

# 5.3

## The Geography of Nutrition and Food Security in BC

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According to Bellows and Hamm (2003): “Community food security exists when all citizens obtain a safe, personally acceptable, nutritional diet through a sustainable food system that maximizes healthy choices, community self-reliance, and equal access for everyone. This definition implies:

- The ability to acquire food is assured;
- Food is obtained in a manner that upholds human dignity;
- Food is safe, nutritionally adequate, and personally and culturally acceptable;
- Food is sufficient in quality and quantity to sustain healthy growth and development and to prevent illness and disease; and
- Food is produced, processed, and distributed in a manner that does not compromise the land, air, or water for future generations” (Food Security Standing Committee, 2004).

The UN Food and Agriculture Organization (FAO) defines food security as existing “when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996). The BC Ministry of Health has adopted this broad approach to food security and encourages “local, provincial, and national policies to support local food systems” (Ministry of Health Planning, 2003).

Today public interest in nutrition and food security (ranging from worries broadly about the sustainability and safety of systems of agricultural production to the desire for information on the links between vitamin intake and specific diseases) is very high (Ostry, 2006). With growing concerns about a host of food security issues that have emerged in the past decade (e.g., “mad cow” disease cases in Western Canada and bird flu, both with major potential for health and economic impacts), and with increasing publicity and concern about an obesity epidemic, especially among children, government and regional health authorities have also begun to pay attention to food security (Rideout and Ostry, 2006).

As part of the process of monitoring the changing nutrition and food security situation in BC, we have developed baseline indicators against which the nature and extent of future changes in food security can be

assessed in different regions of the province. A suite of indicators for nutrition and food security has been selected and these have been mapped to illustrate how nutrition and food security varies across the province and, for some indicators, by gender and age.

What follows is the presentation of 26 maps that describe select indicators of nutrition and food security for much of BC’s population. As breastfeeding is a key to good infant health and health in later life, it is appropriate to begin this section of the Atlas with a map of the regional variation in breastfeeding initiation rates.

The following nine maps focus on children and youth, as it is well known that healthy eating as a child promotes optimal growth and development while helping to prevent various nutrition-related diseases (Kendall, 2003). Six of these nine maps focus on the nutritional policy and learning environment in the school system because children on average consume one-third of their daily food intake while at school (Wechsler, Brener, Kuester, and Miller, 2001). Schools are, therefore, in an excellent position to promote healthy food habits by enacting policies that encourage healthy eating at the school district level and in individual schools (Kendall, 2003).

Several unique surveys have been conducted in the BC school system over the past 3 years. As noted earlier, the McCreary Centre Society conducted surveys in 1992, 1998, and more recently in 2003. This latter survey was conducted in 47 (78.3%) school districts in the province. A total of 1,500 public school Grade 7 to 12 classrooms were randomly selected from the 47 participating school districts. Approximately 30,000 students in these classes completed questionnaires for the 2003 survey. The survey was not conducted in independent schools or among institutionalized youth or those not attending schools. Respondents can be considered to represent about 90% of BC’s high school students.

Several other surveys have been undertaken in the school system. In 2005/06, the Ministry of Education’s School Satisfaction Survey assessed the extent to which Grades 3/4, 7, 10, and 12 students were learning about healthy eating and exercise at school. Maps provided here deal only with Grades 3/4. Two other surveys, one directed to school districts and the other to schools,

were conducted in a joint project by the ministries of Education and Health in the spring of 2005 to determine the types of food sales outlets, the types of more healthy versus less healthy (as defined by nutritional experts) foods and beverages offered for sale in all BC school food outlets, and the extent of nutrition policy implementation in BC school districts and in schools (Ostry, Rideout, Levy-Milne, and Martin, 2005; Rideout, Martin, Levy-Milne, and Ostry, in press). The maps based on results from these school-system-based surveys are described in this section of the Atlas.

Given that BC has, over the past year or so, introduced healthy eating guidelines for schools and several programs to improve the nutritional environment in schools, these indicators provide an important baseline for assessing progress over the next few years.

These school-focused maps are followed by 15 maps based on three questions from the Canadian Community Health Survey (CCHS) illustrating the variation in dietary quality and food availability by region, age, and gender. The first two questions speak fairly directly to the ability of people in BC to access foods that they want to eat and that constitute a balanced diet. The third question assesses the extent to which people in the province are eating according to one of the most important of Health Canada's Dietary Guidelines. Access to balanced meals and preferred foods and the extent to which people eat according to these guidelines will likely depend on some mix of an individual's knowledge about healthy eating as well as their access to income and/or home-grown foods, and the cost of food in local stores. The maps based on these three questions provide a rough snapshot of the quality of the diet of British Columbians.

Finally, in keeping with our desire to move to a broader framing of nutrition and food security, we provide a map of farmers markets, which are scattered throughout the province. These markets are outlets where local farmers sell their produce directly to consumers. The development of farmers markets may be important in establishing more direct contact between producers and consumers leading to several advantages, including better pricing for consumers, direct access to consumers for farmers which may lower their costs making their operations more viable, and increased opportunities for basic public education about food production.



## Breastfed baby on discharge from hospital

In Canada, the long-term health advantages of breastfeeding have been well recognized for over a century (MacMurchy, 1923; Ostry, 2005). Recently, breastfed babies have been shown to be less likely to become obese in later life (Canadian Institute for Health Information, 2004, 2006a). Nutritionists and public health professionals have advocated for breastfeeding consistently over the decades (Arnup, 1994; Ostry, 2006). Nonetheless, breastfeeding initiation rates have varied considerably both over time and across the regions of Canada. For example, in the 1920s approximately 90% of women in Canada breastfed. But, in spite of early nutrition programs encouraging breastfeeding, from the 1930s to the 1960s the majority of Canadian women moved away from breastfeeding so that by the late 1960s only about one-third of women were breastfeeding on discharge from hospital. However, during the 1970s, breastfeeding initiation rates increased rapidly, particularly in Quebec. Since the early 1980s, rates have risen only slowly. As well, since the 1960s there has been an east/west gradient in breastfeeding initiation, with the highest rates observed in BC and the lowest in the maritime provinces (McNally, Hendricks, and Horowitz, 1985).

Besides these regional and temporal trends, studies indicate that women who are well educated and from higher income families are more likely to breastfeed compared to their poorer, less educated sisters (Arnup, 1994). Other factors that influence whether or not a woman initiates breastfeeding are social and cultural (in some cultures breastfeeding is more common than others). Finally, it is well known that women are more likely to breastfeed on discharge from those hospitals with policies that encourage breastfeeding and with staff and a culture that actively support and promote the practice (Breastfeeding Committee for Canada, 2003; Myres, 1988).

In order to measure breastfeeding initiation in BC, we obtained data from the BC Perinatal Data Registry. This database records information on each birth in the province, including whether or not the mother was breastfeeding at the time of discharge from hospital. We have obtained data, based on this question, for the 4 year period from April 2000 to March 2004, on approximately 150,000 babies who were discharged from BC's hospitals during this time.

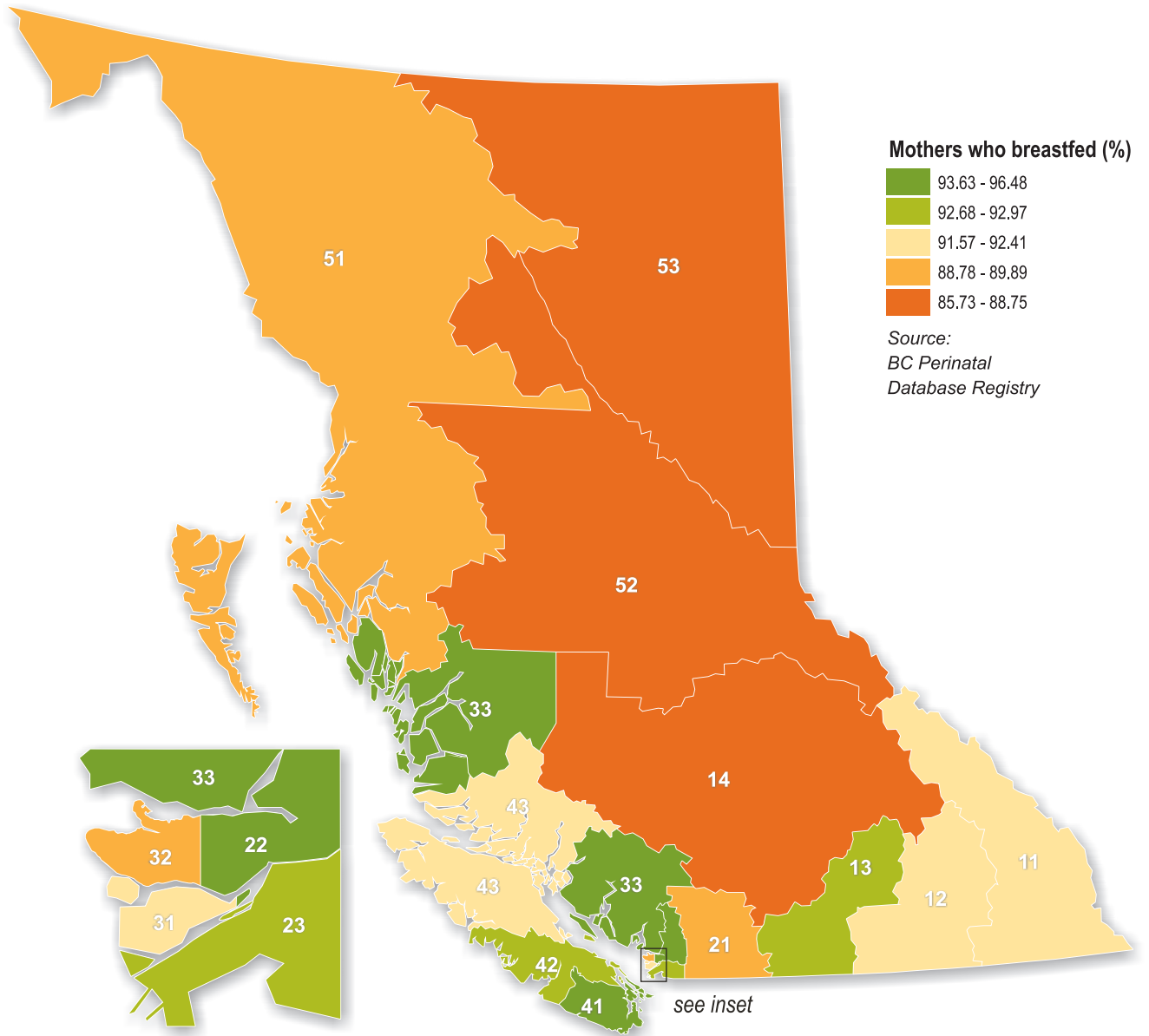
Health Service Delivery Area	Mothers who breastfed (%)
033 North Shore/Coast Garibaldi	96.48
041 South Vancouver Island	94.75
022 Fraser North	93.66
013 Okanagan	92.97
042 Central Vancouver Island	92.82
023 Fraser South	92.68
031 Richmond	92.41
012 Kootenay Boundary	92.38
043 North Vancouver Island	92.17
011 East Kootenay	91.57
032 Vancouver	89.89
021 Fraser East	89.78
051 Northwest	88.78
014 Thompson Cariboo Shuswap	88.75
053 Northeast	88.55
052 Northern Interior	85.73
<b>999 Province</b>	<b>91.89</b>

Over this period, the proportion of women breastfeeding on discharge from BC's hospitals ranged from a low of 85.73% in Northern Interior to a high of 96.48% in North Shore/Coast Garibaldi. The map opposite shows:

- 1) that breastfeeding rates on discharge were high;
- 2) that the differences in breastfeeding rates on discharge across the 16 HSDAs were fairly large (about 10 percentage points); and
- 3) that rates for HSDAs located in the more urban southwest corner of the province were generally higher than they were for those in the north and in the interior. The results for the CCHS question about this practice indicated that for women between 15 and 55 who had had children, 85.19% in BC had breastfed or tried to breastfeed with their last baby. This was significantly higher, statistically, than the 77.96% of all Canadian respondents to this question.

These results indicate that, for this indicator of basic food security for infants, there is still room for improvement, particularly in the north central and northeast regions of the province. While most women in BC are breastfeeding on discharge from hospital, several studies indicate that relatively few women breastfeed for the 6 month period now recommended by public health authorities in Canada.

### Breastfed baby on discharge from hospital



## Youth who always eat breakfast on school days

Approximately half (49.56%) of the Grade 7 to 12 students who responded to the McCreary Centre survey in 2003 “always ate breakfast on school days.” (Note: as shown on the map, data for this question were available from only 13 of the 16 HSDAs.) The difference between the region with the highest (52.57%) and the lowest (46.01%) proportion of students who always eat breakfast was quite small, but more than a 6 percentage point difference. Only one HSDA, Okanagan (52.57%), was significantly higher, statistically, than the provincial average. However, even in this “best” region, almost one-half of BC students stated that they did not “always eat breakfast on school days.”

When the two genders are examined separately, female students were much more likely to skip breakfast on school days. At 44.83% for all female students, this is significantly lower than the 54.36% of male students who always ate breakfast. Not only was this difference statistically significant at the provincial level, but the significant difference occurred for 10 of the 13 HSDAs for which we have data, denoting a very strong trend.

Among males, only Okanagan was statistically different from the provincial average, and there were no significant differences among the female respondents by HSDA. It is worth noting that the highest (best) HSDA for female students (48.52% for North Shore/Coast Garibaldi) was below the lowest male value (49.63% for Richmond).

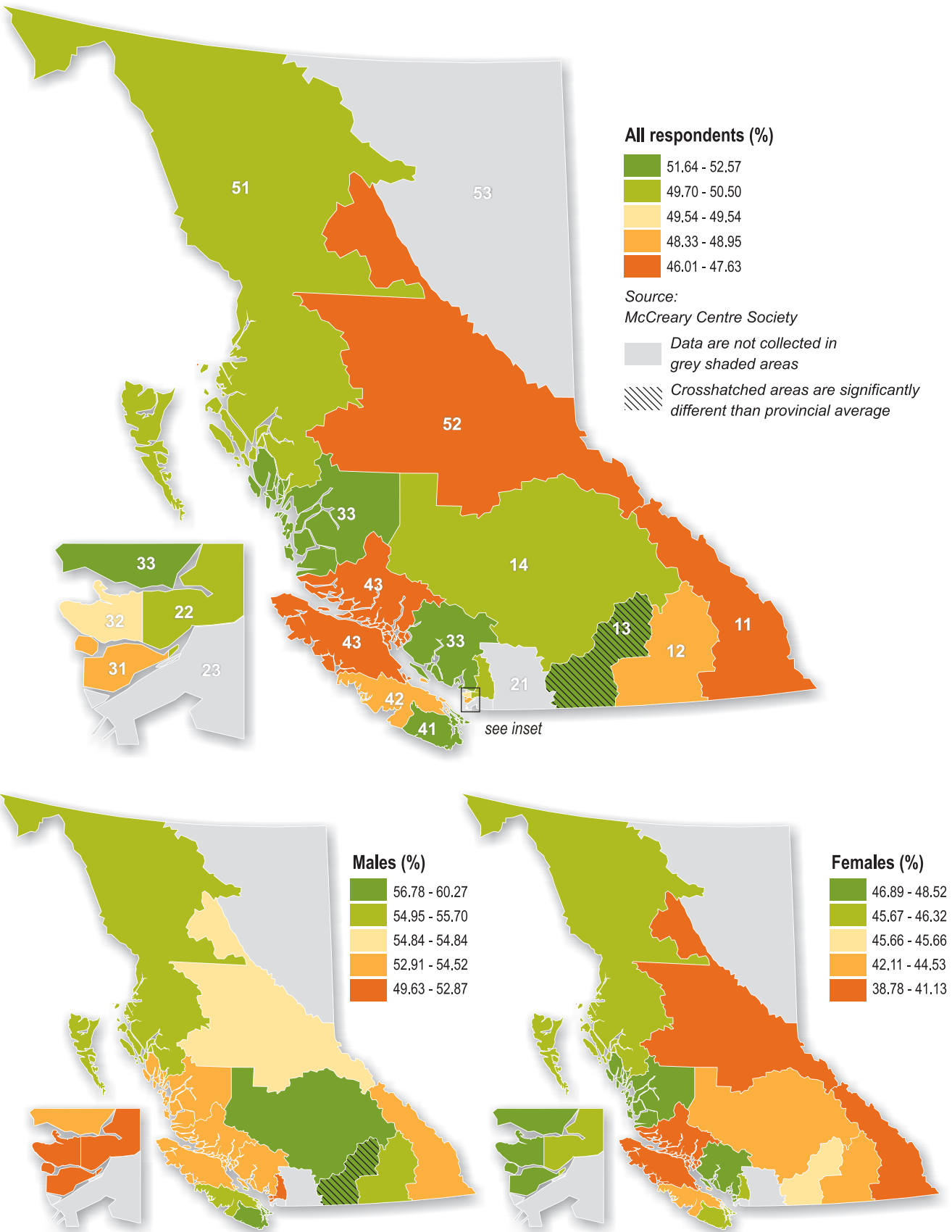
It is clear that many high school youths in BC were not eating breakfast regularly, and that this trend was found fairly equally across all regions of the province. Given the importance of this meal in healthy eating, it is necessary to better understand why so many youths in BC are not eating breakfast regularly. Is this related to economic need, time pressures on parents and children, or some combination of these factors? As well, it may be important to know more about when this trend begins. While we know that lower grades are less likely than higher grades to skip breakfast (McCreary Centre Society, 2006), does it start in Grade 2 or 3, or is it mainly a high school phenomenon? It also raises broader questions about the potential role schools might play in feeding children in the mornings, and perhaps dealing with issues of body image.

Health Service Delivery Area	All respondents (%)	Males (%)	Females (%)
013 Okanagan	52.57	60.27†	45.66†
041 South Vancouver Island	52.30	58.48†	46.18†
033 North Shore/Coast Garibaldi	51.64	54.52	48.52
051 Northwest	50.50	55.54†	45.67†
014 Thompson Cariboo Shuswap	50.33	56.78†	44.53†
022 Fraser North	49.70	52.87†	46.32†
032 Vancouver	49.54	51.56	47.46
042 Central Vancouver Island	48.95	54.95†	43.32†
012 Kootenay Boundary	48.78	55.70†	42.11†
031 Richmond	48.33	49.63	46.89
011 East Kootenay	47.63	53.50†	41.13†
052 Northern Interior	47.41	54.84†	40.81†
043 North Vancouver Island	46.01	52.91†	38.78†
021 Fraser East	F	F	F
023 Fraser South	F	F	F
053 Northeast	F	F	F
<b>999 Province</b>	<b>49.56</b>	<b>54.36†</b>	<b>44.83†</b>

† Males differ significantly from females.

F Schools in this region did not participate in the survey.

### Youth who always eat breakfast on school days



## Learning about healthy food and exercise at school

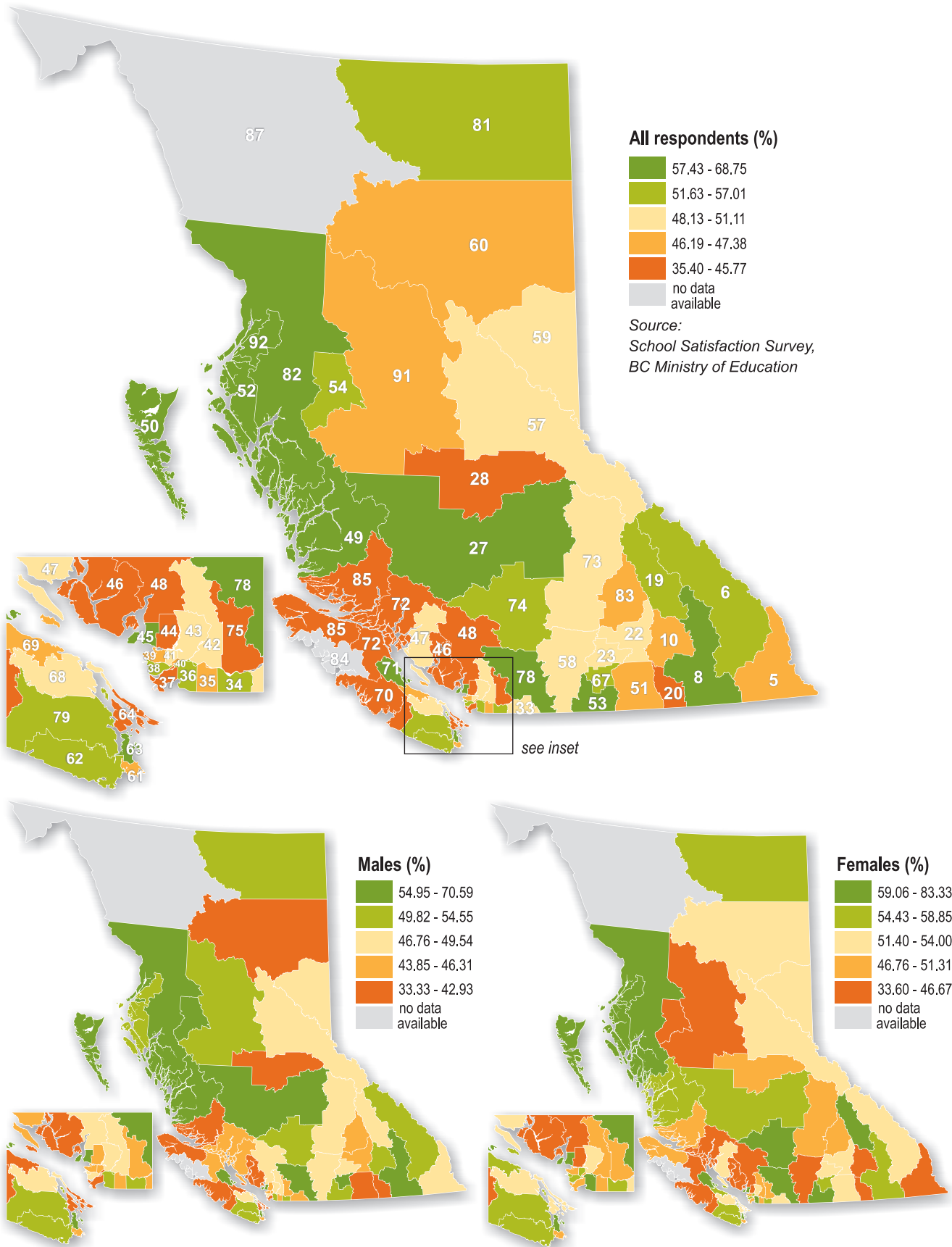
The 2005-2006 School Satisfaction Survey was undertaken to assess a series of factors, including the extent to which Grade 3/4 students were learning about healthy eating and exercise at school. According to this survey, school districts in BC reported that 51.32% of girls and boys in Grade 3/4 were learning this important wellness information. There were large variations across school districts in the proportion of boys and girls who reported learning about these subjects. For example, in the Alberni school district a low of 39.18%, and in the francophone school system (not shown here as it is a non-geographic-based school district) a high of 80.6% of students reported learning about healthy eating and exercise.

Systematic (but generally fairly small) differences were noted in the proportion of girls compared to boys who reported learning about healthy eating and exercise. For example, in 50 school districts (83.3%), the proportion of girls who reported learning about healthy eating and exercise was higher than for boys. Across school districts, 54.51% of girls compared to 49.13% of boys reported learning about these subjects. Even at this young age, girls appear to be learning more about healthy food and exercise than boys in BC's school system.

In terms of broad regional trends, the school districts with the lowest proportion of Grade 3/4 students learning about healthy eating and exercise were found in northern Vancouver Island and the southern coast region. The francophone and Haida Gwaii/Queen Charlotte school districts had the greatest proportion of schools with Grade 3/4 students who reported learning about healthy eating and exercise.

School District	All respondents (%)	Males (%)	Females (%)
050 Haida Gwaii/Queen Charlotte	68.75	69.57	68.00
078 Fraser-Cascade	65.82	60.00	69.89
045 West Vancouver	65.22	59.47	72.19
071 Comox Valley	64.91	63.25	66.67
092 Nisga'a	64.71	54.55	83.33
049 Central Coast	64.29	70.59	54.55
063 Saanich	60.66	55.93	65.75
082 Coast Mountains	60.66	60.16	61.21
053 Okanagan Similkameen	58.70	54.55	62.50
008 Kootenay Lake	58.69	58.74	58.62
052 Prince Rupert	57.93	51.25	66.15
027 Cariboo-Chilcotin	57.43	56.63	58.15
067 Okanagan Skaha	57.01	54.95	58.85
036 Surrey	56.13	53.30	59.06
074 Gold Trail	55.21	50.91	60.98
034 Abbotsford	55.00	51.98	58.50
081 Fort Nelson	54.67	52.38	57.58
054 Bulkley Valley	54.49	63.95	42.86
019 Revelstoke	53.76	46.81	60.87
062 Sooke	53.12	50.49	55.99
079 Cowichan Valley	52.30	49.82	55.02
006 Rocky Mountain	52.10	50.71	53.42
038 Richmond	51.63	49.09	54.43
041 Burnaby	51.11	45.85	56.17
059 Peace River South	50.33	48.61	51.92
057 Prince George	50.32	48.10	52.90
023 Central Okanagan	50.25	47.23	53.24
043 Coquitlam	50.05	48.84	51.40
073 Kamloops/Thompson	49.65	48.47	50.92
068 Nanaimo-Ladysmith	49.40	46.80	51.92
022 Vernon	49.37	45.52	53.21
047 Powell River	49.24	45.71	53.23
033 Chilliwack	48.70	45.96	51.80
042 Maple Ridge-Pitt Meadows	48.28	49.33	47.15
058 Nicola-Similkameen	48.13	49.54	46.67
005 Southeast Kootenay	47.38	49.10	45.57
083 North Okanagan-Shuswap	47.31	45.45	49.19
061 Greater Victoria	47.29	46.31	48.33
060 Peace River North	47.12	42.93	51.55
091 Nechako Lakes	47.11	50.53	43.43
040 New Westminster	46.68	42.86	51.31
051 Boundary	46.60	39.62	54.00
035 Langley	46.59	44.17	49.24
069 Qualicum	46.45	38.82	55.38
010 Arrow Lakes	46.34	52.00	37.50
039 Vancouver	46.19	44.54	47.89
075 Mission	45.77	43.85	48.19
072 Campbell River	45.43	44.79	46.01
064 Gulf Islands	45.26	38.46	53.49
037 Delta	45.18	42.12	48.47
044 North Vancouver	45.03	44.08	45.97
048 Howe Sound	43.82	46.76	40.97
028 Quesnel	43.08	38.60	46.76
085 Vancouver Island North	40.17	33.33	49.02
046 Sunshine Coast	39.60	37.40	41.73
070 Alberni	39.18	34.50	44.59
020 Kootenay-Columbia	35.40	36.91	33.60
084 Vancouver Island West	N/A	N/A	N/A
087 Stikine	N/A	N/A	N/A
<b>999 Province</b>	<b>51.32</b>	<b>49.13</b>	<b>54.51</b>

### Learning about healthy food and exercise at school



## Nutrition policy development at the school district level

As noted earlier, two surveys, one of school districts and the other of schools, were conducted in a joint project by the ministries of Education and Health to determine the number and types of different food sales outlets, the types of foods offered for sale in all school food outlets, and the extent of nutrition policy implementation in school districts and in schools in BC (Ostry et al., 2005; Rideout et al., in press).

In the spring of 2005, the two ministries sent each school district a questionnaire. The district superintendent (or a representative) filled out the questionnaire which, among other things, requested information about the extent to which nutrition policies had been planned, established, or, if established, upgraded in each school district. (Note: This questionnaire assesses the extent to which school districts, not individual schools, have taken leadership to improve the nutritional environment by providing guidance for the schools within their district. A second survey that went to individual schools is described on the next page.)

Specifically, each school district was asked: *“Does your school board have nutrition policies and/or guidelines:*

*1) planned; 2) established; or, if established, 3) do you have plans to upgrade them?”*

Forty-eight school districts (80.0%) responded to the survey. Of those, 29 school districts (60.4%) had no nutrition policies or guidelines in place. Nine of these school districts had no nutrition policies in place and were not planning to develop any, but 20 school districts were planning nutrition policies or guidelines at the time of survey. Nineteen (39.6%) responding school districts had a nutrition policy in place. Seven of these school districts had nutrition policies or guidelines in place but had no plans to upgrade them, and 12 school districts had policies in place and also had plans to upgrade them.

On Vancouver Island, 6 of 11 school districts (54.5%) had policies in place, and 9 of 11 school districts (81.8%) in the lower mainland had policies in place. Of the 26 responding school districts outside Vancouver Island and the lower mainland, 13 (50.0%) had a policy in place.

There was a great deal of variation in the extent to which school districts had developed nutrition policies and were planning them. School districts in the lower mainland, Greater Victoria, and in the Okanagan regions appear to have been more proactive in nutrition policy development than those located in other parts of the province.

School District	Response category
023 Central Okanagan	5
035 Langley	5
068 Nanaimo-Ladysmith	5
091 Nechako Lakes	5
044 North Vancouver	5
059 Peace River South	5
047 Powell River	5
019 Revelstoke	5
038 Richmond	5
006 Rocky Mountain	5
036 Surrey	5
033 Chilliwack	4
037 Delta	4
061 Greater Victoria	4
092 Nisga'a	4
052 Prince Rupert	4
039 Vancouver	4
022 Vernon	4
051 Boundary	3
054 Bulkley Valley	3
041 Burnaby	3
049 Central Coast	3
071 Comox Valley	3
078 Fraser-Cascade	3
074 Gold Trail	3
050 Haida Gwaii/Queen Charlotte	3
048 Howe Sound	3
008 Kootenay Lake	3
020 Kootenay-Columbia	3
042 Maple Ridge-Pitt Meadows	3
075 Mission	3
040 New Westminster	3
083 North Okanagan-Shuswap	3
067 Okanagan Skaha	3
057 Prince George	3
069 Qualicum	3
005 Southeast Kootenay	3
085 Vancouver Island North	3
072 Campbell River	2
082 Coast Mountains	2
079 Cowichan Valley	2
081 Fort Nelson	2
058 Nicola-Similkameen	2
053 Okanagan Similkameen	2
060 Peace River North	2
046 Sunshine Coast	2
084 Vancouver Island West	2
034 Abbotsford	1
070 Alberni	1
010 Arrow Lakes	1
027 Cariboo-Chilcotin	1
043 Coquitlam	1
064 Gulf Islands	1
073 Kamloops/Thompson	1
028 Quesnel	1
063 Saanich	1
062 Sooke	1
087 Stikine	1
045 West Vancouver	1