, 19.7)	17.8		(15.9, 19.7)
2017–2018	20.0	ac	(18.4, 21.5)	18.1		(15.7, 20.5)	21.4	ac	(19.3, 23.4)
2019–2020	20.2	b	(18.6, 21.8)	19.2		(16.9, 21.6)	21.0	b	(18.8, 23.1)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).

Significance testing done.

[a] Significantly different from time period-1

[b] Significantly different from time period-2

[c] Significantly different from time period-3

[d] Significant increasing trend across time

Table A2.10: Prevalence of adjusted self-reported obesity by sex and household income quintile, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Household income quintile 1									
Time period		d			d			d	
2000–2001	21.7		(20.9, 22.6)	19.1		(17.8, 20.4)	23.6		(22.5, 24.7)
2003	22.2		(21.3, 23.2)	20.6		(19.2, 22.1)	23.4		(22.2, 24.6)
2005	21.7		(20.9, 22.5)	20.1		(18.8, 21.4)	22.9		(21.8, 24.0)
2007–2008	23.6	ac	(22.5, 24.6)	22.5	ac	(20.7, 24.4)	24.3		(23.1, 25.6)
2009–2010	23.5	b	(22.5, 24.6)	21.4		(19.8, 22.9)	25.1	b	(23.7, 26.5)
2011–2012	23.7	c	(22.7, 24.7)	21.6		(20.0, 23.2)	25.2	c	(23.8, 26.7)
2013–2014	25.5	abc	(24.4, 26.7)	24.8	ab	(22.9, 26.7)	26.1		(24.6, 27.6)
2015–2016	26.7	bc	(25.6, 27.9)	25.5	bc	(23.7, 27.3)	27.7	bc	(26.3, 29.2)
2017–2018	27.3	bc	(26.3, 28.4)	24.6	c	(23.1, 26.2)	29.5	bc	(28.0, 30.9)
2019–2020	28.3	c	(27.0, 29.5)	26.2		(24.3, 28.1)	29.9	bc	(28.4, 31.5)
Household income quintile 2									
Time period		d			d			d	
2000–2001	22.1		(21.3, 23.0)	21.6		(20.3, 22.8)	22.7		(21.5, 23.9)
2003	22.8		(21.8, 23.8)	23.1		(21.7, 24.5)	22.5		(21.2, 23.8)
2005	21.8		(20.9, 22.6)	21.1	a	(20.0, 22.3)	22.3		(21.2, 23.4)
2007–2008	22.9		(22.0, 23.8)	22.1		(20.8, 23.5)	23.6		(22.4, 24.8)
2009–2010	23.4	b	(22.3, 24.4)	24.0	b	(22.4, 25.5)	22.8		(21.5, 24.1)
2011–2012	24.1	c	(23.0, 25.2)	23.6	c	(22.0, 25.2)	24.5	c	(23.0, 25.9)
2013–2014	26.3	abc	(25.2, 27.4)	26.5	abc	(24.8, 28.3)	26.0	bc	(24.6, 27.5)
2015–2016	26.3	bc	(25.2, 27.4)	27.2	bc	(25.6, 28.8)	25.5	c	(24.0, 27.0)
2017–2018	27.3	c	(26.2, 28.4)	26.8	c	(25.1, 28.5)	27.9	ac	(26.4, 29.3)
2019–2020	28.1	bc	(26.8, 29.5)	27.6		(25.6, 29.7)	28.6	bc	(26.9, 30.2)

Table A2.10 continued on next page

Continuation of **Table A2.10**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Household income quintile 3									
Time period		d			d			d	
2000–2001	20.7		(19.8, 21.6)	21.5		(20.3, 22.8)	19.8		(18.5, 21.0)
2003	22.0	a	(21.1, 22.9)	23.1		(21.8, 24.4)	20.8		(19.5, 22.2)
2005	22.8	b	(21.9, 23.6)	24.8	b	(23.4, 26.1)	20.8		(19.7, 21.8)
2007–2008	23.4	bc	(22.5, 24.2)	24.2	c	(22.8, 25.6)	22.5	c	(21.3, 23.8)
2009–2010	24.2	bc	(23.2, 25.3)	25.0		(23.5, 26.5)	23.5	bc	(22.1, 24.9)
2011–2012	25.2	bc	(24.1, 26.3)	26.0		(24.5, 27.5)	24.4	bc	(23.0, 25.8)
2013–2014	26.9	abc	(25.8, 28.0)	28.4	abc	(26.7, 30.1)	25.4	bc	(24.0, 26.8)
2015–2016	26.1	c	(25.0, 27.2)	27.7	c	(26.2, 29.3)	24.5		(23.0, 26.0)
2017–2018	28.0	ac	(26.9, 29.1)	29.1	c	(27.5, 30.7)	26.8	ac	(25.3, 28.3)
2019–2020	28.1	b	(26.8, 29.4)	28.6		(26.8, 30.4)	27.6	b	(25.9, 29.4)
Household income quintile 4									
Time period		d			d			d	
2000–2001	20.5		(19.7, 21.4)	22.0		(20.9, 23.2)	18.8		(17.7, 20.0)
2003	20.4		(19.5, 21.2)	22.6		(21.4, 23.8)	17.7		(16.5, 19.0)
2005	22.3	ab	(21.4, 23.3)	24.5	ab	(23.2, 25.9)	19.9	a	(18.6, 21.2)
2007–2008	23.4	bc	(22.5, 24.3)	25.9	bc	(24.6, 27.3)	20.6	bc	(19.4, 21.7)
2009–2010	23.6	bc	(22.7, 24.6)	27.1	bc	(25.7, 28.6)	19.7	c	(18.4, 20.9)
2011–2012	25.0	bc	(23.9, 26.1)	27.0	c	(25.6, 28.5)	22.7	abc	(21.2, 24.1)
2013–2014	26.1	bc	(25.1, 27.2)	28.8	c	(27.2, 30.5)	23.1	bc	(21.7, 24.6)
2015–2016	26.9	bc	(25.9, 28.0)	29.8	bc	(28.3, 31.4)	23.8	c	(22.4, 25.1)
2017–2018	26.9	c	(25.9, 27.9)	30.1	c	(28.6, 31.6)	23.4		(22.1, 24.8)
2019–2020	28.8	abc	(27.5, 30.0)	30.6		(28.8, 32.4)	26.7	abc	(25.1, 28.4)

Table A2.10 continued on next page

Continuation of **Table A2.10**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Household income quintile 5									
Time period		d			d			d	
2000–2001	19.8		(19.0, 20.6)	22.5		(21.4, 23.5)	16.1		(15.0, 17.2)
2003	20.4		(19.5, 21.2)	23.1		(21.9, 24.2)	16.6		(15.4, 17.7)
2005	20.9	b	(20.1, 21.7)	23.8		(22.7, 24.9)	17.0		(16.0, 18.1)
2007–2008	22.9	abc	(22.0, 23.7)	26.0	abc	(24.8, 27.2)	18.7	abc	(17.5, 19.8)
2009–2010	24.3	abc	(23.3, 25.4)	27.4	bc	(26.0, 28.7)	20.3	bc	(18.9, 21.7)
2011–2012	25.8	bc	(24.7, 26.9)	29.8	abc	(28.3, 31.4)	20.7	bc	(19.2, 22.1)
2013–2014	25.8	bc	(24.8, 26.8)	29.6	bc	(28.2, 31.1)	20.6	c	(19.3, 21.8)
2015–2016	26.1	c	(25.1, 27.1)	29.2		(27.8, 30.6)	21.9		(20.6, 23.2)
2017–2018	25.1		(24.1, 26.1)	28.2		(26.8, 29.5)	21.5		(20.2, 22.7)
2019–2020	27.7	abc	(26.5, 28.9)	30.0		(28.4, 31.6)	25.0	abc	(23.3, 26.6)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).
Significance testing done.

[a] Significantly different from time period-1
[b] Significantly different from time period-2
[c] Significantly different from time period-3
[d] Significant increasing trend across time

Table A2.11: Prevalence of adjusted self-reported obesity by sex and highest level of education in the household, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Less than secondary school graduation									
Time period		d			d			d	
2000–2001	26.0		(25.1, 26.9)	23.8		(22.3, 25.2)	27.9		(26.7, 29.1)
2003	27.9	a	(26.7, 29.0)	25.8		(24.1, 27.6)	29.5		(28.0, 30.9)
2005	28.7	b	(27.6, 29.8)	26.3	b	(24.6, 28.1)	30.5	b	(28.9, 32.1)
2007–2008	29.3	c	(27.9, 30.6)	27.0	c	(24.7, 29.3)	31.1	c	(29.5, 32.8)
2009–2010	29.5		(28.1, 30.9)	26.6		(24.5, 28.7)	31.8		(29.9, 33.7)
2011–2012	31.7	abc	(30.0, 33.4)	28.8		(26.4, 31.2)	34.0	bc	(31.8, 36.2)
2013–2014	31.0		(29.5, 32.6)	29.0		(26.6, 31.3)	32.7		(30.7, 34.8)
2015–2016	32.8	c	(31.3, 34.4)	32.1	c	(29.6, 34.6)	33.4		(31.4, 35.4)
2017–2018	33.3	b	(31.6, 34.9)	30.8		(28.1, 33.4)	35.4		(33.2, 37.6)
2019–2020	33.6	c	(31.7, 35.5)	31.5		(28.9, 34.0)	35.3		(32.9, 37.8)
Secondary school graduation									
Time period		d			d			d	
2000–2001	21.3		(20.5, 22.0)	21.8		(20.6, 23.0)	20.8		(19.7, 21.8)
2003	23.3	a	(22.4, 24.2)	24.4	a	(23.0, 25.7)	22.3		(21.0, 23.6)
2005	25.2	abc	(24.3, 26.1)	25.4	b	(24.1, 26.7)	25.1	ab	(23.8, 26.3)
2007–2008	25.5	bc	(24.5, 26.5)	25.7	c	(24.3, 27.2)	25.3	bc	(23.9, 26.7)
2009–2010	26.5	c	(25.3, 27.8)	26.2		(24.4, 28.0)	26.8	c	(25.2, 28.4)
2011–2012	28.0	bc	(26.7, 29.3)	27.5		(25.7, 29.3)	28.5	bc	(26.7, 30.3)
2013–2014	30.2	abc	(29.0, 31.4)	31.2	abc	(29.4, 33.0)	29.2	bc	(27.6, 30.8)
2015–2016	30.8	bc	(29.6, 32.0)	30.7	bc	(28.9, 32.5)	30.9	c	(29.2, 32.5)
2017–2018	30.3	c	(29.1, 31.5)	30.8	c	(29.0, 32.5)	29.8		(28.2, 31.4)
2019–2020	32.3	ac	(30.9, 33.7)	32.3		(30.3, 34.3)	32.3	c	(30.4, 34.2)

Table A2.11 continued on next page

Continuation of **Table A2.11**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Post-secondary certificate, diploma or university degree									
Time period		d			d			d	
2000–2001	19.4		(18.9, 19.8)	20.5		(19.8, 21.1)	18.2		(17.6, 18.8)
2003	19.8		(19.3, 20.2)	21.2		(20.5, 21.9)	18.3		(17.7, 18.8)
2005	20.7	ab	(20.2, 21.2)	22.6	ab	(21.9, 23.3)	18.9		(18.3, 19.4)
2007–2008	22.4	abc	(21.9, 22.8)	24.1	abc	(23.4, 24.9)	20.6	abc	(20.0, 21.2)
2009–2010	22.8	bc	(22.2, 23.3)	25.1	bc	(24.3, 25.9)	20.4	bc	(19.8, 21.1)
2011–2012	24.0	abc	(23.4, 24.6)	25.7	bc	(24.9, 26.5)	22.3	abc	(21.5, 23.1)
2013–2014	24.9	abc	(24.3, 25.5)	27.1	abc	(26.2, 28.0)	22.6	bc	(21.9, 23.3)
2015–2016	25.2	bc	(24.6, 25.7)	27.4	bc	(26.6, 28.2)	22.9	c	(22.2, 23.6)
2017–2018	25.8	bc	(25.2, 26.4)	27.3	c	(26.5, 28.1)	24.3	abc	(23.5, 25.1)
2019–2020	27.3	abc	(26.6, 27.9)	28.1		(27.2, 29.0)	26.4	abc	(25.6, 27.2)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files)

Significance testing done.

[a] Significantly different from time period-1

[b] Significantly different from time period-2

[c] Significantly different from time period-3

[d] Significant increasing trend across time

Table A2.12a: Prevalence of adjusted self-reported class III obesity by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 years or older									
Time period		d			d			d	
2000–2001	1.6		(1.5, 1.7)	1.3		(1.1, 1.4)	2.0		(1.8, 2.1)
2003	1.8	a	(1.7, 1.9)	1.6	a	(1.4, 1.8)	2.0		(1.9, 2.2)
2005	1.9	b	(1.8, 2.1)	1.5	b	(1.4, 1.7)	2.4	ab	(2.2, 2.5)
2007–2008	2.3	abc	(2.2, 2.4)	1.8	ac	(1.6, 2.0)	2.8	abc	(2.6, 3.0)
2009–2010	2.4	bc	(2.2, 2.5)	2.0	bc	(1.8, 2.2)	2.8	bc	(2.6, 3.0)
2011–2012	2.5	bc	(2.4, 2.7)	2.0	c	(1.8, 2.2)	3.1	c	(2.8, 3.3)
2013–2014	2.8	abc	(2.6, 3.0)	2.3	abc	(2.1, 2.6)	3.3	bc	(3.0, 3.5)
2015–2016	2.9	bc	(2.7, 3.0)	2.4	bc	(2.2, 2.6)	3.4	c	(3.1, 3.6)
2017–2018	3.2	abc	(3.0, 3.4)	2.6	c	(2.4, 2.9)	3.8	abc	(3.6, 4.1)
2019–2020	3.5	bc	(3.2, 3.7)	2.9	bc	(2.6, 3.2)	4.0	bc	(3.6, 4.3)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).

Significance testing done.

[a] Significantly different from time period-1

[b] Significantly different from time period-2

[c] Significantly different from time period-3

[d] Significant increasing trend across time

Table A2.12b: Prevalence of adjusted self-reported class III obesity (age-standardized) by sex, household population aged 18 years or older, Canada excluding territories, 2000–2001 to 2019–2020

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 years or older									
Time period									
2000–2001	1.6		(1.5, 1.7)	1.3		(1.1, 1.4)	2.0		(1.8, 2.1)
2003	1.8		(1.7, 2.0)	1.6		(1.4, 1.8)	2.1		(1.9, 2.3)
2005	1.9		(1.8, 2.0)	1.5		(1.3, 1.6)	2.4		(2.2, 2.5)
2007–2008	2.3		(2.1, 2.4)	1.8		(1.6, 1.9)	2.8		(2.6, 3.0)
2009–2010	2.4		(2.2, 2.5)	2.0		(1.8, 2.2)	2.8		(2.5, 3.0)
2011–2012	2.5		(2.4, 2.7)	2.0		(1.8, 2.2)	3.0		(2.8, 3.3)
2013–2014	2.8		(2.6, 3.0)	2.3		(2.1, 2.6)	3.3		(3.0, 3.5)
2015–2016	2.9		(2.7, 3.0)	2.4		(2.2, 2.6)	3.4		(3.1, 3.6)
2017–2018	3.2		(3.0, 3.4)	2.6		(2.4, 2.9)	3.9		(3.6, 4.1)
2019–2020	3.5		(3.2, 3.7)	3.0		(2.6, 3.3)	4.0		(3.6, 4.3)

DATA SOURCES: 2000–2001 to 2019–2020 Canadian Community Health Survey (share files).

Table A2.13a: Prevalence of measured obesity by sex, household population aged 18 years or older, Canada excluding territories (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 or older									
Time period									
2004	23.1		(21.7, 24.6)	22.9		(20.6, 25.1)	23.4		(21.4, 25.3)
2005	24.3		(22.0, 26.6)	25.6		(22.4, 28.8)	23.0		(20.3, 25.8)
2008	25.4	*	(23.6, 27.2)	26.4	*	(23.7, 29.0)	24.4		(21.9, 27.0)
2015	26.6	*	(24.9, 28.4)	28.4	*	(25.8, 31.0)	24.9		(22.7, 27.1)
Adults aged 18–79									
Time period									
2004	23.2		(21.7, 24.7)	23.1		(20.8, 25.4)	23.3		(21.3, 25.3)
2005	24.6		(22.3, 27.0)	25.9		(22.7, 29.2)	23.3		(20.4, 26.2)
2008	25.3		(23.4, 27.2)	26.4		(23.7, 29.1)	24.2		(21.5, 26.8)
2007–2009/ 2009–2011/ 2012–2013	25.6		(23.3, 27.8)	26.0		(23.5, 28.6)	25.1		(22.2, 28.0)
2015	27.0	*	(25.2, 28.8)	28.8	*	(26.1, 31.4)	25.2		(22.9, 27.5)
2014–2015/ 2016–2017/ 2018–2019	26.5	*	(23.6, 29.3)	27.3	*	(24.2, 30.5)	25.5		(22.3, 28.8)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/ 2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

Table A2.13b: Prevalence of measured obesity (age-standardized) by sex, household population aged 18–79 years, Canada excluding territories (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Time period									
2004	23.6		(22.1, 25.1)	23.7		(21.4, 26.0)	23.5		(21.6, 25.4)
2005	24.8		(22.5, 27.1)	26.2		(23.0, 29.5)	23.3		(20.4, 26.1)
2008	25.1		(23.3, 27.0)	26.5		(23.8, 29.2)	23.6		(21.1, 26.2)
2007–2009/ 2009–2011/ 2012–2013	25.5		(23.4, 27.7)	26.2		(23.7, 28.7)	25.0		(22.1, 27.8)
2015	26.3		(24.5, 28.2)	28.4		(25.7, 31.1)	24.4		(22.1, 26.7)
2014–2015/ 2016–2017/ 2018–2019	26.1		(23.4, 28.9)	27.2		(24.1, 30.3)	25.1		(21.9, 28.2)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/ 2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

NOTE: Rates were age-standardized using the 2011 Canadian population.

Table A2.14a: Prevalence of measured class III obesity by sex, household population aged 18 years or older, Canada (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Adults aged 18 years or older									
Time period									
2004	2.7		(2.2, 3.2)	1.6	E	(1.1, 2.1)	3.8		(2.9, 4.7)
2005	2.1		(1.5, 2.8)	1.2	E	(0.5, 1.9)	3.1	E	(1.9, 4.3)
2008	2.4		(1.8, 2.9)	1.3	E	(0.8, 1.8)	3.5		(2.4, 4.5)
2015	2.8		(2.3, 3.3)	1.9		(1.3, 2.5)	3.7		(2.9, 4.5)
Adults aged 18 to 79 years									
Time period									
2004	2.8		(2.2, 3.3)	1.6	E	(1.1, 2.2)	3.9		(3.0, 4.8)
2005	2.2	E	(1.5, 2.9)	1.2	E	(0.5, 1.9)	3.1	E	(1.9, 4.3)
2008	2.3		(1.7, 2.8)	1.3	E	(0.8, 1.8)	3.2		(2.2, 4.2)
2007–2009/ 2009–2011/2012–2013	3.4	ab	(2.8, 4.0)	2.1		(1.5, 2.6)	4.8		(3.5, 6.0)
2015	2.9		(2.4, 3.4)	2.0		(1.4, 2.6)	3.9		(3.0, 4.7)
2014–2015/ 2016–2017/2018–2019	4.0	ac *	(3.0, 4.9)	3.2	Ec *	(1.8, 4.6)	4.8	c	(3.8, 5.8)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/ 2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

[a] Significantly different from time period-1 ($p<0.05$)

[b] Significantly different from time period-2 ($p<0.05$)

[c] Significantly different from time period-3 ($p<0.05$)

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution

Table A2.14b: Prevalence of measured class III obesity (age-standardized estimates) by sex, household population aged 18 years or older, Canada excluding territories (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Time period									
2004	2.8		(2.3, 3.3)	1.7		(1.1, 2.2)	3.9		(3.0, 4.7)
2005	2.2	E	(1.5, 2.9)	1.3	E	(0.5, 2.0)	3.1	E	(1.9, 4.4)
2008	2.2		(1.7, 2.8)	1.3	E	(0.8, 1.8)	3.2		(2.2, 4.2)
2007–2009/ 2009–2011/ 2012–2013	3.4		(2.8, 4.0)	2.1		(1.5, 2.6)	4.8		(3.6, 5.9)
2015	2.9		(2.4, 3.4)	2.0	E	(1.3, 2.6)	3.9		(3.0, 4.8)
2014–2015/ 2016–2017/ 2018–2019	4.0		(3.1, 4.9)	3.2	E	(1.9, 4.6)	4.8		(3.8, 5.7)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/ 2018–2019 Canadian Health Measures Survey (Cycles 1 to 6).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution

NOTE: Rates were age-standardized using the 2011 Canadian population.

Table A2.16: Prevalence of adjusted self-reported obesity among Indigenous/non-Indigenous peoples (living off reserve), by sex and age group, household population aged 18 years or older, Canada excluding territories, 2021

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age group (in years)									
Total (18+)									
Indigenous peoples	43.8	*	(39.2, 48.5)	45.6	*	(38.1, 53.0)	41.9	*	(36.7, 47.2)
Non-Indigenous	29.1		(28.3, 30.0)	29.6		(28.4, 30.9)	28.6		(27.5, 29.7)
18–34									
Indigenous peoples	36.3	*	(28.9, 43.7)	36.2	E *	(25.5, 47.0)	36.4	*	(26.7, 46.1)
Non-Indigenous	22.1		(20.3, 23.9)	21.9		(19.3, 24.4)	22.3		(19.8, 24.8)
35–49									
Indigenous peoples	56.4	*	(46.5, 66.4)	58.4	*	(43.0, 73.8)	54.2	*	(43.2, 65.2)
Non-Indigenous	32.2		(30.5, 33.9)	33.0		(30.5, 35.6)	31.4		(29.2, 33.6)
50–64									
Indigenous peoples	43.7	*	(34.7, 52.6)	47.0	E	(31.6, 62.3)	40.3		(31.2, 49.5)
Non-Indigenous	33.5		(31.8, 35.1)	36.0		(33.5, 38.4)	31.0	a	(28.7, 33.2)
65 or older									
Indigenous peoples	37.7	*	(30.9, 44.5)	41.7	*	(30.6, 52.7)	34.8		(26.2, 43.3)
Non-Indigenous	29.3		(28.1, 30.5)	28.5		(26.7, 30.3)	30.1		(28.4, 31.7)

DATA SOURCE: 2021 Canadian Community Health Survey (share file).

Significance testing done.

* Significantly different from non-Indigenous ($p<0.05$).

[a] Significantly different from non-Indigenous ($p<0.05$).

[E] Coefficient of variation between 15.0% and 35.0%, interpret with caution.

Table A3.1a: Percentage distribution of household population aged 2 to 17 years, by sex and measured body mass index (BMI) category, Canada excluding territories, 2015

	BOTH SEXES				MALES				FEMALES			
	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval
Measured BMI category (%) (based on World Health Organization BMI cut-points)												
Age 2 to 4 years												
Total	**1 220.8**				**552.1**				**668.6**			
Thin	—	—	F	—	—		F	—	—	—	F	—
Normal weight	776.0	63.6		(57.9, 69.2)	353.6	64.0		(56.4, 71.7)	422.4	63.2		(54.9, 71.4)
At risk of overweight	327.2	26.8		(21.4, 32.2)	118.2	21.4		(15.3, 27.5)	209.1	31.3		(23.0, 39.5)
Overweight	55.8	4.6	E	(2.5, 6.7)	38.8	7.0	E	(3.0, 11.1)	—	—	F	—
Obesity	41.1	3.4	E	(1.2, 5.5)	—	—	F	—	—	—	F	—
Overweight/ Obesity	96.9	7.9	E	(5.0, 10.9)	69.5	12.6	E	(6.9, 18.2)	27.4	4.1	E*	(1.9, 6.3)
Age 5 to 17 years												
Total	**4 822.9**				**2.452.3**				**2.370.6**			
Thin	130.8	2.7	E	(1.8, 3.7)	69.5	2.8	E	(1.5, 4.2)	61.4	2.6	E	(1.2, 4.0)
Normal weight	3 159.3	65.5		(63.1, 68.0)	1.537.8	62.7		(59.2, 66.2)	1.621.6	68.4	*	(64.8, 72.0)
Overweight	934.5	19.4		(17.2, 21.5)	480.9	19.6		(16.4, 22.8)	453.6	19.1		(16.2, 22.1)
Obesity	598.3	12.4		(10.7, 14.1)	364.2	14.9		(12.1, 17.6)	234.1	9.9	*	(7.8, 12.0)
Overweight/ Obesity	1 532.8	31.8		(29.4, 34.1)	845.1	34.5		(30.9, 38.0)	687.7	29.0	*	(25.5, 32.5)

Table A3.1a continued on next page

Continuation of **Table A3.1a**

	BOTH SEXES				MALES				FEMALES			
	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval	Population (in thousands)	%		95% Confidence Interval
Age 5 to 11 years												
Total	**2 535.0**				**1.288.6**				**1.246.4**			
Thin	45.1	1.8	E	(0.7, 2.9)	—	—	F	—	—	—	F	—
Normal weight	1 770.7	69.8		(66.4, 73.3)	853.5	66.2		(61.3, 71.2)	917.1	73.6	*	(68.7, 78.4)
Overweight	447.4	17.6		(14.8, 20.5)	256.3	19.9		(15.5, 24.2)	191.2	15.3		(11.4, 19.2)
Obesity	271.8	10.7		(8.3, 13.1)	157.0	12.2		(8.7, 15.7)	114.8	9.2		(6.2, 12.2)
Overweight/ Obesity	719.3	28.4		(25.0, 31.8)	413.2	32.1		(27.1, 37.0)	306.0	24.6	*	(19.9, 29.2)
Age 12 to 17 years												
Total	**2 287.9**				**1.163.7**				**1.124.2**			
Thin	85.7	3.7	Ea	(2.2, 5.3)	47.6	4.1	E	(1.9, 6.3)	38.0	3.4	E	(1.2, 5.5)
Normal weight	1 388.7	60.7	a	(57.3, 64.1)	684.2	58.8	a	(53.6, 64.0)	704.4	62.7	a	(58.0, 67.3)
Overweight	487.1	21.3		(18.3, 24.2)	224.6	19.3		(15.2, 23.4)	262.5	23.3	a	(19.1, 27.6)
Obesity	326.5	14.3		(11.7, 16.8)	207.2	17.8		(13.5, 22.1)	119.2	10.6	*	(7.8, 13.4)
Overweight/ Obesity	813.5	35.6	a	(32.3, 38.9)	431.8	37.1		(31.9, 42.3)	381.7	34.0	a	(29.4, 38.5)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share files).

Significance testing done.

* Significantly different from males ($p<0.05$).

E Coefficient of variation between 16.6% and 33.3%, interpret with caution.

F Coefficient of variation greater than 33.3%, value suppressed.

Table A3.1b: Percentage distribution of household population aged 5 to 17 years, by sex and measured body mass index (BMI) category, Canada excluding territories, 2014–2019

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Measured BMI category (%) (based on World Health Organization BMI cut-points)									
Age 5 to 17 years									
Thin	2.2		(1.5, 2.8)	2.8	E	(1.6, 4.1)	1.5	E *	(0.9, 2.1)
Normal weight	68.9	b	(66.7, 71.1)	66.8		(63.7, 70.0)	71.0	*	(68.0, 73.9)
Overweight	17.7		(16.4, 19.0)	17.0		(15.0, 19.0)	18.4		(15.9, 20.8)
Obesity	11.3		(9.6, 12.9)	13.3		(11.0, 15.7)	9.1	*	(7.4, 10.9)
Overweight/Obesity	28.9		(26.9, 31.0)	30.3		(27.3, 33.4)	27.5		(24.4, 30.7)
Age 5 to 11 years									
Thin	2.3	E	(1.3, 3.3)	2.6	E	(0.9, 4.3)	2.0	E	(1.1, 2.8)
Normal weight	71.1		(68.1, 74.1)	69.9		(65.4, 74.4)	72.4		(69.1, 75.6)
Overweight	16.2		(14.3, 18.1)	15.1		(12.4, 17.8)	17.3		(14.3, 20.3)
Obesity	10.4		(8.5, 12.4)	12.3		(9.6, 15.1)	8.4	*	(6.4, 10.4)
Overweight/Obesity	26.6		(23.7, 29.5)	27.5		(23.2, 31.7)	25.7		(22.4, 29.0)
Age 12 to 17 years									
Thin	2.1	E	(1.0, 3.1)	3.1	E	(1.2, 5.1)	-	F	-
Normal weight	66.3	ab	(63.2, 69.3)	63.2	a	(58.7, 67.6)	69.4	b *	(65.0, 73.8)
Overweight	19.4	a	(17.3, 21.6)	19.2		(15.8, 22.7)	19.6		(15.9, 23.3)
Obesity	12.2		(9.9, 14.6)	14.5		(10.5, 18.4)	10.0		(7.4, 12.5)
Overweight/Obesity	31.6	a	(28.7, 34.5)	33.7		(28.8, 38.6)	29.6		(25.0, 34.1)

DATA SOURCES: 2014–2015, 2016–2017, and 2018–2019 Canadian Health Measures Survey (Cycles 4, 5, and 6). Significance testing done.

* Significantly different from males ($p<0.05$).

[a] Significantly different from ages 5 to 11 ($p<0.05$).

[b] Significantly different from 2015 Canadian Community Health Survey—Nutrition (share file) ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

[F] Estimate suppressed, coefficient of variation greater than 33.3%.

Table A3.2: Prevalence of measured obesity by sex and age group, household population aged 2 to 17 years, Canada excluding territories (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 2–4 years									
Time period									
2004	4.0	E	(2.4, 5.7)	3.3	E	(1.6, 5.1)	4.7	E	(1.8, 7.6)
2015	3.4	E	(1.2, 5.5)	—	F	—	—	F	—
Age 5–17 years									
Time period									
2004	12.9		(11.7, 14.1)	15.3		(13.3, 17.4)	10.3		(8.7, 12.0)
2009–2011/ 2012–2013	12.2		(10.6, 13.8)	14.8		(12.2, 17.4)	9.4		(7.6, 11.2)
2015	12.4		(10.7, 14.1)	14.9		(12.1, 17.6)	9.9		(7.8, 12.0)
2014–2015/ 2016–2017/ 2018–2019	11.3		(9.6, 12.9)	13.3		(11.0, 15.7)	9.1		(7.4, 10.9)
Age 5–11 years									
Time period									
2004	13.3		(11.4, 15.2)	15.3		(12.2, 18.4)	11.2		(8.6, 13.8)
2009–2011/ 2012–2013	11.2		(9.4, 13.0)	14.3		(11.5, 17.2)	8.0	*	(6.0, 9.9)
2015	10.7		(8.3, 13.1)	12.2		(8.7, 15.7)	9.2		(6.2, 12.2)
2014–2015/ 2016–2017/ 2018–2019	10.4	*	(8.5, 12.4)	12.3		(9.6, 15.1)	8.4		(6.4, 10.4)

Table A3.2 continued on next page

Continuation of **Table A3.2**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 12–17 years									
2004	12.5		(10.8, 14.2)	15.4		(12.7, 18.0)	9.4		(7.3, 11.5)
2005	11.6	E	(7.7, 15.5)	16.0	E	(9.7, 22.3)	7.0	E	(3.0, 11.0)
2008	10.8	E	(7.2, 14.4)	13.6	E	(8.4, 18.8)	7.8	E	(3.4, 12.3)
2007–2009/ 2009–2011/ 2012–2013	13.9		(11.0, 16.8)	16.0		(11.7, 20.2)	11.6		(9.0, 14.2)
2015	14.3		(11.7, 16.8)	17.8		(13.5, 22.1)	10.6		(7.8, 13.4)
2014–2015/ 2016–2017/ 2018–2019	12.2		(9.9, 14.6)	14.5		(10.5, 18.4)	10.0		(7.4, 12.5)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

E Coefficient of variation between 16.6% and 33.3%, interpret with caution

F Coefficient of variation greater than 33.3%, value suppressed

Table A3.3: Prevalence of measured overweight/obesity by sex and age group, household population aged 2 to 17 years, Canada excluding territories (selected years)

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 2–4 years									
Time period									
2004	11.8		(9.2, 14.4)	12.4		(8.5, 16.2)	11.1		(7.5, 14.7)
2015	7.9	E	(5.0, 10.9)	12.6	E	(6.9, 18.2)	4.1	* E	(1.9, 6.3)
Age 5–17 years									
Time period									
2004	34.5		(32.7, 36.3)	37.9		(35.1, 40.7)	31.0		(28.5, 33.4)
2009–2011/ 2012–2013	31.5		(29.0, 34.0)	34.0		(30.5, 37.5)	28.8		(24.5, 33.1)
2015	31.8		(29.4, 34.1)	34.5		(30.9, 38.0)	29.0		(25.5, 32.5)
2014–2015/ 2016–2017/ 2018–2019	28.9	*	(26.9, 31.0)	30.3	*	(27.3, 33.4)	27.5		(24.4, 30.7)
Age 5–11 years									
Time period									
2004	35.9		(33.3, 38.5)	39.0		(34.9, 43.1)	32.8		(29.3, 36.4)
2009–2011/ 2012–2013	29.5	*	(27.0, 32.1)	31.6	*	(27.6, 35.6)	27.4	*	(24.0, 30.7)
2015	28.4	*	(25.0, 31.8)	32.1	*	(27.1, 37.0)	24.6	*	(19.9, 29.2)
2014–2015/ 2016–2017/ 2018–2019	26.6	*	(23.7, 29.5)	27.5	*	(23.2, 31.7)	25.7	*	(22.4, 29.0)

Table A3.3 continued on next page

Continuation of **Table A3.3**

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Age 12–17 years									
Time period									
2004	33.0		(30.6, 35.4)	36.7		(33.2, 40.2)	28.9		(25.5, 32.2)
2005	34.6		(28.4, 40.9)	40.2		(31.3, 49.0)	28.8		(20.1, 37.6)
2008	34.4		(28.7, 40.0)	34.1		(25.9, 42.3)	34.7		(26.0, 43.3)
2007–2009/ 2009–2011/ 2012–2013	32.7		(28.8, 36.6)	35.7		(30.6, 40.7)	29.3		(24.2, 34.5)
2015	35.6		(32.3, 38.9)	37.1		(31.9, 42.3)	34.0		(29.4, 38.5)
2014–2015/ 2016–2017/ 2018–2019	31.6		(28.7, 34.5)	33.7		(28.8, 38.6)	29.6		(25.0, 34.1)

DATA SOURCES: 2004 and 2015 Canadian Community Health Survey—Nutrition (share files); 2005 and 2008 Canadian Community Health Survey (share files); 2007–2009/2009–2011/2012–2013/2014–2015/2016–2017/ 2018–2019 Canadian Health Measures Survey (Cycles 1 to 6)

Significance testing done.

[a] Significantly different from time period-1 ($p<0.05$)

[b] Significantly different from time period-2 ($p<0.05$)

[c] Significantly different from time period-3 ($p<0.05$)

* Significantly different from 2004 Canadian Community Health Survey—Nutrition ($p<0.05$)

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution

Table A3.6: Prevalence of measured obesity and overweight/obesity among Indigenous/non-Indigenous children and youth, by sex, household population aged 5 to 17 years, Canada excluding territories, 2015

	BOTH SEXES			MALES			FEMALES		
	%		95% Confidence Interval	%		95% Confidence Interval	%		95% Confidence Interval
Obesity									
Total (5–17 years)	**12.4**		**(10.7, 14.1)**	**14.9**		**(12.1, 17.6)**	**9.9**	[a]	**(7.8, 12.0)**
First Nations living off reserve, Inuit peoples, and Métis	26.0	[E] *	(17.3, 34.7)	23.9	[E]	(12.5, 35.3)	28.3	[E] *	(15.7, 41.0)
Non-Indigenous	11.9		(10.2, 13.6)	14.5		(11.7, 17.2)	9.2	[a]	(7.1, 11.4)
Overweight/obesity									
Total (5–17 years)	**31.8**		**(29.4, 34.1)**	**34.5**		**(30.9, 38.0)**	**29.0**	[a]	**(25.5, 32.5)**
First Nations living off reserve, Inuit peoples, and Métis	48.4	*	(39.1, 57.7)	45.6		(32.5, 58.7)	51.4	*	(38.7, 64.2)
Non-Indigenous	31.2		(28.8, 33.7)	34.0		(30.3, 37.6)	28.4	[a]	(24.8, 31.9)

DATA SOURCE: 2015 Canadian Community Health Survey—Nutrition (share files).

Significance testing done.

* Significantly different from reference ($p<0.05$).

[a] Significantly different from males ($p<0.05$).

[E] Coefficient of variation between 16.6% and 33.3%, interpret with caution.

Table A4a: Response rates and sample sizes for self-reported estimates based on the Canadian Community Health Survey

	Response rate[a] (%)	% agreeing to share responses[b]	Sample size: Number of respondents 18+ for whom BMI was calculated	Number and percent of respondents 18+ with a missing value for BMI[c]	
Time period					
2000–2001	84.7	95.9	107,682	2,190	2.0
2003	80.7	95.2	108,240	2,736	2.5
2005	78.9	95.5	108,195	2,437	2.2
2007–2008	76.4	94.6	105,695	4,792	4.3
2009–2010	72.3	94.0	99,297	4,438	4.3
2011–2012	68.4	94.5	100,010	5,061	4.8
2013–2014	66.2	94.7	102,812	5,358	5.0
2015–2016	59.5	94.3	87,370	4,714	5.1
2017–2018	60.8	91.9	90,881	4,938	5.2
2019–2020	41.0	93.6	88,383	5,308	5.7

[a] combined household/person response rate

[b] with the Public Health Agency of Canada

[c] excludes pregnant women

Table A4b: Response rates and sample sizes for measured estimates

	Response rate[a] (%)	Percent agreeing to share responses[b]	Sample size: Number of respondents for whom BMI was calculated by age group[c]				
	%	%	18 or older	18–79	12–17	5–11[d]	2–4[e]
Time period							
2004 CCHS-Nutrition	76.5	95.3	11,909	10,986	3,942	3,266	1,187
2005 CCHS measured	55.9	95.5	4,039	3,814	473		
2007–2009 CHMS	51.7			3,691	804		
2008 CCHS measured	50.7	94.6	4,052	3,823	428		
2009–2011 CHMS	55.5			3,832	846	1,267	
2012–2013 CHMS	51.7			3,354	802	1,182	
2014–2015 CHMS	53.7			3,352	798	1,203	
2015 CCHS-Nutrition	61.6	96.0	9,265	8,664	1,879	1,692	778
2016–2017 CHMS	48.5			3,272	832	1,219	
2018–2019 CHMS	45.9			3,349	802	1,179	

[a] combined household/person response rate
[b] with the Public Health Agency of Canada
[c] excludes pregnant women
[d] 61 to 143 months
[e] 24 to 60 months

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