The Geography of Food Security and Nutrition

Introduction

Healthy, nutritious food is fundamental to wellness. The food we eat “defines, to a great extent, our health, growth, and development, and ability to function well in a complex world. Poor nutrition, especially low fruit and vegetable intake, is related to some of the leading risks of chronic diseases in developed nations: high blood pressure, cholesterol, overweight (obesity), and diabetes” (WHO, 2000; Sorhaindo & Feinstein, 2006).

“Eating a variety of nutrient-rich, high quality foods with the right proportions of fat, protein, carbohydrates, fibre, vitamins, minerals, and other dietary constituents provides our bodies with what they need for optimal growth and development” (Kendall, 2006, p. 1). A healthy diet promotes positive physical and psychological development and maintenance through every stage of the life course. It helps to build the body’s resilience to illness and reduces the risk of developing chronic diseases.

Food security is viewed as a key determinant of health (Ostry, 2010a), and in BC is regarded as a core public health function (Pederson, 2006). 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” (Pederson, 2006). Nevertheless, food banks in BC served nearly 95,000 individuals in March 2010, an increase of 5% compared with the same month in the previous year (Kravitz, 2010). Relative to the US, Canada still does well when it comes to household food security (Nord & Hopwood, 2008).

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 adverse 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 & Ostry, 2006). There is also increasing interest in food security issues in relation to climatic change (Ostry, 2010b) and, as we noted in the first Atlas, precipitation and temperature have shown important changes in the last decade or so that may impact food production in BC.
There is growing concern about increasing food prices, not only in BC but worldwide (Royal Bank of Canada, 2011). High food prices are becoming the most significant barrier to healthy eating and, because of fairly high levels of income inequality in BC (see Chapter 5), contribute to regional variation in food security across BC (Dieticians of Canada & Community Nutritionists Council of BC, 2009). Within BC, because there are many small and remote communities, access to inexpensive and fresh fruits and vegetables is a major problem. In 2009, the Produce Availability in Remote Communities Initiative was introduced to help deal with these issues. Initiatives included the development of community gardens in First Nations communities, and sustainable programs that addressed barriers to vegetable and fruit availability in other remote communities (Ministry of Agriculture and Lands & Ministry of Healthy Living and Sports, 2009).

Substantial modifications and expansions have been made to this section of the Atlas compared with the first edition. Based on the 2007 revised school guidelines, foods sold in the “Not Recommended” and “Choose Least” categories were eliminated from all elementary schools by January 2008, and from middle and secondary schools by September 2008 (Ministry of Education & Ministry of Healthy Living and Sport, 2010). This policy change obviated the need and utility of mapping variability in school nutrition policies in this current edition.

In this edition, we have added indicators related to the food production and food safety system as these are fundamental to food security. In addition, an indicator on alcohol consumption has been added, along with several indicators related to food content. The revised scope and expansion in the number of indicators and maps reflect recent policy changes in the province, as well as growing interest in issues of nutrition and food security as it affects health and wellness.

A suite of 85 maps for food security and nutrition has been selected, and these illustrate how nutrition and food security vary across the province. Many indicators provide patterns by gender and for different age cohorts. What follows is the presentation of maps that describe select indicators of nutrition and food security for much of BC’s population. They have been divided into four major groups for description purposes, although there is overlap between the groups.

**Food production, potential and safety**

The first group of 18 maps provides a variety of indicators related to food production and safety and uses information from a variety of sources, particularly the 2006 Agricultural Census. Census-based maps follow the BC Regional Districts administrative boundaries. The first three maps provide information on key climatic factors, such as growing degree days and key frost indicators. This is followed by information on the allocation of Agricultural Land Reserve (ALR), lands specifically set aside for farming, and the distribution and size of farms. The relationship between settlement patterns and the need for suitable land for growing food has resulted in major settlements being built on the best agricultural land in BC (Smith, 1998; Katz, 2009) and, as noted in Chapter 4, this settlement is highly concentrated. Only about 1% of soils in BC have the highest capability for growing crops, and most of that is in the lower mainland, southern part of Vancouver Island, and Okanagan Valley (SmartGrowth BC, nd). In total, BC has only about 1.4% of Canada’s “dependable” agricultural land as defined by the Canada Land Inventory (Hofmann et al., 2005).

The next indicator considered in this group of maps provides information on the three major types of farming undertaken in each Regional District. These are followed by six maps that provide information on greenhouse and organic farming. The final map in this group illustrates the location of meat processing plants throughout BC. Overall, BC farmers produced just less than half (48%) of all foods consumed in the province in 2001, but only one-third of the recommended consumption by Canada’s Food Guide to Healthy Eating (as referenced in Ministry of Agriculture and Lands, 2006). By 2008, the proportion of food imported was 45% (Ostry, 2010a).

**Food security**

The second group of maps is based on survey information, and describes several features of food security. In total, there are 18 maps in this section. The first three maps of this group are based on information from McCreary AHS IV, and provide information on students who were never hungry when going to bed. The next 15 maps are based on data from CCHS 4.1. These describe survey responses to questions on food access, preference, and affordability. A derived variable of overall food security is provided, developed by Statistics Canada from CCHS 4.1 responses to a large number of questions (Statistics Canada, nd). Age and gender differences are mapped at the HSDA level for all CCHS 4.1 responses.

The next five maps are focused on alcohol consumption, which has been shown to have certain benefits for cardiovascular health, and researchers have concluded that moderate alcohol intake is not only associated with a reduced risk of heart disease, but may actually improve heart health (Ronksley et al., 2011; Brien et al., 2011). Moderate intake of wine as part of the so-called
“Mediterranean diet” is an important dimension of the diet’s healthy effects (Trichopoulou et al., 2009). However, while some research shows healthful effects of moderate alcohol consumption, there is still a debate about the impact of various kinds and amounts of alcohol on health. There are clearly many harmful effects (Kendall, 2008b), and daily drinkers may also become heavy drinkers. Alcohol consumption can be addictive, and there are many studies showing a link between heavy consumption and certain cancers. What most researchers agree on is that binge drinking, viewed as five alcoholic drinks or more at a session, is unhealthy. Our map on this topic focuses on those who do not binge drink, thus taking a wellness approach to this issue. Maps show variations at the HSDA level for gender and different age cohorts.

Food content and consumption

The next group of 46 maps provides data related to food content and consumption patterns. Most of the data are from CCHS 4.1, though several of the indicators are from McCreary AHS IV. All are at the HSDA level. Some of the maps provide information on the extent to which respondents choose or avoid certain food based on their knowledge of its salt, caloric, fat, or cholesterol content, while others focus on students’ consumption of fruits and vegetables and their breakfast habits, on school days. The high levels of consumption of salt by Canadians has been recognized as a major health concern (Sodium Working Group, 2010). In addition, breakfast on school days is essential to health and a nutritious breakfast is important for learning (Murphy, 2007). Yet the most recent published survey of child nutrition habits across Canada, by Breakfast for Learning (2007), indicated that only about 50% of children had the minimum daily servings of fruits and vegetables, and many skip breakfast unless it is made for them.

Community food outlets and healthy eating programs

In keeping with our desire to move to a broader framing of nutrition and food security, we provide three maps of the location, size, and distribution of farmers markets, community gardens, and initiatives implemented by BCHLA to support ActNow BC.

Farmers markets are scattered throughout the province. These 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. Direct access to consumers for farmers may lower their costs and make their operations more viable, and increase opportunities for basic public education about food production in BC.

Community gardens have been growing in importance, especially in urban areas. They provide an opportunity for individuals to grow their own food, socialize with others, trade produce, and learn more about growing food close to home. The establishment of these public gardens has grown over the past few years, as has urban farming, and using waste land, such as roof tops, to grow food for local consumption.

The final map shows where the BCHLA has focused its efforts to encourage healthy eating throughout BC (BCHLA, 2007b; 2010).