

# 5.5

## The Geography of Healthy Weight in BC

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Healthy weight is an important wellness asset.

A person's weight depends on nutrition and food security issues as well as physical activity, as discussed in the two previous sections of this Atlas.

There are many health problems and risks associated with being either underweight or overweight. Being underweight may be an indication of an underlying illness or an eating disorder. It may also cause osteoporosis and infertility. Being overweight or obese has several health risks, including Type 2 diabetes, hypertension, cardiovascular disease, some types of cancer, osteoarthritis, gallbladder disease, functional limitations, and impaired fertility, among others (Health Canada, 2003; Canadian Institute for Health Information, 2004, 2006a).

While there are several different measures utilized to assess healthy body weight, body mass index (BMI), which gives a value based on kilograms per metre squared (weight and height), is widely used internationally for assessing health risk. Any person with a BMI lower than 25 but higher than 18.5 is considered to have a "healthy body mass index" (Health Canada, 2003). Values lower than 18.5 are considered underweight, 25 to 29.9 is considered overweight, and those with a BMI in excess of 30 are considered obese.

In 1978-1979, the Canada Health Survey directly measured respondents' height and weight. After adjusting for age, this survey found that 50.8% of Canadians had a healthy measured BMI (i.e., BMI between 18.5 and 24.9). The CCHS conducted in 2004 (and also utilizing direct measures of height and weight) found that the age-adjusted rate of healthy BMI had decreased to 40.9%. The 2004 CCHS demonstrated clear gender differences, as 35% of males compared to 46.4% of females had healthy age-adjusted measured BMI. Healthy measured BMIs were highest for young adults (about 60%), but decreased steadily so that only about one-quarter of the population had healthy BMIs by age 75. After age 75, the healthy BMI rate increased somewhat (Tjepkema, 2006). Rates of healthy BMI have been decreasing in Canada since at least as far back as the early 1950s, with a more rapid rate of decline occurring over the past 15 years (Katzmarzyk, 2002).

Using the 2004 CCHS, Shields and Tjepkema (2006) investigated regional differences in healthy measured BMI. The province with the highest proportion of their population having a healthy BMI was Quebec (43.7%, followed closely by BC), and the province with the lowest proportion was Newfoundland/Labrador (29%). Within all provinces, according to the Canadian Institute for Health Information (2006a), the rate of healthy BMI is higher in urban areas and lower in northern and remote rural regions. A recent 2006 telephone survey of 8,000 respondents in BC showed that, overall, 46% of respondents had a normal weight (BMI between 18.5 and 24.9), but the areas with the healthiest weights were in the lower mainland urban communities (Burnaby with 56%, Coquitlam with 57%, and Delta with 53% in the normal range for BMI) (Discovery Research, 2006).

While self-reports of height and weight are a less reliable basis for calculations of BMI than directly measured height and weight (there is a tendency to overestimate height and underestimate weight in self-reports; see Kendall, 2006), they can fairly reliably be used to estimate the regional, age, and gender variability in healthy BMI at a specific time.

Two questions were used from the CCHS to assess key weight and related wellness assets. The first question, "*Do you consider yourself overweight, underweight, or just about right?*" assessed individual's feelings about their own body weight. It is important in relation to the second question, which asked respondents (excluding pregnant women) their weight and height. Responses to this question were used to calculate the body mass index (BMI) for each respondent aged 18 years or older. For younger individuals, the 2003 McCreary Adolescent Health Survey data were used.

## Weight is perceived to be just about right

Provincially, an average of 54.27% of respondents over the age of 12 felt that their weight was about right. (For Aboriginal respondents, the average was 53.28%). The top map opposite indicates a rough gradient, with the proportion of respondents feeling that their weight was just right being generally higher in the urban southwest and rural coastal regions compared to the interior and the north. For example, a low of 44.56% of respondents in the Northeast felt that their weight was just right compared to a high of 59.38% in Fraser North. As well, Vancouver and Fraser North had a significantly higher than average proportion of respondents who felt their weight was just right, while Central Vancouver Island, Northern Interior, Fraser East, and Northeast regions all had rates significantly lower than the provincial average.

The second two maps show the patterns for males and females separately. They illustrate that, in all regions (except Vancouver), a higher proportion of males than females were likely to feel that their weight was just right. These gender differences were statistically significant at the provincial level, and for 6 of the 16 regions (Fraser North, Fraser South, North Shore/Coast Garibaldi, East Kootenay, South Vancouver Island, and Thompson Cariboo Shuswap). The greatest gender difference was found in East Kootenay, where 60.23% of men compared with 46.24% of women felt their weight was about right. In general, the variation in responses to this question was greater across regions for females than for males.

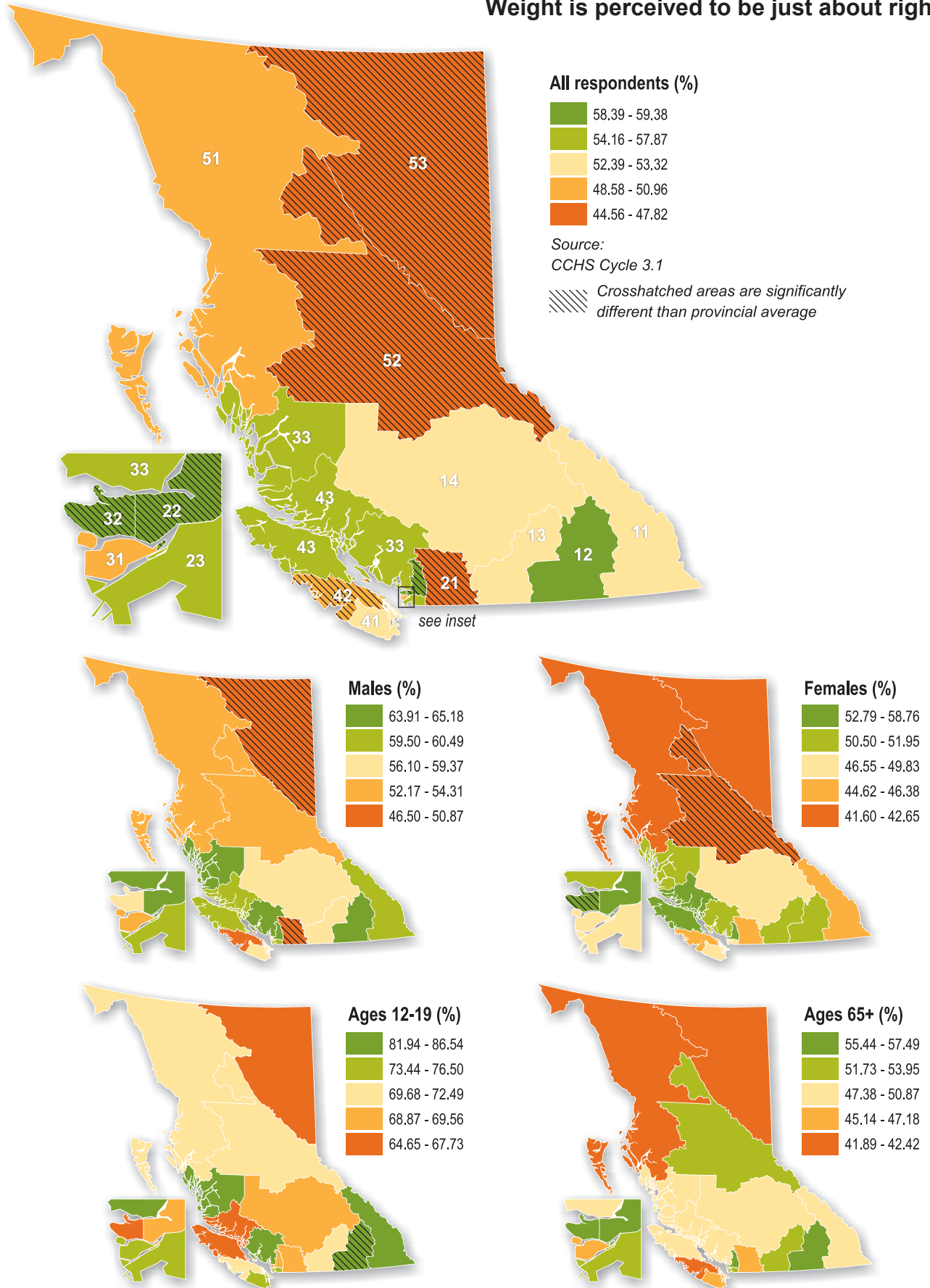
As shown in the bottom two maps and the above table, on average, 72.43% of youths felt that their weight was about right, compared to 52.09% of 20- to 64-year-olds and 50.56% of seniors. Differences in the proportion of 12- to 19-year-olds who felt that their weight was just right were higher (and statistically significant) compared to 20- to 64-year-olds in all but three regions of the province. Geographically, Fraser East and Northeast had significantly lower values than the provincial average for males, while for females, Vancouver was significantly higher and Northern Interior was significantly lower than the provincial average.

| Health Service Delivery Area    | All respondents (%) | Males (%)     | Females (%)   | Ages 12-19 (%) | Ages 20-64 (%) | Ages 65+ (%) |
|---------------------------------|---------------------|---------------|---------------|----------------|----------------|--------------|
| 022 Fraser North                | 59.38               | 63.91†        | 54.97†        | 69.40          | 58.54          | 55.44        |
| 032 Vancouver                   | 58.47               | 58.18         | 58.76         | 67.73          | 57.66          | 57.49        |
| 012 Kootenay Boundary           | 58.39               | 65.18         | 51.58         | 86.54‡         | 53.85          | 56.65        |
| 033 North Shore/Coast Garibaldi | 57.87               | 64.09†        | 51.95†        | 81.94‡         | 56.42          | 47.38        |
| 043 North Vancouver Island      | 56.62               | 60.49         | 52.79         | 64.65          | 56.35          | 50.87        |
| 023 Fraser South                | 54.16               | 59.50†        | 48.93†        | 76.50‡         | 50.59          | 51.73        |
| 011 East Kootenay               | 53.32               | 60.23†        | 46.24†        | 83.62‡         | 49.05          | 47.38        |
| 013 Okanagan                    | 53.22               | 56.10         | 50.50         | 69.68‡         | 50.02          | 53.95        |
| 041 South Vancouver Island      | 52.88               | 59.37†        | 47.02†        | 73.44‡         | 51.77          | 45.27        |
| 014 Thompson Cariboo Shuswap    | 52.39               | 58.26†        | 46.55†        | 68.87‡         | 50.21          | 48.71        |
| 031 Richmond                    | 50.96               | 52.17         | 49.83         | 73.92‡         | 48.94          | 45.14        |
| 051 Northwest                   | 48.71               | 54.31         | 42.65         | 72.49‡         | 44.65          | 41.89        |
| 042 Central Vancouver Island    | 48.58               | 50.86         | 46.38         | 72.41‡         | 46.13          | 42.20        |
| 052 Northern Interior           | 47.82               | 53.72         | 41.60         | 70.69‡         | 42.64          | 52.65        |
| 021 Fraser East                 | 47.71               | 50.87         | 44.62         | 69.56‡         | 43.34          | 47.18        |
| 053 Northeast                   | 44.56               | 46.50         | 42.48         | 66.52‡         | 40.20          | 42.42        |
| <b>999 Province</b>             | <b>54.27</b>        | <b>58.17†</b> | <b>50.48†</b> | <b>72.43‡</b>  | <b>52.09</b>   | <b>50.56</b> |

‡ Age group differs significantly from 20-64 group.  
† Males differ significantly from females.

When considering trends across regions of the province but within the two age groups 12 to 19 and 65 and over, there is very little variation in the proportion of respondents who felt that their weight was about right, although Kootenay Boundary was significantly higher than the average for teens. However, for 20- to 64-year-olds there were relatively large regional differences. For example, Northeast, Fraser East, and Northern Interior all had significantly low values for this age group, while Fraser North and Vancouver had significantly high values compared to the provincial average for this age group.

### Weight is perceived to be just about right



## Healthy body mass index based on self-reported height and weight

The following maps and tables are based on the CCHS except the map pertaining to youths aged 12 to 19. Because BMI calculations are complex for children and teens, the CCHS did not calculate a BMI for those under age 18. We substituted data from the 2003 McCreary Adolescent Health Survey for the map pertaining to the 12 to 19 age group (Grades 7 to 12) as it used a more accepted method for calculating BMI in young people (Cole, Bellizzi, Fliegler, and Dietz, 2000).

Based on self-reports of weight and height rather than direct measures, approximately half of all respondents in BC over the age of 18 had a healthy self-reported BMI. For Aboriginal respondents, however, only 41.74% had a self-reported healthy weight, although the difference was not statistically significant. When compared to the Canadian population as a whole, BC had a significantly higher percentage of respondents with a healthy BMI (49.96% compared to 46.18%). There is a gradient with the lowest proportion of respondents with healthy BMI generally in the northern and interior regions of the province and the highest proportion in the lower mainland. The range between the highest and lowest was more than 20 percentage points. Vancouver, Richmond, North Shore/Coast Garibaldi, and Fraser North (all over 55% with a healthy BMI) were significantly higher than the provincial average. Central Vancouver Island, Thompson Cariboo Shuswap, Fraser East, Northwest, and Northeast were all significantly lower.

For females, the proportion with healthy BMI is highest in Vancouver and Richmond and lowest in Fraser East and in the north and interior regions of the province. Geographically for males, Vancouver was significantly high and Thompson Cariboo Shuswap and Fraser East were significantly low when compared to the provincial average. For females, Vancouver was significantly high while South Vancouver Island, Thompson Cariboo Shuswap, Fraser East, Northwest, and Northeast were all significantly lower than the provincial average.

On average, 55.39% of females reported healthy BMIs compared to 44.43% of males. This difference was

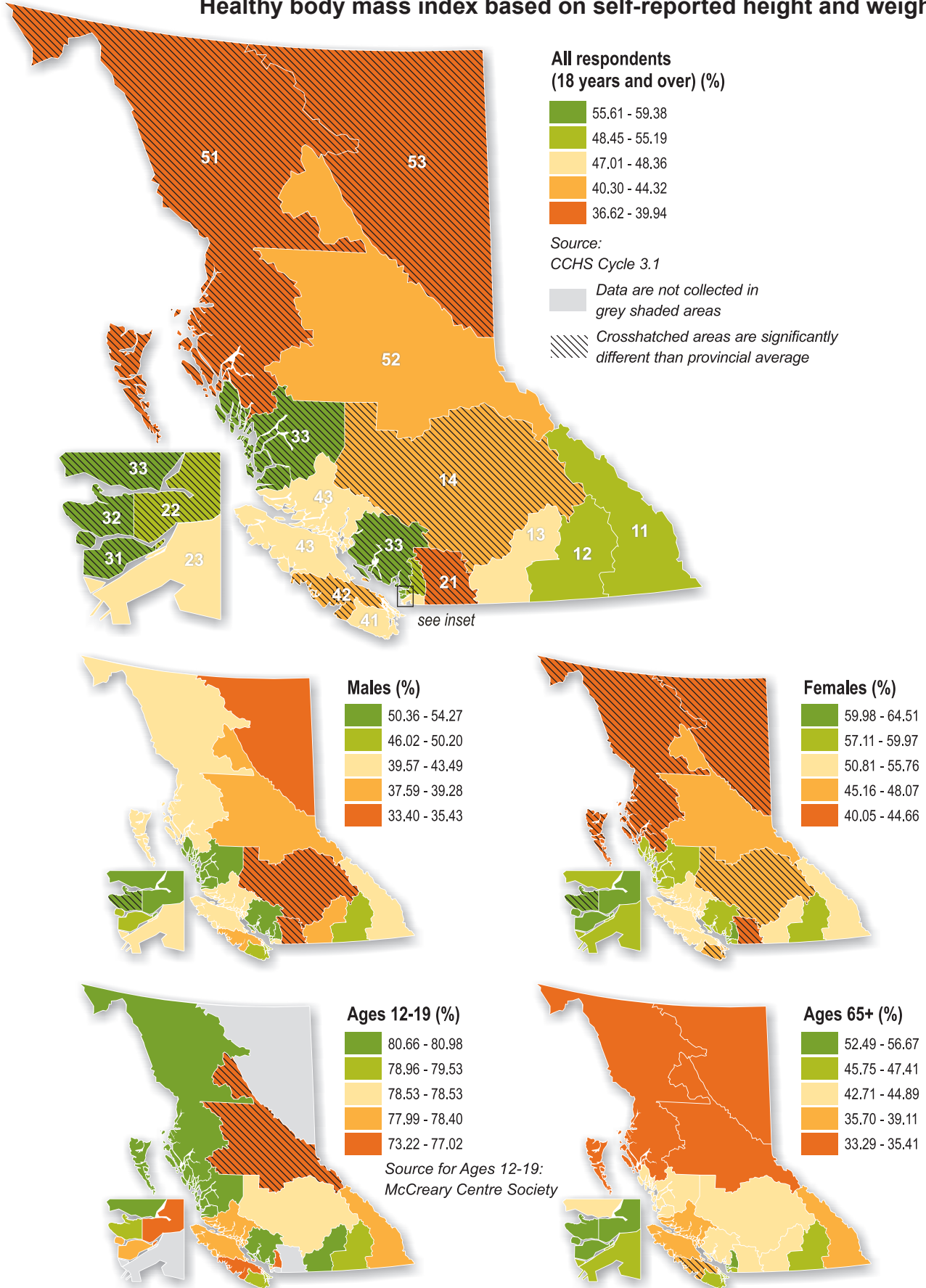
| Health Service Delivery Area    | All respondents (%) | Males (%)     | Females (%)   | Ages 12-19 (%) | Ages 20-64 (%) | Ages 65+ (%)  |
|---------------------------------|---------------------|---------------|---------------|----------------|----------------|---------------|
| 032 Vancouver                   | 59.38               | 54.27†        | 64.51†        | 79.16‡         | 60.35          | 55.31         |
| 031 Richmond                    | 56.09               | 50.20         | 61.64         | 77.99‡         | 55.60          | 52.49         |
| 033 North Shore/Coast Garibaldi | 55.61               | 51.01         | 59.97         | 80.98‡         | 57.51          | 44.89‡        |
| 022 Fraser North                | 55.19               | 50.36         | 59.98         | 77.02‡         | 55.11          | 56.67         |
| 012 Kootenay Boundary           | 52.75               | 47.52         | 57.94         | 79.53‡         | 51.86          | 47.41         |
| 011 East Kootenay               | 48.45               | 43.49         | 53.62         | 78.40‡         | 50.10          | 37.77         |
| 023 Fraser South                | 48.36               | 39.57†        | 57.11†        | F              | 48.28          | 45.75         |
| 013 Okanagan                    | 47.50               | 38.69†        | 55.76†        | 80.66‡         | 47.68          | 44.56         |
| 043 North Vancouver Island      | 47.31               | 41.25         | 53.40         | 78.10‡         | 48.43          | 39.11         |
| 041 South Vancouver Island      | 47.01               | 46.02         | 47.91         | 78.96‡         | 46.67          | 46.13         |
| 042 Central Vancouver Island    | 44.32               | 37.59†        | 50.81†        | 76.76‡         | 45.10          | 35.70         |
| 052 Northern Interior           | 43.57               | 39.28         | 48.07         | 73.22‡         | 43.80          | 33.29E        |
| 014 Thompson Cariboo Shuswap    | 40.30               | 35.43         | 45.16         | 78.53‡         | 38.91          | 42.71         |
| 021 Fraser East                 | 39.94               | 35.12         | 44.66         | F              | 37.89          | 44.24         |
| 051 Northwest                   | 39.86               | 39.70         | 40.05         | 80.72‡         | 38.53          | 33.55E        |
| 053 Northeast                   | 36.62               | 33.40         | 40.17         | F              | 35.72          | 35.41E        |
| <b>999 Province</b>             | <b>49.96</b>        | <b>44.43†</b> | <b>55.39†</b> | <b>78.35‡</b>  | <b>50.14</b>   | <b>46.46‡</b> |

‡ Age group differs significantly from 20-64 group  
 † Males differ significantly from females  
 E Interpret data with caution (16.77 < coefficient of variation < 33.3)  
 F Data not available

statistically significant. In all regions, a higher proportion of females reported healthy BMIs compared to males. These differences were statistically significant for 4 of the 16 regions (Vancouver, Fraser South, Okanagan, and Central Vancouver Island). The greatest difference was found in Fraser South, where 57.11% of women compared to 39.57% of men reported healthy BMIs.

For 12- to 19-year-olds, based on the 2003 McCreary Society survey, there was very little difference in the proportion of teens with healthy BMI across the regions, except for the Northern Interior, where only 73.22% of respondents had a healthy BMI. The difference from the provincial average (78.35%) for this age group was statistically significant. For the middle age cohort, the story is different. Among 20- to 64-year-olds, a high of 60.35% of respondents in Vancouver reported healthy BMIs compared to a low of 35.72% in the Northeast. Although the pattern of regional differences among seniors was similar to 20- to 64-year-olds, the magnitude of differences across regions was not as marked. Only Central Vancouver Island had a significantly different value (35.70%) from the average for seniors.

### Healthy body mass index based on self-reported height and weight



## Summary

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The proportion of the population that felt their weight was about right tended to be lower in rural than in urban regions. As well, three-quarters of youth felt their weight was about right compared to about half of those aged 20 and over. Across all but one region (Vancouver), a higher proportion of males felt their weight was about right compared to females. Finally, regional differences were quite marked for 20- to 64-year-olds but not for teens or seniors.

There was a rough urban/rural gradient for self-reported healthy BMI in BC, and a greater proportion in mainly urban regions had a healthy BMI. There was little regional variation in self-reported BMI among youth. The proportion of females reporting a healthy BMI in all regions of BC was, on average, about 10% greater than for males. These results, in conjunction with results from a recent study on rural health (Canadian Institute for Health Information, 2006), indicate that attention must be paid to the diets of populations living in the north and in rural and remote regions of BC.

According to BC's Select Standing Committee on Health (2006), obesity is a problem that we can no longer ignore. While this committee focused on childhood obesity, our maps indicate that obesity and being overweight may be a larger problem among older adults, particularly seniors. (Because a different data set was used for the youth analysis, extreme caution is required when interpreting differences between that age group and others.)

Committee members reporting on problems of childhood obesity have recommended that the broad framework brought to bear in developing this map also be utilized to develop a coherent policy response to problems of obesity in the province. In particular, the committee recommends an extremely broad policy thrust including: expanded data gathering and monitoring; improving food security through broad initiatives, such as improved promotion and marketing of BC vegetables and fruit, and through school-based programs aimed at increasing the availability of healthy foods in schools; a diabetes action plan; expanded ActNow BC initiatives; and improved promotion of breastfeeding and other early childhood initiatives (Select Standing Committee on Health, 2006).

More recently, Canada's House of Commons Standing Committee on Health (2007) has also expressed concern about the levels of childhood overweight and obesity:

26% of Canadians aged 2 to 17 years are overweight or obese, while for First Nations children, 55% on-reserve and 41% off-reserve are overweight or obese. The Committee has noted that many experts have predicted that "today's children will be the first generation for some time to have poorer health outcomes and a shorter life expectancy than their parents" (p. 1).