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Canada's Food Report Card 2016.

Provincial Performance

REPORT MAY 2017

Canada's Food Report Card 2016: Provincial Performance

Dr. Jean-Charles Le Vallée, Cameron MacLaine, Melissa Lalonde, and Michael Grant

Preface

This inaugural provincial food report card was launched at The Conference Board of Canada's 5th Canadian Food and Drink Summit, held in Toronto, Ontario, November 28–29, 2016 (#CBOCFood). It compares 63 food performance metrics across Canada's 10 provinces. The report card organizes these metrics around the Canadian Food Strategy's five elements: industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability. It strives to offer clear, comprehensive evidence of provincial food system and food sector performance toward enhancing public and private awareness and commitment to action.

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The findings and conclusions of this report are entirely those of The Conference Board of Canada. Any errors and omissions in fact or interpretation remain the sole responsibility of The Conference Board of Canada.

About the Centre for Food in Canada

The Centre for Food in Canada (CFIC) is an evidence-based, independent source of advanced food and beverage performance monitoring and reporting that provides advisory and research services, food strategy engagement, and communications outreach.

It aims to:

- raise public awareness of the nature and importance of the food and beverage sectors in Canada's economy and society;
- articulate and promote a shared vision for the future of food in Canada—the 2014 Canadian Food Strategy—that meets our country's need for a coordinated, long-term strategy for change;
- track and report on Canada's national food and beverage performance, covering industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability, through its Canadian Food Observatory initiative;
- conduct advanced research on new and emerging issues related to food and drink to sustain the empirical basis for planning and action;
- provide opportunities for dialogue and collaboration among food- and non-food-related stakeholders to promote and facilitate change.

For more information on CFIC, visit us at www.conferenceboard.ca/cfic.

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EXECUTIVE SUMMARY

Canada's Food Report Card 2016: Provincial Performance

At a Glance

- This food report card is the second in a series of annual Canadian food report cards that explore and monitor Canada's food performance.
- *Canada's Food Report Card 2015* compared Canada's international food performance to 16 OECD countries. This 2016 food report card is the first to compare Canada's domestic food performance across all 10 provinces (and territories where data permit).
- *Canada's Food Report Card 2016* measures 63 food performance metrics spread across the Canadian Food Strategy's five elements.
- The comparison aims to offer clear, comprehensive evidence of Canada's food system and food sector performance to help enhance public and private awareness and commitment to action.

Welcome to the second annual Canadian food report card, produced by The Conference Board of Canada's Canadian Food Observatory. Last year, the 2015 food report card assessed Canada's international food performance against that of 16 leading Organisation for Economic Co-operation and Development (OECD) countries.[1] This year, the focus is Canada's domestic food performance.

Canada's Food Report Card 2016 is the first in a series of provincial report cards that explore, monitor, and report on Canada's domestic food performance, comparing Canada's 10 provinces against each other. In some instances, we also include data on Canada's three territories.[2]

Canada's Food Report Card 2016 measures 63 food performance metrics across five main elements of the Canadian Food Strategy: industry prosperity, healthy food and diets, food safety, household food security, and environmental sustainability. Below are brief highlights of Canada's relative domestic food performance, along with their respective summary grades. More detailed grade summaries for each metric by element are presented in Appendix A.

Industry Prosperity

Table 1
Industry Prosperity

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.
Summary Grade	D	C	A	C	C	C	C	D	B	D

Source: The Conference Board of Canada.

1 Le Vallée and Grant, *Canada's Food Report Card 2015: International Comparison.*

2 However, across many of the metrics covered in the report, data limitations do not allow comparisons to include the three territories.

The 15 industry-related metrics follow the supply chain from primary agriculture to food manufacturing, food retail, and food services. Saskatchewan stands out in terms of farm area, farm size, capital employed in farming, and farm profitability. Ontario also performs well in farm value-added. Atlantic Canada has relatively large farms while British Columbia has a higher proportion of smaller farms. Farms in Newfoundland and Labrador and Prince Edward Island are the most solvent. In terms of government support programs, New Brunswick and Prince Edward Island receive above-average support for crops, while Quebec and Newfoundland and Labrador have relatively higher support for animal production.

Downstream in food manufacturing and processing, Prince Edward Island leads all provinces in per capita food manufacturing sales, while food manufacturing growth was also strongest in Prince Edward Island, Saskatchewan, and New Brunswick. Prince Edward Island and Saskatchewan also lead food manufacturing exports in Canada and Quebec bests other provinces for food manufacturing innovation.

In retail and food services, the highest provincial grocery sales per capita are in Newfoundland and Labrador. Meanwhile, the highest food and beverage store margins are found in British Columbia. Elsewhere, Prairie provinces, particularly Saskatchewan and Alberta, have the highest food service sector margins.

Healthy Food and Diets

Table 2
Healthy Food and Diets

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.
Summary Grade	A	B	B	B	B	A	B	B	B	D

Source: The Conference Board of Canada.

Food report card findings for 2016 highlight both negative and positive results through 16 dietary, health, and food consumption metrics. For instance, many Canadians consume more calories and sodium than

Many Canadians are concerned about developing various diet-related chronic diseases and health conditions.

they need, and do not consume enough fruits and vegetables, fish and shellfish, or carbohydrates. Vitamin A and D intake is also below recommended levels. Similarly, intake of iron and calcium is inadequate, particularly for Canadian women. More positively, Canadians across all provinces are consuming less than, or are close to meeting, the World Health Organization's 10 per cent recommended limit for daily dietary energy intake from added sugar and saturated fat.

Many Canadians are personally concerned about developing various diet-related chronic diseases and health conditions. Rates and prevalence are of particular concern for Newfoundland: the province has the highest rates of type 2 diabetes, obesity, and high blood pressure/diagnosed hypertension, in addition to gastrointestinal disease prevalence. Elsewhere, over-consumption of alcohol and alcoholic liver disease mortality rates were highest in Yukon.

Last year, the 2015 food report card revealed how fewer than half of Canadians are adequately food-literate. Domestic results for 2016 are more encouraging, however, as over 70 per cent of Canadian households read nutritional content food labels while shopping, with British Columbia leading the way.

Food Safety

Table 3
Food Safety

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.
Summary Grade	C	C	A	A	B	C	D	D	D	B

Source: The Conference Board of Canada.

Some 4 million Canadians suffer from food-borne illnesses acquired within Canada ever year. These food-borne illnesses cause 240 related deaths per year. The 2016 food report card provides an overview of food-borne illness incidence rates by province for *Campylobacter*, *Salmonella*, *E. coli,* and *Listeria monocytogenes*. Results reveal that food-borne

illness incidence is highest in Prince Edward Island while food recalls per 100,000 inhabitants were lowest in Quebec, relative to its peers.

Regarding animal welfare, the food report card also examines animal health conditions and deaths during transport, which result in high numbers of animal condemnations before slaughter. Results differ by region: poultry condemnation rates were highest in Western Canada, while Quebec and Eastern Canada led hog and cattle condemnation rates.

Household Food Security

Table 4
Household Food Security

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.
Summary Grade	B	A	A	D	C	A	B	C	C	A

Source: The Conference Board of Canada.

Many Canadians experience food insecurity when they cannot afford or access nutritious food. Nunavut is, by far, the most affected region, and needs remedial action. Other Indigenous people, Canadians on social welfare, and single parents often suffer from food insecurity. Provincially, the largest shares of single parents with children experiencing moderate to severe food insecurity are Nova Scotia and Saskatchewan, while child food insecurity was highest in Prince Edward Island.

The report card also reveals that food is most affordable in Saskatchewan and Quebec. Anxieties were greatest in Prince Edward Island, however, where close to 10 per cent reported they could not afford balanced meals or had run out of food, with no money available to acquire additional food. Nationally, nearly one in five Canadians had reported that they had gone hungry due to lack of food at least once in the preceding 12 months.

Food “deserts” are districts in urban areas with limited physical accessibility to affordable, fresh, and healthy foods. The report card

examines this food access issue though a retail food store measure. Analysis shows retail access was highest in urban Newfoundland and Labrador and Quebec.

Using a household debt service ratio, the report card shows that households in British Columbia and Ontario are more vulnerable to food emergencies. In fact, over half of Canadian households are poorly prepared for food emergencies, as per the food report card's household emergency supply kit's metric. Indeed, many Canadians look to food relief measures through the use of food banks, for instance. Comparatively, food bank usage was highest in Manitoba and Newfoundland and Labrador.

Environmental Sustainability

Table 5
Environmental Sustainability

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.
Summary Grade	A	C	A	B	D	B	C	C	B	D

Source: The Conference Board of Canada.

Food waste, particularly household food waste, is a key sustainability issue, and represents close to half of all the waste along the supply chain. Indeed, the 2016 report card confirms many Canadians generate food waste equivalent to one or more grocery bags of food each week. Overall, the Canadian food system wastes approximately 40 per cent of all food, equivalent to $31 billion annually. Factoring in all other associated waste costs beyond food, the overall annual waste estimate totals $107 billion.

Compared to their peers, Alberta and New Brunswick lag household organic waste diversion efforts elsewhere. There are many reasons for waste, which include food over-acquisition, food over-preparation, confusion around the "best before" date, and purchasing oversized products. Performance metrics show Nova Scotia trails behind other provinces in waste measures.

The report card shows a varied picture on air quality, water contamination, soil health, and farm environmental planning.

The report card also considers impacts in several risk areas elsewhere in the food system. *Canada's Food Report Card 2016* shows a varied picture on air quality, water contamination, soil health, and farm environmental planning. Half of Canada's provinces registered a small increase in greenhouse gases (GHGs) over a 30-year period, while Alberta and Ontario are the largest emitters of agricultural GHGs. Broadly, this report card looks at four air quality metrics. Saskatchewan is the only consistent performer in these measures, receiving "A" grades in all indicators except for particulate matter emissions. Intensity of ammonia emissions is greatest in Quebec and Ontario.

On water quality, Ontario stands out among provinces on coliform contamination, while the highest risks of water contamination by pesticides are in Prince Edward Island and Ontario. For soil health, Quebec has the largest risk from residual soil nitrogen, while almost all farmland in Newfoundland and Labrador is at risk of phosphorus contamination. Loss of topsoil and organic matter by erosion can lead to decreased soil fertility along with losses in yield, productivity, and sustainability. Results show that Ontario has the greatest share of cropland at risk to soil erosion, followed by Newfoundland and Labrador and New Brunswick.

Lastly, Quebec leads other provinces with 72 per cent of farms having an active environmental farm plan. Conversely, only 24.5 per cent of farms on average in the Western provinces had environmental farm plans in place in 2011.

British Columbia

Table 6
British Columbia
(overall grades)

Element: Industry Prosperity	D
Element: Healthy Food and Diets	A
Element: Food Safety	C
Element: Household Food Security	B
Element: Environmental Sustainability	A

Source: The Conference Board of Canada.

Industry Prosperity

Industry prosperity is broken down into five sub-elements, but B.C. thrives in only one—Food and Beverage Retailing. British Columbia receives D grades for all but two farm-related metrics. Indeed, B.C. lags its peer provinces, receiving the lowest average grade across the 15 industry-related metrics that follow the supply chain from primary agriculture to food manufacturing, food retail, and food services.

B.C. receives lower grades than its peer provinces in Industry Prosperity due, in part, to the category's greater focus on primary agriculture. For instance, the province only has about 30 per cent of its farm land in field crops compared with over 87 per cent in Saskatchewan.

Healthy Food and Diets

Overall, B.C. receives an A grade in Healthy Food and Diets with top marks in 13 of the 31 metrics. British Columbia's performance is strongest in the Chronic Diet-Related Health Conditions sub-element. The province has lower rates than its peers in the Type 2 Diabetes, Obesity, High Blood Pressure, and Gastrointestinal Diseases metrics. However, B.C. experiences some of the lowest intake levels of fruits and vegetables, while average daily sodium intake per person is the second-highest in Canada. Additionally, consumption of carbohydrates

B.C. shines in its environmental sustainability food performance, ranking first overall in Canada.

and intake of vitamin D are of concern for women in the province as B.C. receives D grades in both metrics when compared with peer intake in other provinces.

Food Safety

In this food performance element, B.C. receives A grades for hog and cattle condemnation, and contrasting D grades for poultry condemnation. Looking at the incidence of illness due to four key biological pathogens for Canada, occurrences of *Campylobacter* and *Salmonella* illness per 100,000 inhabitants were second-highest and highest, respectively, than elsewhere in Canada. In contrast, B.C. receives an A grade for its lower incidence in *E. coli* reported illnesses.

Household Food Security

It is difficult to provide B.C. with a comprehensive evaluation for its food security performance as data were only available for 7 of the 16 metrics. The province's average grade for available metrics is B. However, B.C. receives A grades for two household food insecurity metrics: Moderate to Severe Household Food Insecurity, and Indigenous Food Security. However, this is typical of most Canadian provinces in these metrics, as Nunavut's food insecurity is far greater than the rest of Canada. Elsewhere, B.C.'s food security economic measures were poorer, with C and D grades on Urban Retail Food Accessibility, and Household Debt Service Ratio metrics, respectively. Household Debt Service Ratio metrics measure the share of disposable income required to meet interest payments on household debt. Having a high ratio is of great concern, as these households are likely to allocate less to savings and are therefore more vulnerable to natural hazards, financial shocks, and related food emergencies.

Environmental Sustainability

B.C. shines in its environmental sustainability food performance, ranking first overall in Canada, just ahead of Saskatchewan. In fact, from household waste to soil health, B.C. receives either A or B grades in all but 2 of the 17 metrics. For instance, B.C., along with Ontario

and Quebec, performs exceptionally well in household efforts to divert organic food materials (food waste). Furthermore, B.C. receives top marks for particulate matter emissions ($PM_{2.5}$) from Canadian agricultural operations, where the difference between the highest- and lowest-producing provinces in 2011 is striking: British Columbia produces only 1 kilotonne per year, whereas Saskatchewan produces 139 kilotonnes. However, regarding environmental farm planning, B.C. receives a D, the lowest grade of all provinces. The province lags Quebec by 51 percentage points, with less than a quarter of its farms reporting that they actively follow an environmental plan.

Alberta

Table 7
Alberta
(overall grades)

Element: Industry Prosperity	C
Element: Healthy Food and Diets	B
Element: Food Safety	C
Element: Household Food Security	A
Element: Environmental Sustainability	C

Source: The Conference Board of Canada.

Industry Prosperity

Alberta's food industry prosperity performance is mixed, as it receives A to D grades across the 17 metrics, giving the province an overall C grade. Alberta receives four A grades, including top marks for Farm Area, and Net Capital Stock in Farming. Alberta's grades demonstrate that its farming industry is strong. However, Alberta has notable D grades in Farms With Revenue of at Least $500,000 (see Chart 5b); Farming Return on Assets; and Farm Solvency Ratio, Debt. Alberta also receives a C grade for its Per Capita Food Manufacturing Sales, and a D grade for its Provincial Food Manufacturing Exports. However, Alberta receives top marks for its Food Service Establishment Operating Margin that, along with Saskatchewan, is among the highest in Canada.

Of all provinces, Alberta has the lowest percentage of adults and children who use food banks.

Healthy Food and Diets

Alberta's overall grade of B reflects the province's primarily positive performance in the 31 Healthy Food and Diets element. Although Alberta only placed first in one metric (Type 2 Diabetes), it receives a total of seven A grades. Like all other Canadian provinces, fruit and vegetable intake is low, as is fish and seafood intake. Alberta also receives poor marks for all metrics in the Micronutrients sub-element: Vitamins A & D, Iron, Calcium Intake. The one exception is a B grade for Calcium Intake (men, aged 71+).

Food Safety

Alberta receives an overall C grade for Food Safety. Compared to peer provinces, Alberta performed relatively well with four A grades out of nine metrics. The A grades are for incidence of *Listeria* illnesses, food recalls per 100,000 Inhabitants, rate of hog condemnation, and rate of cattle condemnation. However, Alberta's food safety performance fell—due, in part, to higher incidences of *Salmonella* and poultry condemnation rates.

Household Food Security

Alberta receives A or B grades in most of the metrics in three of five sub-elements—Household Food Insecurity, Food Insecurity Among Canadians, and Mental and Physical Effects. Of all provinces, Alberta has the lowest percentage of adults and children who use food banks. However, Alberta, along with the other Prairie provinces (Manitoba and Saskatchewan), receives D grades for Urban Retail Food Accessibility—food stores per 1,000 people. This is the measure of physical accessibility to food in census metropolitan areas (CMAs) across Canada.

Environmental Sustainability

Alberta receives an overall C grade for Environmental Sustainability, due to its mixed performance in the sub-element's 17 metrics. Alberta's top marks are in the Soil Health sub-element: Nitrogen Balance in Soil,

Phosphorus Balance, and Soil Erosion. Conversely, the province's weaker greenhouse gas reduction performance awards the province two D grades, and only a quarter of Alberta farms declared having an environmental farm plan in place.

Saskatchewan

Table 8
Saskatchewan
(overall grades)

Element: Industry Prosperity	A
Element: Healthy Food and Diets	B
Element: Food Safety	A
Element: Household Food Security	A
Element: Environmental Sustainability	A

Source: The Conference Board of Canada.

Industry Prosperity

Saskatchewan is Canada's strongest provincial industry performer; the only province with an A grade for this element. Overall, the province receives ten A grades and five B grades out of 17 Industry Prosperity metrics. It ranks first out of all provinces in Farm Area, Farm Size, Farming—Net Value-Added, Farming Return on Assets, and Food Service Establishment Operating Margin. Compared with its peers, Saskatchewan has a very large and profitable farming industry coupled with a strong food manufacturing sector. Saskatchewan's prime farm land and capital ultimately result in value creation. However, Saskatchewan does receive two D grades: Farm Solvency Ratio–Debt, and Per Capita Grocery Sales.

Healthy Food and Diets

Saskatchewan receives A grades for four out of five of the report card's elements—with the exception being a B grade in Healthy Food and Diets. Despite receiving a B, Saskatchewan's performance is still strong

Saskatchewan farms demonstrate stronger performance in Air Quality, Water Contamination, and Soil Health performance metrics.

in two of seven sub-elements: Chronic Diet-Related Health Conditions, and Alcohol Consumption. However, food consumption is a similar concern as with most, if not all, Canadian provinces. Saskatchewan receives low grades for iron intake for women between the ages of 19–50. Overall, obesity rates were also low, and Saskatchewan receives A and B grades for all Chronic Diet-Related Health Conditions metrics. Saskatchewan also performed strongly with regard to added sugar intake, receiving an A grade.

Food Safety

Saskatchewan receives nearly all A grades for Food Safety, with its lowest grade being a C in Recalls Per 100,000 Inhabitants. Saskatchewan receives top marks in the Animal Welfare sub-element, obtaining A grades for all four metrics. Saskatchewan and Manitoba are the only provinces in Canada to receive A grades for chicken, turkey, hog, and cattle condemnation.

Household Food Security

Saskatchewan also gets top marks for Household Food Security. The province performs well in the Household Food Insecurity and Mental and Physical Effects sub-elements. According to data from Statistics Canada and Food Banks Canada, residents of Saskatchewan, in comparison with the rest of Canadians, are statistically unlikely to be worried that food will run out, be hungry but unable to eat, lose weight due to hunger, or use food banks. There are some residents of Saskatchewan that do not fit into this group. For instance, single parents with children tend to be 14 per cent more food insecure in Saskatchewan than in Quebec.

Environmental Sustainability

With A grades in 10 of 15 metric categories, Farms With an Environmental Farm Plan is one of the only areas in which Saskatchewan performs below its peers, receiving a D grade. Despite this, Saskatchewan farms demonstrate stronger performance in Air Quality, Water Contamination, and Soil Health performance metrics. However, Saskatchewan should focus its efforts on improving its

particulate matter emissions ($PM_{2.5}$), which are directly attributed to agriculture operations and production. This is the case for Saskatchewan and Alberta.

Manitoba

Table 9
Manitoba
(overall grades)

Element: Industry Prosperity	C
Element: Healthy Food and Diets	B
Element: Food Safety	A
Element: Household Food Security	D
Element: Environmental Sustainability	B

Source: The Conference Board of Canada.

Industry Prosperity

Although Manitoba obtains an overall C grade in Industry Prosperity, the province receives some of the highest grades of all Canadian provinces in terms of the percentage of farms with revenue above $500,000. Manitoba also has the lowest percentage of farms in Canada with revenue under $100,000. Like Saskatchewan, Manitoba has seen above-average increases in farm size since 2006. Manitoba also places second only to Saskatchewan for its farm profitability and average annual return on interest (ROI), where it receives a B grade. Despite this, Manitoba receives three D grades in Growth in Food Manufacturing, Value-Added; Food Manufacturing Research and Development Expenditures; and Food Service Establishment Operating Margin. However, Manitoba fares quite well in terms of its food and beverage sector and manufacturing sector sales, each receiving B grades.

Healthy Food and Diets

Manitoba is a mid-range performer in the Healthy Food and Diets element, placing 5th out of Canada's 10 provinces. Manitoba performs

Manitoba is among the highest-scoring provinces in the Food Safety element, joined only by Saskatchewan.

well under the Chronic Diet-Related Health Conditions sub-element, with A grades for Type 2 Diabetes, and Gastrointestinal Diseases. Manitoba also receives a mix of A and B grades for its male and female obesity levels at all ages. In terms of consumption, Manitoba performed poorly in fruit and vegetable intake, fish and seafood intake, and salt intake. Also, Manitoba's residents, aged 19 and over, are likely to have a diet that averages around 60–70 per cent below the daily recommended allowance of vitamin D, while calcium intake for all residents over the age of 71 is also lower.

Food Safety

Manitoba is among the highest-scoring provinces in the Food Safety element, joined only by Saskatchewan. Like Saskatchewan, Manitoba performs well, obtaining A grades for all four Animal Condemnation metrics (chicken, turkey, hog, and cattle condemnations). Manitoba also fares quite well in the Microbial Risk sub-element, receiving A and B grades. Manitoba's lowest grade was a C in Recalls Per 100,000 Inhabitants.

Household Food Security

Manitoba receives the lowest grade of any province for Food Security.[3] Manitoba receives A grades for its Moderate to Severe Household Food Insecurity and Indigenous Food Security performance. However, Manitoba receives D grades for its performance in the following three metrics: Urban Retail Food Accessibility, Use of Food Banks, and Household Emergency Supply Kits (domestic food emergency preparedness). Adult food banks usage was also highest in Manitoba.

Environmental Sustainability

In this category, Manitoba receives a B grade for its environmental sustainability practices. This places the province in the upper-middle range in terms of its grades as compared with its Canadian provincial peers. Manitoba performs well with regard to its scores in the metric

3 However, this is partially because there was very little data available for Manitoba (8 of 16 metrics with data), and the data that were available showed that Manitoba had a mixed to weak performance.

Organic Food Material Diversion (food waste). Of the six food waste-related metrics (Organic Food Material Diversion; Grocery Bags of Food Thrown Out Weekly; Over-Acquisition of Food; Food Over-Preparation; Food Expiry Dates; and Food Packaging Size), Manitoba receives A grades in all but one. This demonstrates that Manitobans are more likely to waste food due to cooking and food preparation. Manitoba also has a large farming industry, but lags other provinces with regard to greenhouse gas emissions reduction and nitrogen balance in soil. Overall, however, the province receives mostly B grades in farming practices around water contamination, soil health, and air quality.

Ontario

Table 10
Ontario
(overall grades)

Element: Industry Prosperity	C
Element: Healthy Food and Diets	B
Element: Food Safety	B
Element: Household Food Security	C
Element: Environmental Sustainability	D

Source: The Conference Board of Canada.

Industry Prosperity

Ontario is a middle- to bottom-ranking performer in the Industry Prosperity element's metrics—receiving a C grade overall. This grade reflects Ontario's weaker relative performance in seven metrics across three sub-elements: Endowments, Farm Revenue Structure, and Food and Beverage Retailing. Ontario falls short in these sub-elements due to the size of its farms, as well as the number of farms in the province with revenue of at least $500,000. Ontario's per capita food manufacturing exports score is lower than its peers. Conversely, Ontario receives one of two A grades for its performance in Farming—Net Value-Added, due to the relatively large contribution made by agriculture, in addition to its large farming capital stock.

Ontario is one of two provinces, along with Quebec, that receives an A grade for the number of food recalls per 100,000 inhabitants.

Healthy Food and Diets

Ontario does relatively well in its Healthy Food and Diets performance—receiving an overall grade of B. On food consumption, Ontario's shortcomings mirror those experienced in the rest of Canada regarding low fruit and vegetable intake; fish and seafood intake; and vitamin A, vitamin D, iron, and calcium intake. Ontario excels in terms of its carbohydrate, saturated fat, and added sugar intake—resulting in A grades for these metrics. Ontario also receives an A grade for male obesity aged 12–17, but the health metric deteriorated for male obesity aged 18+. Ontario also receives an A grade for its lower prevalence in heavy drinking.

Food Safety

Ontario's Food Safety results are quite favorable overall, apart from incidence of *Campylobacter*, incidence of *Salmonella*, and rate of hog condemnation—which resulted in two C grades and a D grade, respectively. It is important to recognize that Ontario is one of two provinces, along with Quebec, that receives an A grade for the number of food recalls per 100,000 inhabitants. However, Ontario did have the largest number of individual food recalls for any province, but this was offset by its population size. Also, Ontario receives an A grade for the incidence of *E. coli* reported illnesses per 100,000 inhabitants.

Household Food Security

Ontario receives mixed grades for its Food Security performance, primarily B and C grades among the 16 reported metrics. As is the case in most Canadian provinces, youth and adults (12 years and older) are unlikely to be moderately or severely food insecure. Ontario also receives A grades for its levels of Indigenous food insecurity, as well as its food bank use by children 0–17 years of age. Ontario can focus its attention on improving its performance with regard to the percentage of hungry youth and adults who could not afford more food for their hungry children. Ontario also reports a slightly higher percentage than the Canadian average of people who reported that they were hungry but could not eat. Ontario also has the second-highest average provincial household debt service ratio, which measures the share of disposable

income required to meet interest payments on household debt. Having a high ratio is of great concern, since households with a high debt service ratio are likely to allocate less to savings and are therefore more vulnerable to natural hazards, financial shocks, and related food emergencies.

Environmental Sustainability

Ontario receives the lowest score of all 10 Canadian provinces for its performance in the Farm Environmental Sustainability metrics. The province's score was hampered by its D-level performance in the following metrics: Greenhouse Gas Emissions in 2011, Ammonia Emissions, Water Contamination by Coliforms, Water Contamination by Pesticides, and Soil Erosion. Like most other Canadian provinces, Ontario's performance would also benefit from a stronger commitment to environmental farm planning. However, Ontario also receives an A grade for Organic Food Material Diversion (food waste) performance, in comparison with most other provinces with regard to less food thrown out. This is one of the top five reasons listed in the Centre for Food in Canada 2012 Household Survey.

Quebec

Table 11
Quebec
(overall grades)

Element: Industry Prosperity	C
Element: Healthy Food and Diets	A
Element: Food Safety	C
Element: Household Food Security	A
Element: Environmental Sustainability	B

Source: The Conference Board of Canada.

Quebec had the third-lowest incidences of *Salmonella* and *E. coli*- related illnesses, receiving A grades in both categories.

Industry Prosperity

Quebec earns a mix of B, C, and D grades, with only one A grade, leading to an overall grade of C. Quebec's comparatively weak performance in Farm Area and Farm Size is counteracted by B grades on Net Capital Stock in Farming, and Farming—Net Value-Added. On metrics related to Farming Revenue Structure, Quebec's strongest performance comes in Farming—Return on Assets, where it was Canada's third-strongest performer. On government payments for animal programs, however, Quebec was Canada's weakest performer, earning a D grade. Quebec could also improve its performance in the sub-elements Food and Beverage Retailing and The Food Manufacturing Sector, where it earned only one A grade.

Healthy Food and Diets

Quebec receives A grades in several categories, including five of eight metrics on Micronutrient Intake, and six of eight metrics on Diet-Related Health Conditions. Despite being Canada's weakest performer on Daily Dietary Energy Intake among youth aged 14 to 18, Quebec receives four A grades for its lower rates of youth and adult obesity. However, Quebec was Canada's weakest performer on saturated fat intake and added sugar intake (for women). Nonetheless, it comes close to meeting levels recommended by the World Health Organization (WHO)—a maximum of 10 per cent of daily Calorie intake.

Food Safety

In 2014, Quebec had the highest incidence of *Campylobacter*-related illnesses, and the second-highest incidence of *Listeria*, earning D grades in both categories. Quebec also receives D grades on rates of hog and cattle condemnation, but these grades are shared with the Atlantic provinces. More positively, Quebec had the third-lowest incidences of *Salmonella* and *E. coli*-related illnesses, receiving A grades in both categories.

Household Food Security

This report card shows that Quebec households are the most food secure in Canada. On Moderate to Severe Household Food Insecurity, for instance, Quebec households fall closely behind those in Newfoundland and Labrador (the top performer), and receive an A grade. Quebec also receives A grades for food affordability and food accessibility, but falls behind many of its peers on Household Debt Service Ratio. Its performance is also encouraging on Food Insecurity Among Canadians. For example, Quebec had the lowest rates of moderate or severe food insecurity among single parents with children; the third-lowest rate of Indigenous food insecurity; and the fourth-lowest rate of child food insecurity, further contributing to a strong overall grade. Quebec is also among the top-performing provinces on food bank use by adults and children.

Environmental Sustainability

Quebec also performs relatively well on environmental sustainability, finishing third behind British Columbia and Saskatchewan. Approximately 40 per cent of Quebec food businesses rank improving environmental performance as a very important or extremely important success factor. This earns the province an A grade as one of Canada's top-performing provinces. While Quebec households throw out more grocery bags than many of their provincial peers, Quebec receives A or B grades on other metrics related to household food waste. Quebec is one of Canada's top performers on several other metrics, including Particulate Matter Emissions ($PM_{2.5}$), Water Contamination by Pesticides, Soil Erosion, and the proportion of Farms With an Environmental Plan. However, these positive results are contrasted by weaker performance in other sub-elements such as Ammonia Emissions, where Quebec has the highest proportion (91 per cent) of total farmland in the two highest ammonia emission intensity classes.

New Brunswick

Table 12
New Brunswick
(overall grades)

Element: Industry Prosperity	C
Element: Healthy Food and Diets	B
Element: Food Safety	D
Element: Household Food Security	B
Element: Environmental Sustainability	C

Source: The Conference Board of Canada.

Industry Prosperity

New Brunswick is a middle-of-the pack performer on Industry Prosperity, placing 5th out of 10 provinces. It receives D grades on all four metrics related to farm endowments and farm capitalization, with three sixth-place finishes and one fifth-place finish. Its performance on Farming Revenue Structure is more positive, with two A grades, one B grade, and three C grades. One of these A grades results from having the third-lowest average government program payment for agricultural production among Canada's provinces. New Brunswick has mixed performance on Food Manufacturing, earning A grades (and two third-place finishes) in Growth in Food Manufacturing—Value-Added, and in Food Manufacturing Research and Development Expenditures. However, weaker performance in Per Capita Food Manufacturing Sales, and Provincial Food Manufacturing Exports, gives New Brunswick two C grades.

Healthy Food and Diets

New Brunswick is the second-weakest performer of its provincial peers on Healthy Food and Diets. This is partly due to weak performance (and four D grades) on Fruit and Vegetable Intake (men and women), Fish and Seafood Intake, and Sodium Intake. It is also due to weak performance on Chronic Diet-Related Health Conditions, where it receives C or D grades on six of eight metrics. The province's performance on

New Brunswick has the lowest percentage of youth and adults whose children were hungry but could not afford more food.

micronutrient intake is more mixed, where it receives B and C grades for intake of vitamin A, vitamin D, and iron, but receives two D grades for calcium intake among men and women aged 71 or older. More positively, New Brunswick receives two A grades for its performance on Added Sugar Intake (men and women), due to consumption below the WHO's recommended maximum of 10 per cent of daily Calorie intake.

Food Safety

New Brunswick is also a comparatively weak performer on Food Safety. This is largely due to D grades in five of nine metrics. Two of these five D grades come in food-borne illnesses, where the province has the third-highest incidence of *Campylobacter* illnesses, and the second-highest incidence of *Salmonella*. The remaining three D grades (on Food Recalls, and hog and cattle condemnations) are shared with the three other Atlantic provinces. More positively, New Brunswick receives an A grade for having the second-lowest incidence of *E. coli* reported illnesses among its provincial peers.

Household Food Security

On Household Food Security, New Brunswick has the fifth-highest average score of Canada's provinces, and receives a B grade. It receives seven A grades, including A grades on all five metrics related to food security among Canadians. New Brunswick has the lowest percentage of youth and adults whose children were hungry but could not afford more food, as well as second-best performances in several other metrics. Weak performance on economic measures of food security—where it earned four C grades—and on the mental and physical effects of food insecurity, reduce New Brunswick's overall grade on Household Food Security.

Environmental Sustainability

Of its provincial counterparts, New Brunswick receives the fourth-weakest average score on Environmental Sustainability. It also receives a C grade for the fourth-lowest percentage of businesses that prioritize improving environmental performance. New Brunswick earns three A

grades on metrics related to Household Food Waste. However, it also earns two D grades in the same sub-element, including on the number of grocery bags thrown out each week, where it was the weakest performer of its provincial peers. C grades on Nitrogen Balance in Soil, Phosphorus Balance, and Soil Erosion, lead to further reductions in New Brunswick's overall performance on environmental sustainability.

Nova Scotia

Table 13
Nova Scotia
(overall grades)

Element: Industry Prosperity	D
Element: Healthy Food and Diets	B
Element: Food Safety	D
Element: Household Food Security	C
Element: Environmental Sustainability	C

Source: The Conference Board of Canada.

Industry Prosperity

Nova Scotia has much room to improve its performance on Industry Prosperity. Nova Scotia receives six D grades and five C grades, which account for the majority of its grades in this category. This contributes to a 7th-place finish (out of 10 provinces). The province's performance is near the last in Farm Area, Farm Size, Net Capital Stock in Farming, and Farming—Net Value-Added. Comparative performance is also poor on Per Capita Food Manufacturing Sales, and on Provincial Food Manufacturing Exports. Nova Scotia's average program payments for crop production are the lowest in Canada, giving the province an A grade.

Healthy Food and Diets

Despite this comparatively poor performance, Nova Scotia's performance on Healthy Food and Diets is more promising. Highlights include

These grades, and those on child food security, suggest that Nova Scotia may be one of Canada's top performers.

A grades on Vitamin D Intake (women aged 19+), Added Sugar Intake (men), and Obesity (males, aged 12–17). The province receives B or C grades in many other metrics, including those in Daily Dietary Energy Intake, Micronutrients: Vitamins A and D, Iron, Calcium Intake, and Chronic Diet-Related Health Conditions. Despite receiving D grades for Fruit and Vegetable Intake and Fish and Seafood Intake, Nova Scotia's performance is closer to the "middle of the pack" than the bottom.

Food Safety

Nova Scotia also has much room to improve its performance on Food Safety. It receives C or D grades on five of nine Food Safety metrics, including incidence of *Salmonella* and *E. coli* illnesses, food recalls, and hog and cattle condemnation. This contributes to a ranking of 9th out of 10 provinces. Nova Scotia receives B grades in the four remaining categories. Of these, Nova Scotia's best performance comes in incidence of *Campylobacter*, where it places fourth among its provincial peers.

Household Food Security

Nova Scotia's performance falls behind the majority of its peers, placing 7th out of 10 provinces, and receives a C grade. Nova Scotia's performance on Child Food Insecurity is especially encouraging, as the province has the lowest rates of its provincial peers. It also receives an A grade as the province with the lowest percentage of adults who could not feed their children balanced meals. In addition, Nova Scotia has the third lowest percentage (7 per cent) of youth and adults who could not afford to feed their children more food when they were hungry. Nova Scotia also receives A grades on use of food banks by both adults and children. These grades, and those on child food security, suggest that Nova Scotia may be one of Canada's top performers. However, it falls behind other provinces due to D grades on Worry, Hunger, and Weight Loss Due to Food Insecurity; Household Debt Service Ratio; and Food Insecurity Among Single Parents. In addition, Nova Scotia placed last among its provincial peers on Moderate to Severe Household Food

Insecurity, but receives an A grade because Nunavut's performance is far worse than the rest of Canada.[4]

Environmental Sustainability

Nova Scotia receives a C grade on Environmental Sustainability, due to a combination of robust and poor performance. In some cases—Improving Business Environmental Performance; Greenhouse Gas Emissions; Particulate Matter Emissions ($PM_{2.5}$); and Soil Erosion—Nova Scotia receives A grades for its relatively stronger performance among peer provinces. This contrasts with last-place food waste performances (and D grades) on Food Over-Preparation, and Food Expiry Dates. It also receives D grades on Food Packaging Size, Reductions in Agricultural Greenhouse Gas Emissions, and Nitrogen Balance in Soil.

Prince Edward Island

Table 14
Prince Edward Island
(overall grades)

Element: Industry Prosperity	B
Element: Healthy Food and Diets	B
Element: Food Safety	D
Element: Household Food Security	C
Element: Environmental Sustainability	B

Source: The Conference Board of Canada.

Industry Prosperity

P.E.I.'s encouraging performance on Industry Prosperity is led by A grades in 7 of 19 metrics. Its performance is especially strong in The Food Manufacturing Sector sub-element, where it receives A grades for Per Capita Food Manufacturing Sales; Growth in Food Manufacturing,

4 Recall that this report card includes territorial performance for metrics where data are available, but does not include territorial summaries.

While P.E.I. finishes 7th out of 10 provinces on Healthy Food and Diets, and receives a B grade, its performance is not necessarily discouraging.

Value-Added; Food Manufacturing Research and Development Expenditures; and Provincial Food Manufacturing Exports. It also receives A grades on three of six metrics related to Farming Revenue Structure. Like all Atlantic provinces, however, P.E.I.'s performance is less encouraging on Farm Endowments and Capitalization, where it finishes next-to-last on three metrics, and receives four D grades.

Healthy Food and Diets

While P.E.I. finishes 7th out of 10 provinces on Healthy Food and Diets, and receives a B grade, its performance is not necessarily discouraging, as six other provinces also receive B grades. P.E.I. receives C or D grades on four of five metrics related to Micronutrients: Vitamin A & D, Iron, Calcium Intake, but receives an A grade on added sugar consumption among men, consuming slightly less than the World Health Organization's recommended maximum of 10 per cent of daily Calorie intake. Prince Edward Island's performance on micronutrient intake is mixed. It receives A and B grades on vitamin A and vitamin D intake, and an A grade on iron intake among women aged 19 to 30. This contrasts with D grades on iron intake among women aged 31 to 50, and on calcium intake for men and women aged 71 and over. P.E.I. receives D grades on all three metrics related to food consumption; however, its D grade on Fish and Seafood Intake is a combined grade for all Atlantic provinces.

Food Safety

P.E.I. receives a D grade for Food Safety, and is the worst performer among its provincial peers. It receives D grades on four of a possible nine metrics. However, for three of these grades (Food Recalls, and hogs and cattle Animal Condemnations grades), P.E.I.'s performance is grouped with other Atlantic provinces. The province's incidence of *Listeria*-related illnesses is the highest of all Canadian provinces, leading to a fourth D grade. On Incidence of *Campylobacter* and Incidence of *Salmonella*, (sub-metrics of Microbial Risk), P.E.I. places sixth and fifth (respectively), and earns two C grades.

Household Food Security

P.E.I.'s performance on Household Food Security lags most of its provincial peers. Particularly concerning is its performance on child food security, where it receives three D grades for Child Food Insecurity, Children Hungry But Could Not Afford More Food, and Could Not Feed Children Balanced Meals. On these three sub-metrics, P.E.I. is the worst performer of its provincial peers. Interestingly, this has not necessarily led to weak relative performance on food security for single parents with children, where P.E.I. finishes 3rd of 10 provinces, and earns a B grade. Elsewhere, P.E.I.'s performance on Moderate to Severe Household Food Insecurity is next-to-last, but the province receives an A grade in the report card because it far outpaces the worst performer (Nunavut).

Environmental Sustainability

P.E.I. was a middle-of-the-pack performer on Environmental Sustainability, placing 5th out of 10 provinces, and earning a B grade. There are several highlights worth mentioning. For instance, P.E.I. receives an A grade on Improving Business Environmental Performance, as the province with the highest proportion (43 per cent) of businesses that believe improving environmental performance is very important or an extremely important success factor. In addition, in 2011, almost none of P.E.I.'s cropland had high or very high soil erosion, leading to an A grade. P.E.I. receives a B grade for a relatively high proportion of farms with an environmental plan, but this is a shared grade that includes the other Atlantic provinces. Relatively poor performance on Reductions in Agricultural Greenhouse Gas Emissions, Ammonia Emissions, Water Contamination by Pesticides, and Phosphorus Balance prevent P.E.I. from earning an A grade on Environmental Sustainability.

Newfoundland and Labrador

Table 15
Newfoundland and Labrador
(overall grades)

Element: Industry Prosperity	D
Element: Healthy Food and Diets	D
Element: Food Safety	B
Element: Household Food Security	A
Element: Environmental Sustainability	D

Source: The Conference Board of Canada.

Industry Prosperity

On Industry Prosperity, Newfoundland and Labrador is the second-weakest performer among Canada's provinces, earning an overall grade of D. It earns D grades in 9 of 17 metrics, and is Canada's weakest performer in 6 metrics: Farm Area, Farm Size, Net Capital Stock in Farming, Farming—Net Value-Added, Food and Beverage Store Gross Margin, and Food Service Establishment Operating Margin. Its performance on the Farming Revenue Structure sub-element is more varied, earning a mix of A, C, and D grades. It is a top Canadian performer on three sub-metrics: Enterprise Viability for Farms With Revenue of at Least $500,000; Solvency Ratio, Debt; and Viability Through Crop Programs.

Healthy Food and Diets

On Healthy Food and Diets, Newfoundland and Labrador is the weakest performer of its provincial counterparts, earning D grades in 17 of the 29 metrics for which data are available. This weak performance is largely due to elevated rates of child and adult obesity, type 2 diabetes, high blood pressure, hypertension, and gastrointestinal diseases. As a result, the province earns D grades in eight of eight metrics on Diet-Related Health Conditions. While Newfoundland and Labrador has the second-highest rate of heavy drinking in Canada (earning a C grade), it has

Newfoundland and Labrador is a top performer on greenhouse gas emissions, and is among Canada's leaders on particulate matter emissions.

the second-lowest age-standardized mortality rate from alcoholic liver disease. However, the province's intake of carbohydrates, saturated fat, and added sugar receive A grades.

Food Safety

Newfoundland and Labrador's performance on food safety is mixed. On one hand, the province performs well on Microbial Risk, receiving four A grades for incidence of *Campylobacter*, *Salmonella*, *E. coli*, and *Listeria*-related illnesses. On the other hand, the province shares D grades (with the other Atlantic provinces) on food recalls per 100,000 inhabitants, and on hog and cattle condemnation, which decreases its overall score, and leads to an overall grade of B.

Household Food Security

This is Newfoundland and Labrador's strongest performance category. It earns the second-highest average score of its provincial peers, and is one of four provinces to receive A grades. Newfoundland and Labrador's overall grade in this category should be viewed with caution, however, as data were available for only 8 of a possible 16 metrics. This performance is bolstered by strong showings in Moderate to Severe Household Food Insecurity, Urban Retail Food Accessibility, and Indigenous Food Security, where its grade is shared with other Atlantic provinces. Less encouraging is the province's relatively high dependence on food banks, earning it D grades for child and adult food bank usage.

Environmental Sustainability

On Environmental Sustainability, Newfoundland and Labrador places 9th out of 10 provinces, earning an overall grade of D. It places last in 3 of 16 metrics for which data are available: Improving Business Environmental Performance, Over-Acquisition of Food, and Phosphorus Balance in soil. In food waste, households in Newfoundland and Labrador tend to throw out more grocery bags of food than households in many other provinces, earning the province a D grade. However, Newfoundland and Labrador is a top performer on greenhouse gas emissions, and is among Canada's leaders on particulate matter emissions ($PM_{2.5}$).

CHAPTER 1

Introduction

Chapter Summary

- Food performance data are not collected strategically on a pan-Canadian scale to achieve goals set out in a common food policy. To monitor change, the Conference Board's food report cards constitute a regular, reliable, pan-Canadian food performance surveillance and reporting system.
- The 2016 provincial food report card provides a cross-sectional view of Canada's latest domestic food performance—a provincial baseline of Canada's food performance upon which we will track progress, going forward.
- Good performance benefits the food economy, the well-being of Canadians, and the ecosystem. Conversely, worsening and poor performance in some areas require remedial attention and corrective action.
- To improve Canada's food performance and monitoring, it is recommended that the Canadian Community Health Survey's (CCHS) Nutrition Survey and Canada's Food Guide be updated every five years.

Inaugural Launch of the 2016 Provincial Food Report Card

The Conference Board of Canada released the 2016 provincial food report card at its 5th Canadian Food & Drink Summit, held in Toronto, November 28–29, 2016 (#CBoCFood). Produced by the Canadian Food Observatory, which is housed at the Conference Board's Centre for Food in Canada (CFIC), this report card is the first of a series of *provincial* report cards that monitor Canada's domestic food performance. The domestic food report cards will alternate with a series of biennial *international* report cards comparing Canada's food performance against 16 or more OECD peer countries. The first *international* report card was released in 2015.

Engaging Canadians

The food report cards constitute a regular, reliable, pan-Canadian food performance surveillance and reporting system. The food report cards offer clear, credible evidence of Canada's food system and food sector performances that can enhance public and private awareness and commitment to action. It is our hope that these food report cards will foster change, and help persuade Canadians, food businesses, governments, and civil society organizations take action to advance Canada's food performance and potential.

Consequently, food performance metrics must be credible to stakeholders and cover the complete food system and supply chain from land and sea. They should spur stakeholders and Canadians to act—to make management and market decisions; finance investments; build programs; and improve dietary, consumption, and production choices.

The Canadian Food Strategy

The Conference Board's Canadian Food Strategy recognizes that change is essential to meet both current and future food needs.[1] The strategy is the product of four years of research,[2] national surveys, and national dialogue. The broad scope is essential. It reflects Canadians' widely held view that our food system encompasses more than the food industries. It includes multiple economic, social, and environmental dimensions. Canadians want foods that are safe, nutritious, affordable, available to all, and produced in ways that are environmentally sustainable. These goals can be achieved while taking advantage of abundant and growing opportunities to further Canada's exports to the world and enhance Canada's food industry prosperity and viability.

Monitoring Canada's Food Performance Strategically

The food report card tracks the five main elements of the 2014 Canadian Food Strategy, namely: industry prosperity, healthy food and diets, food safety, household food security and environmental sustainability. The 2016 provincial food report card provides a cross-sectional view of Canada's latest domestic food performance. We use the most current data available, including the 2011 Census of Agriculture, the 2004 Canadian Community Heath Survey (CCHS), and the Conference Board's 2011 Food Industry and Household Food surveys, among other sources. (See "About the Centre for Food in Canada's Surveys.")

About the Centre for Food in Canada's Surveys

A key mandate of the Centre for Food in Canada is to generate insights about the food system from both the perspective of industry and households. The achievement of this mandate requires CFIC to gather proprietary data on the specific challenges facing Canada's food industry and Canadian households' food-related skills, attitudes, and behaviours. To this end, we designed and

1 Bloom, *From Opportunity to Achievement*, 3.

2 The Conference Board of Canada, *Centre for Food in Canada: Research Reports*.

executed two surveys: first, a business survey of the Canadian food industry and, second, a survey of Canadian households. These surveys were conducted by Forum Research, a Toronto-based survey company.

For the industry survey, Forum Research randomly surveyed 1,186 food companies from June 23–July 22, 2011, using questions prepared by The Conference Board of Canada. Companies were sampled according to the 3-digit North American Industrial Classification System (NAICS) codes 445 (retail food distribution), 311 (food processing), 111 (crop production), and 112 (animal production). Of the surveys, 1,177 were telephone surveys conducted by trained interviewers, and 9 were filled in by hand and submitted in hard-copy form. Aggregate survey findings are considered accurate +/– 2.85 per cent, 19 times out of 20. For the household survey, Forum Research randomly surveyed 1,056 Canadian households during the September 8–11, 2011 period, using questions prepared by The Conference Board of Canada. In this case, aggregate survey findings are considered accurate +/– 3.02 per cent, 19 times out of 20. Sub-sample results have wider margins of error for both surveys.

Indeed, Canada has many data sets. However, its food performance data are not collected strategically on a pan-Canadian scale to achieve goals set out in a common food policy. At our 5th Food and Drink Summit in 2016, we called for the CCHS Nutrition Survey and Canada's Food Guide[3] to be updated every five years. The previous 2004 CCHS Nutrition Survey is over 12 years old and new results will not be released until the spring of 2017. We are releasing this report card as a provincial baseline of Canada's food performance upon which we will track progress, going forward.

Metric Rating System

The food report card follows The Conference Board of Canada's *How Canada Performs* methodology, detailed on our website.[4] Good performance benefits the food economy, the well-being of Canadians, and the ecosystem. Conversely, worsening and poor performance in some areas require remedial attention and corrective action.

3 Health Canada, *Eating Well With Canada's Food Guide*.

4 The Conference Board of Canada, *How Canada Performs: Methodology*.

Good performance benefits the food economy, the well-being of Canadians, and the ecosystem.

For 59 of the report card's 63 food performance metrics, a grade has been assigned to each province (and territory, where data permit). To assign a score, we calculated the difference between the top and bottom performers and divided the figure by 4 into four quartiles.

For the four exceptions—fruit and vegetable intake (eight portions per day recommended); fish and seafood intake (two 75-gram servings per week); added sugar intake (10 per cent); and sodium intake (2,300 mg daily upper limit)—the provinces are rated against an established dietary performance standard. Many provinces do not meet these standards, and earn a D: for instance, on fruit and vegetable intake.

To calculate a category ranking, the provinces are ranked according to their composite index scores (an average of the normalized scores for each indicator in the category). Note that in the Healthy Food and Diets category, the normalized score for gastrointestinal diseases is weighted according to the number of Canadians affected by each disease. A composite index for the category is calculated by taking the difference between the top and bottom performer, and dividing by four. The top-ranking province for the category receives a 1, while the bottom-ranking province receives a 0. A province receives a grade of "A" for the category if its score is in the top quartile, a "B" if its score is in the second quartile, a "C" if its score is in the third quartile and a "D if its score is in the bottom quartile. The Overall ranking is determined using the average scores from the four categories.

Our two normalization formulas are as follows:

Normalization Formula (for indicators where a higher result is best)
Normalized value = (indicator value – maximum value) ÷ (minimum value – maximum value)

Normalization Formula (for indicators where a lower result is best)
Normalized value = (indicator value – minimum value) ÷ (maximum value – minimum value)

The following rating legend colour scheme applies to all charts and tables throughout the food report card.

Rating Legend A B C D

CHAPTER 2

Element: Industry Prosperity

Chapter Summary

- Saskatchewan stands out in terms of farm area, farm size capital employed in farming, and farm profitability.
- Prince Edward Island leads all provinces in per capita food manufacturing sales. Food manufacturing growth was also strong in Prince Edward Island, Saskatchewan, and New Brunswick.
- Newfoundland and Labrador sees the highest provincial grocery sales per capita, while British Columbia has the highest food and beverage store margins.

In 2013, the agriculture and agri-food (AAF) industry generated $106.9 billion in value-added, or 6.7 per cent of Canada's GDP.[1] The industry comprises all aspects of the food supply chain—from primary production, through to processing and distribution, and finally to food service.

Provincial AAF industry prosperity is influenced by many factors. To begin, provincial natural endowments (e.g., arable land, soils, and water) shape the nature of primary agricultural production. Yet natural endowments, on their own account, do not result in a prosperous AAF industry. The modern food industry involves significant levels of investments in capital and associated technology across the entire value chain. Enterprise management is also essential to ensure that capital is well-used and productive. The operational and financial strength of enterprises is also important. All of these factors play into a prosperous AAF sector. As this chapter explores, provinces differ significantly across these factors.

1 Agriculture and Agri-Food Canada, *An Overview.*

Sub-Element: Endowments

Metric 1: Farm Area

Alberta and Saskatchewan Lead Provinces in Farm Area

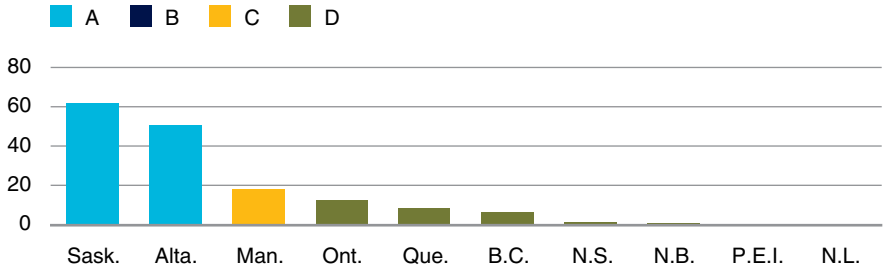
Farm area gauges the extent to which provincial land is being put to the service of primary agriculture. The most recent census of agriculture shows that the amount of farm area in Canada declined by 4.1 per cent between 2006 and 2011.[2] This loss of agricultural land is due to farm land being converted to other uses (e.g., residential development) or simply being taken out of agricultural service due to unfavorable economics.

Canada's Prairie provinces lead the way in farm area on both an absolute (see Chart 1) and per capita basis. Lightly populated Prairie provinces, Saskatchewan and Manitoba, face relatively little competition for use of vast tracts of prime farmland.

Chart 1

Farm Area, by Province, 2011

(millions of acres)



Source: Statistics Canada, *2011 Census of Agriculture*.

Farm area statistics do not speak to the underlying fertility of the land and, therefore, its use. For instance, Alberta dedicates much of its farm land to cattle feeding. Alberta maintains the largest cattle herd in Canada; over 42 per cent of Alberta farm land is pasture and an additional 21 per cent is hay.[3] Meanwhile, in Ontario, over 70 per cent of land is cropland.

2 Statistics Canada, *Farm and Farm Operator Data*.

3 Statistics on farm area and size obtained from the *2011 Census of Agriculture*. Statistics Canada, Farm and Farm Operator Data.

Modern farming is capital-intensive and larger farms allow capital to be fully utilized.

Metric 2: Farm Size

Saskatchewan Tops Provinces in Average Farm Size

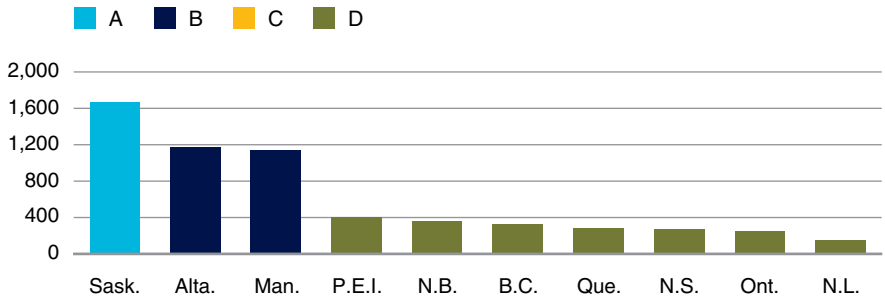
Notwithstanding recent declines in farm area, the total land allocated to farming in Canada has changed very little over the last 50 years. The main change is the number and size of farms: over time, they have become fewer in number and larger in size.

Between 2006 and 2011, the only province that saw an increase in the number of farms was Nova Scotia (2.9 per cent increase). All other provinces saw a drop in the number of farms, with the Prairie provinces and Prince Edward Island exceeding the average decline.

Increasing farm size merely reflects the fact that larger farms are generally more operationally efficient than smaller farms. Modern farming is a capital-intensive endeavour and larger farms allow capital to be fully utilized. This allows capital costs to be spread out over larger acreage and reduces the amount of capital downtime.

To some extent, farm size reflects the nature of farm land. Prairie grain and oilseed farming lends itself to large operations and extensive use of land. (See Chart 2.) Hay and fruit production, as in British Columbia's Okanagan and Fraser valleys, do not lend themselves to large operational footprints. British Columbia only has about 30 per cent of its farm land in field crops compared to over 87 per cent in Saskatchewan.

Chart 2
Average Size of Farm, by Province, 2011
(acres)



Source: Statistics Canada, *2011 Census of Agriculture.*

Sub-Element: Capitalization

Metric 3: Net Capital Stock in Farming

Alberta, Ontario, and Saskatchewan Lead in Net Capital Employed in Farming

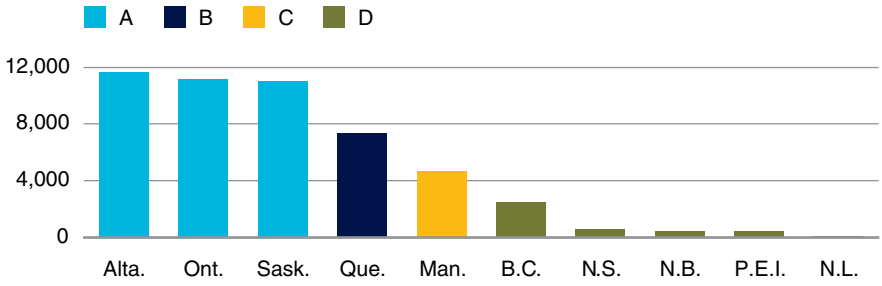
Farming is among Canada's most capital-intensive industries. Canadian farming has an asset-to-GDP ratio of 2.5 to 1, which is above the national average for all industries. Moreover, farming is the most capital-intensive among the food sub-industries—food manufacturing has an asset-to-GDP ratio of only 0.6 to 1 and food distribution is 1.1 to 1.[4]

Given the amount of farm land and size of farms, it is perhaps not surprising that Alberta and Saskatchewan are A performers in net capital employed in farming. (See Chart 3.) Perhaps more surprising is Ontario's performance for this metric, especially given the relatively small amount of farm area and farm size. Clearly, Ontario farms have sought to overcome their smaller scale through efficient use of farming technologies and focusing on high-value products.

Chart 3

Net Capital Stock in Crop and Animal Production, by Province, 2014

($ millions)



Sources: Statistics Canada, CANSIM table 031-0005; calculations by The Conference Board of Canada.

4 Grant and Butler, *Funding Food*, 7.

Metric 4: Farming—Net Value-Added

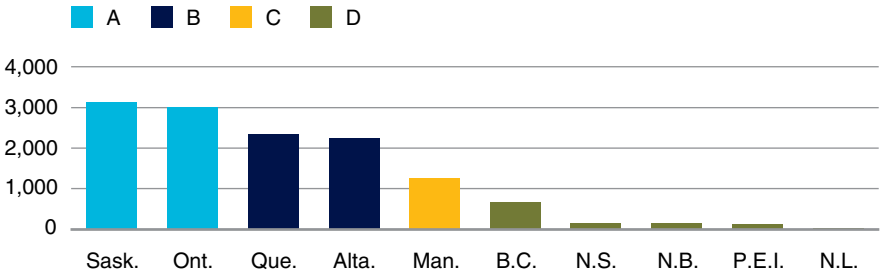
Farm Value-Added Highest in Saskatchewan and Ontario

The employment of land and capital ultimately results in the creation of value-added. Saskatchewan's high net value-added is a function of a large contribution of both land and capital. (See Chart 4.) In the case of Ontario and Quebec, the relatively large contribution made by agriculture is a function of the large farming capital stock.

Chart 4

Average Annual Net Value-Added Contribution of Agriculture, by Province, 2004–14

($ millions)



Source: Statistics Canada, CANSIM table 002-0004.

Sub-Element: Farming Revenue Structure

In the Centre for Food in Canada's work on farm enterprise viability, we discovered that the smallest farms were the most financially fragile.[5] Farms in the $10,000 to $99,999 class had the highest proportion of low margin operations. Larger farms were much more likely to be profitable.

One reason why viability varies with size is that larger farms have the financial means to withstand the inevitable business fluctuations, such as commodity price shocks, that are a feature of the farming business. Larger farms are also more likely to be diversified either by commodity or in upstream and downstream food businesses. This diversification improves their viability in the face of changing market conditions.

According to the *2011 Census of Agriculture*, Canada had 9,602 farms with $1 million or more in gross farm receipts in 2010. Although these farms are still a relatively small share of all farms, their percentage increased significantly. It climbed from 3.2 per cent of the total number of farms in 2005 to 4.7 per cent of all farms in 2010. And, the percentage of gross farm receipts increased from 42.8 per cent for 2005 to 49.1 per cent for 2010 (at 2010 constant prices). The number of farms reporting $1 million or more (at 2010 constant prices) in receipts grew by 31.2 per cent over the last census period, while the number of farms reporting less than $1 million fell by 11.7 per cent.

Million-dollar farms were more likely to be incorporated: 77.2 per cent of million-dollar farms were incorporated compared with 19.8 per cent of all farms. Family corporations represented 66.3 per cent of million-dollar farms compared with 17.4 per cent of all farms. Non-family corporations represented 10.9 per cent of million-dollar farms, but only 2.4 per cent of all farms.

5 See Stuckey and Butler, *Seeds of Success*.

Growing farm size is an indication that larger farms have acquired smaller farms.

Metric 5: Agriculture Enterprise Viability

Greatest Share of Large Farms Are in Atlantic Canada; Small Farms in British Columbia

Although endowments and capital are important factors in agricultural viability, the way these factors are organized within enterprises is equally important. An industry is prosperous when firms in the industry are consistently profitable. Hence, enterprise metrics of viability are a key way to understand whether and why an industry is viable over time.

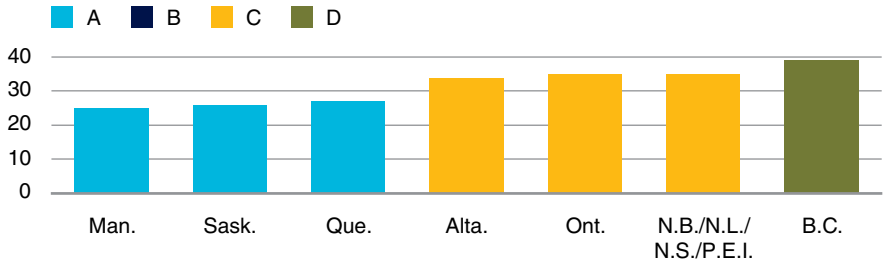
Charts 5a and 5b show the percentage of small (under $100,000 in revenue) and large (at least $500,000 in revenue) farms. Almost half of the farms in British Columbia have under $100,000 in revenue. But Atlantic Canada does quite well in terms of large farms because it is home to large corporate farming enterprises like Cavendish Farms—a subsidiary of J.D. Irving Ltd. Cavendish Farms is the fourth largest producer of french fries in North America and controls its supply chain from farm to distribution.[6] Saskatchewan and Manitoba have seen above-average increases in farm size since 2006. Typically, growing farm size is an indication that larger farms have acquired smaller farms. This explains the relatively low number of farms with revenue under $100,000 in those provinces.

6 Cavendish Farms, *Our Affiliated Companies*.

Chart 5a

Farms With Revenue Under $100,000

(per cent)

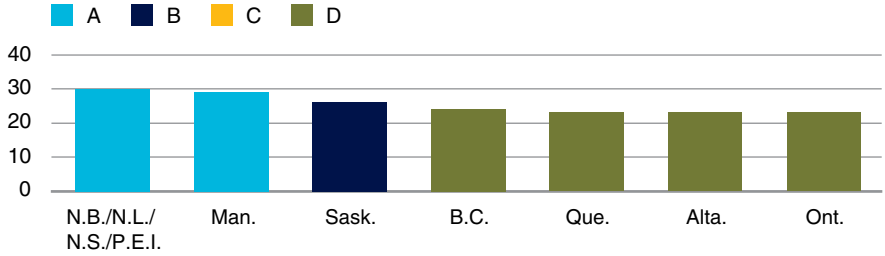


Source: Statistics Canada, CANSIM table 002-0073.

Chart 5b

Farms With Revenue of at Least $500,000

(per cent)



Source: Statistics Canada, CANSIM table 002-0073.

Metric 6: Farming Return on Assets

Saskatchewan Leads in Farm Profitability

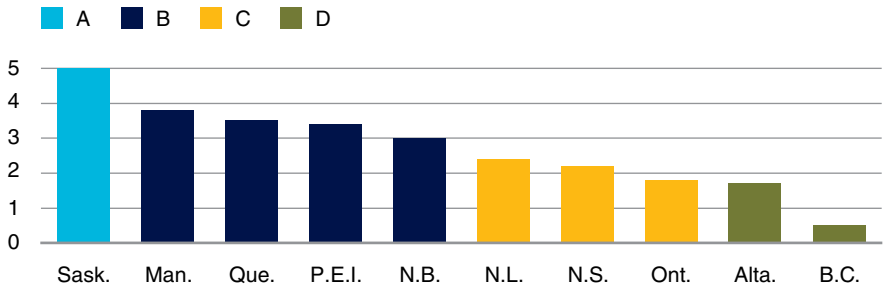
Return-on-assets (ROA) is an indicator of how well farm management utilizes assets to produce earnings. Saskatchewan is an A performer on this metric largely because its average farm size results in financial and operational efficiencies, which are larger than those in other provinces. This contrasts with British Columbia, which scores low on both operational and financial efficiency—ultimately reflected in a very low return on farm assets.

Saskatchewan also benefits from diversification as it produces a variety of grain, oilseed, and pulse cash crops as well as livestock. Alberta, by contrast, is heavily reliant on livestock, which exposes the province to substantial meat commodity price risk. Also, meat products are subject to considerable trade barriers because of food safety concerns or old-style protectionism, such as the United States' country-of-origin labelling regulations. (See Chart 6.)

Chart 6

Farm Profitability, by Province: Average Annual Return on Assets, 2005–15

(per cent)



Source: Statistics Canada, CANSIM table 002-0020.

Metric 7: Farm Solvency Ratio, Debt

Farms in Newfoundland and Prince Edward Island More Solvent

Most farms in Canada are family-owned enterprises—organized as either sole proprietorships or private corporations. They have few equity-raising options and therefore tend to favour debt finance. A high reliance on debt finance can make farming enterprises financially fragile because debt holders maintain a fixed claim on the cash flows of the business. (In comparison, equity holders maintain a long-term variable claim that depends on earnings.) As such, in times when earnings decline, farms may have difficulty servicing debt.

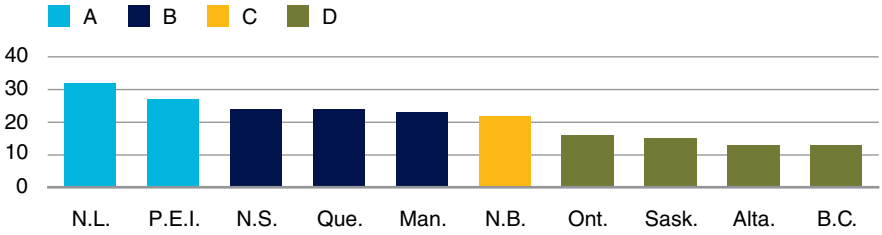
The solvency ratio is calculated as the ratio: (net income plus depreciation)/debt liabilities. It is a sign of the heightened risk of insolvency when a farm's net income falls in relationship to its debt liabilities. The lower the solvency ratio, the greater the likelihood is that a farm will default on its debt obligations.

There is almost an inverse relationship between the size of the farming sector and its solvency ratio. Very large farming sectors—like Saskatchewan, Ontario, and Alberta—all perform poorly on this metric. The sense is that provinces with large viable farming sectors are more likely to attract debt financing because of the economics of the sector, but this may result in excessive leverage in these provinces. This is concerning because of the key role that the federal Crown corporation, Farm Credit Canada, plays in underwriting the agricultural sector's debt obligations. This is a further concern in provinces like Alberta and Ontario that perform poorly on the return on assets, as shown in Metric 6. (See Chart 7.)

Chart 7

Farm Solvency Ratio Debt Coverage, by Province, Average for 2005–15

(per cent)



Source: Statistics Canada, CANSIM table 002-0020.

Governments regularly intervene in agriculture in order to improve the viability of otherwise unviable farming enterprises.

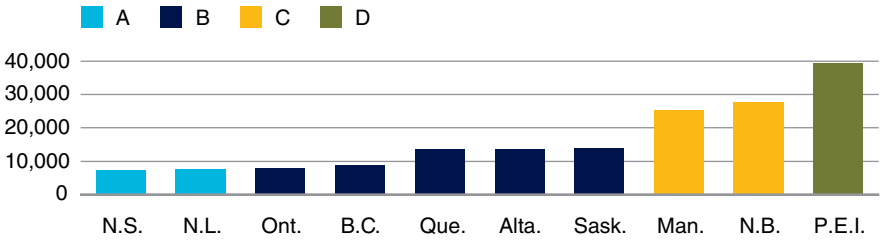
Metric 8: Viability Through Government Programs

New Brunswick and Prince Edward Island Receive Above-Average Support for Crops; Quebec and Newfoundland for Animal Production

Federal and provincial governments regularly intervene in agriculture in order to improve the viability of otherwise unviable farming enterprises. The most recent federal-provincial agreement, Growing Forward II, provided $3 billion to the primary sector to fund a range of efficiency, environmental, and market development projects. Although the nature of assistance has changed over time (from production subsidy to market and weather insurance to innovation and market development), governments still actively subsidize agriculture across all provinces. However, the average dollar payment per farm for most farms in Canada is relatively low, with most provinces paying less than $15,000 per year in support for both crop and animal production. New Brunswick and Prince Edward Island stand out as having above-average support for crop farmers, while Quebec and Newfoundland and Labrador focus on program payments on animal production. (See charts 8a and 8b.)

Chart 8a

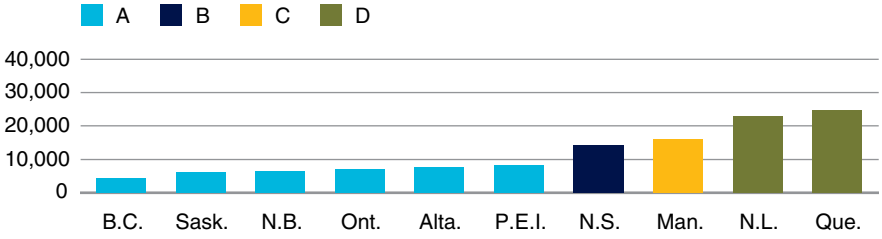
Net Program Payments, Crop Production, by Province, 2010–14
(average payment per program, $)



Source: Statistics Canada, CANSIM table 002-0053.

Chart 8b

Net Program Payments, Animal Production, by Province, 2010–14
(average payment per program, $)



Source: Statistics Canada, CANSIM table 002-0053.

Sub-Element: The Food Manufacturing Sector

The food and beverage manufacturing industry is the largest manufacturing industry in Canada, contributing 16 per cent of manufacturing GDP in 2013.[7] About 38 per cent of primary agricultural products produced in Canada are used as raw material inputs by the food manufacturing industry.

The industry's shipments more than doubled between 1992 and 2013 to $98.8 billion.

7 Statistics from Agriculture and Agri-Food Canada, *An Overview*.

Metric 9: Per Capita Food Manufacturing Sales

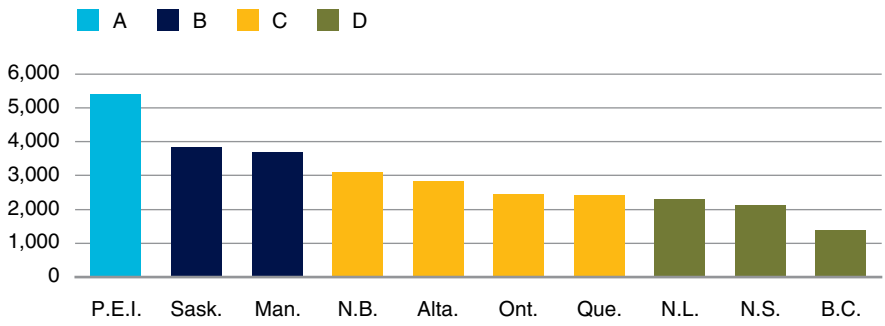
Prince Edward Island Leads Country in Per Capita Food Manufacturing Sales

Depending on the food in question, food processing will favour either being close to end market or close to feedstock. Larger population provinces naturally do well in comparisons of food manufacturing sales because they often source raw material within the province and have large end markets. In Chart 9, we net out this population bias by considering per capita manufacturing sales by province.

Chart 9

Per Capita Food Manufacturing Sales, by Province, 2013

($)



Sources: Statistics Canada, CANSIM table 301-0008; calculations by The Conference Board of Canada.

Relatively small population provinces with proportionally large agricultural sectors do especially well on this metric. In the case of Prince Edward Island, the water content of its main product, potatoes, favours processing prior to shipping to end market. Likewise, Saskatchewan and Manitoba are major oilseeds producers. Oilseed crushing tends to occur close to the supply source, which allows the valuable oil to be separated from low-value husks. The economics of shipping usually favours transforming products near the source to focus products on the main source of value, thus reducing the proportional costs of transportation in product price to consumers.

Metric 10: Growth in Food Manufacturing, Value–Added

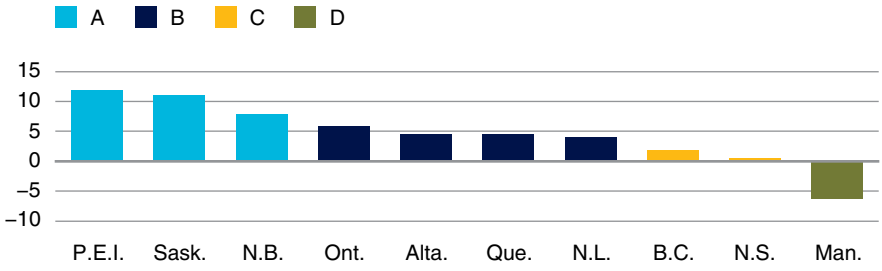
Food Manufacturing Growth Strongest in Prince Edward Island, Saskatchewan, New Brunswick

A growing industry is a sign that an industry is effective in meeting the demands of consumers. Usually this involves leading innovative companies that are excellent at product innovation and efficient production. In the case of Prince Edward Island, Cavendish Farms is a highly successful food processor. Similarly, in New Brunswick, McCain Foods (of Florenceville-Bristol) is one of the world's top food processors. These companies are adept at satisfying current customer demands while creating innovative new products for tomorrow's customers. (See Chart 10.)

Chart 10

Food Manufacturing Value-Added, Annual Average Growth, by Province, 2010–14

(per cent)



Source: Government of Canada, *Food Manufacturing (NAICS 311)*.

Metric 11: Food Manufacturing Research and Development Expenditures

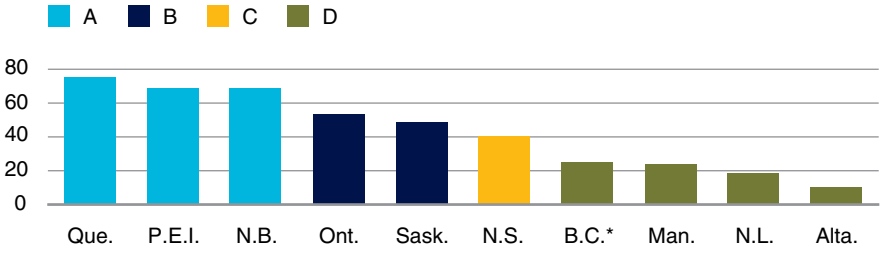
Quebec Leading Investments in Food Manufacturing Innovation

The importance of innovation to growth is seen in the research and development expenditures of the food manufacturing industry. (See Chart 11.) Two of Canada's smallest provinces, Prince Edward Island and New Brunswick, score an A on this metric. Quebec is also an important centre for food manufacturing innovation and is headquarters to two world-leading dairy processors, Saputo and Agropur Co-operative, both of which are very innovative. Notably, Manitoba scores rather poorly on this metric, which may be a factor in its poor growth performance, (See Metric 10.)

Chart 11

Per Capita Business Enterprise Expenditure on Research and Development, Food Manufacturing, 2003–13, by Province

($)



*includes territories
Sources: Statistics Canada, CANSIM table 358-0161; calculations by The Conference Board of Canada.

Exporting shows that manufacturers know how to appeal to consumers outside their home market.

Metric 12: Provincial Food Manufacturing Exports

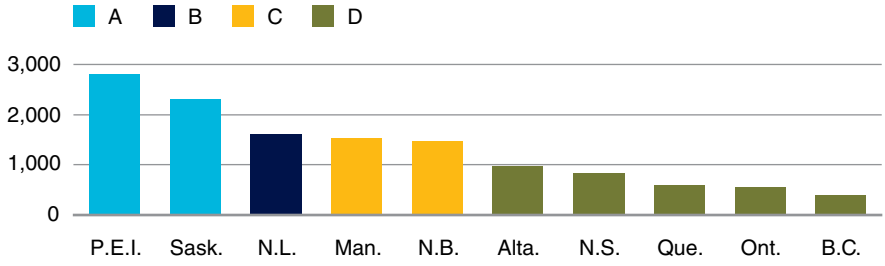
Prince Edward Island and Saskatchewan Top Food Manufacturing Exports

Exporting is a sign of growth and viability because it shows that manufacturers know how to appeal to consumers outside their home market. This is especially seen when netting-out the impact of domestic population growth by looking at per capita food manufacturing exports by province. (See Chart 12.) One reason that Newfoundland and Labrador does well on this metric, while performing poorly on farm-based metrics, is because of its seafood processing industry.

Chart 12

Per Capita Food Manufacturing Exports, by Province, 2011–15

(annual average, $)



Sources: Innovation, Science and Economic Development Canada, *Trade Data Online*; calculations by The Conference Board of Canada.

Sub-Element: Food and Beverage Retailing

Metric 13: Per Capita Grocery Sales

Highest Per Capita Grocery Sales in Newfoundland and Labrador

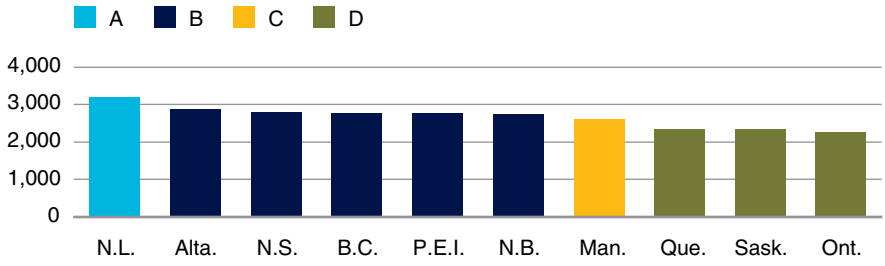
The final stage in the food supply chain is food and beverage retailing. There are over 25,000 stores that sell food and beverages.[8] In addition, consumers have the choice to acquire food at food service establishments that combine food vending with other food services (preparation and wait service). One metric of the relative success of different food vending options is per capita grocery sales. Groceries focus mostly on unprepared food offerings that see them compete with other vendors who prepare and serve food (e.g., institutions and restaurants). Groceries and food manufacturers have increasingly enhanced their prepared food offerings to compete with food service vendors. (See Chart 13.)

Per capita grocery sales are one way to look at how successful grocery store operators compete for a share of food customers' wallets. On this metric, grocery stores in Newfoundland and Labrador do well. The lower performance of the largest populated provinces, like Quebec and Ontario, may be a result of major urban centres offering consumers a wide range of food vending options.

Chart 13

Per Capita Grocery Store Sales, by Province, 2015

($)



Sources: Statistics Canada, CANSIM table 080-0020; calculations by The Conference Board of Canada.

8 Innovation, Science and Economic Development Canada, *Food and Beverage Stores*.

Metric 14: Food and Beverage Store Gross Margin

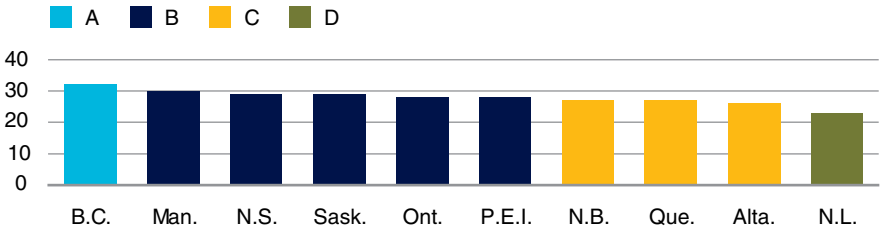
Above-Normal Food and Beverage Store Margins in British Columbia

Gross margins are a sign of enterprise viability. High margins typically reflect a unique competitive advantage or exclusivity. British Columbia performs especially well on this metric, although the range of performance is fairly small between the provinces. Most provinces see average food and beverage store gross margins vary in a narrow range between 25 and 30 per cent. This suggests that the food and beverage store business is a mature, competitive business with relatively few opportunities to realize above-normal margins. (See Chart 14.)

Chart 14

Food and Beverage Store Gross Margin, by Province, 2012

(per cent of operating revenue)



Source: Statistics Canada, CANSIM table 080-0023.

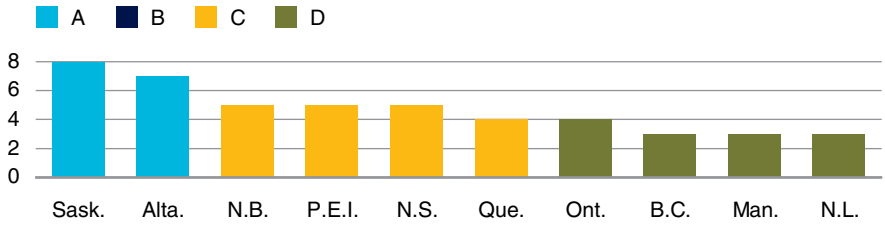
Metric 15: Food Service Establishment Operating Margin

Saskatchewan and Alberta Leading Provinces in Food Service Sector Margins

Food stores compete directly with food service establishments. Food service establishment operating margins are much more variable than food and beverage stores' gross margins. This may be because it is easier for food service establishments to offer a unique value proposition based on the quality of food preparation and the level of service. Food service establishments in Alberta and Saskatchewan perform particularly well on this metric. Ontario margins are low, perhaps because of the fierce competition in the Ontario food service establishment space. (See Chart 15.)

Chart 15

Food Service Establishments Operating Margin, by Province, 2013
(per cent of operating revenue)



Source: Statistics Canada, CANSIM table 355-0008.

CHAPTER 3

Element: Healthy Food and Diets

Chapter Summary

- Many Canadians consume more calories and sodium than they need, and do not consume enough fruits and vegetables, fish and shellfish, or carbohydrates.
- Canadians across all provinces are consuming less than, or are close to meeting, the World Health Organization's 10 per cent recommended limit for daily dietary energy intake from added sugar and saturated fat.
- Newfoundland has the highest rates of type 2 diabetes, obesity, and high blood pressure/diagnosed hypertension in addition to gastrointestinal disease prevalence.

This chapter focuses on several components of healthy food and diets—a key theme of the Canadian Food Strategy.[1] These components include daily dietary energy intake, food consumption, macronutrient and micronutrient intake, diet-related health conditions, and food literacy. Healthy food and diets are also on the minds of Canadians concerned with their weight, image, well-being, and diet-related health conditions—including eating disorders. As well, the long-term impact of unhealthy diets often leads to chronic health conditions such as cancer, heart diseases, hypertension, obesity, and type 2 diabetes. These health conditions cost Canada's health care system and economy billions of dollars annually.

Unhealthy diets also increase the risk of gastrointestinal diseases. In addition to impacting the lives of Canadians, according to the Canadian Digestive Health Foundation, digestive conditions also lead to an average of 13.4 missed days of work, per ailing person, per year.[2] These risks are compounded by sedentary lifestyles that are predominant in our society.[3]

Report card findings in this chapter show that Canadians tend to consume more calories than they need, especially males aged 14 to 18. Across Canada, average daily sodium intake in every province is at least 500 mg over the recommended 2,300 mg upper daily limit. Conversely, Canadians consume at least 3 to 5 servings fewer than the daily recommended intake of fruits and vegetables, and 1.4 and 2.8 servings less than the monthly recommended combined intake of fish and shellfish.[4]

1 Bloom, *From Opportunity to Achievement*.

2 Canadian Digestive Health Foundation, *Establishing Digestive Health*.

3 Statistics Canada, *Directly Measured Physical Activity of Adults, 2012 and 2013*.

4 Canadian Aquaculture Industry Alliance, *Farmed Seafood and Canadian Health*, 7; calculations by The Conference Board of Canada.

Many adults across Canada also fall below the recommended daily intake of carbohydrates. Vitamin A intake is below recommended levels for 29 to 68 per cent of men and 18 to 55 per cent of women. Inadequate vitamin D intake is common across Canada. Calcium intake levels are particularly concerning for women over the age of 70. Indeed, in most provinces, at least 40 per cent of women in this age group do not meet their recommended daily intake of calcium.

The impact of overconsumption has corresponding risks to personal health, weight gain, and wellness.

Sub-Element: Daily Dietary Energy Intake

Metric 16: Dietary Energy Intake

Most Canadians Consume Too Many Calories

Canada's Food Guide (CFG) recommends that sedentary men consume between 2,000 and 2,500 Calories per day; for women, it recommends between 1,550 and 1,900 Calories per day.[5] As well, Statistics Canada notes that only one in five Canadian adults meet the Canadian Society for Exercise Physiology's Canadian Physical Activity Guidelines.[6]

The impact of overconsumption is significant as it has corresponding risks to personal health, weight gain, and wellness. Of the various population cohorts, boys aged 14 to 18 perform poorly on daily dietary energy intake, consuming approximately 150 to more than 800 Calories over the Estimated Energy Requirement (EER).[7] Men aged 19 to 30 over-consume at slightly lower levels than their 14- to 18-year-old counterparts. However, overconsumption decreases further as Canadians become older. Indeed, among those aged 71 and older, men and women in most provinces and territories have daily dietary energy intakes at or below the EER.

Among adolescents aged 14 to 18 years, no provinces match Health Canada's guidelines for recommended daily intake of dietary energy (approximately 2,360 calories for boys and 1,750 calories for girls). (See charts 16a and 16b.) Boys in Nova Scotia and girls in Alberta get top marks as they come closest to meeting Health Canada's EER. However, teenagers in Quebec consume more calories than any other province. Overall, girls more closely respect recommended consumption levels.

5 These figures include individuals 14 years of age and older. Most Canadians live a sedentary lifestyle that "requires little physical movement," whether in individuals' daily routines or during leisure time. See Statistics Canada, *Canadian Health Measures Survey: Directly Measured Physical Activity of Canadians*; Canadian Society for Exercise Physiology, *Canadian Physical Activity Guidelines*.

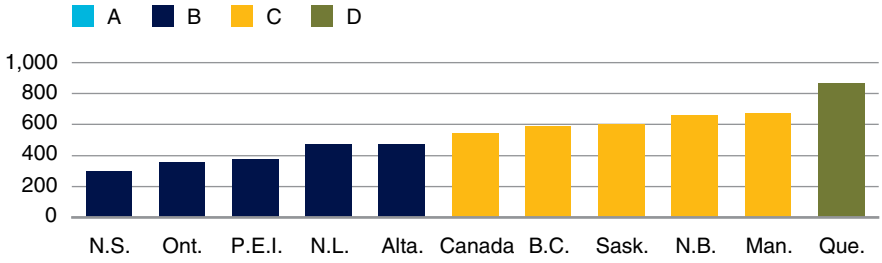
6 Statistics Canada, *Directly Measured Physical Activity of Adults*.

7 See requirements by age and sex. Health Canada, *Estimated Energy Requirements*.

Chart 16a

Daily Dietary Energy Intake Over Estimated Requirement, Boys Aged 14 to 18, 2004

(kcal/day)

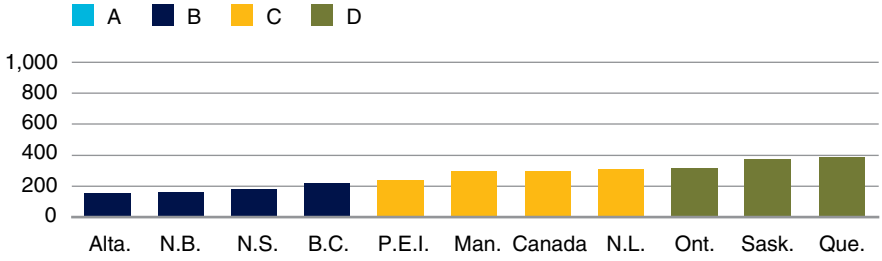


Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 13–26; Health Canada, *Estimated Energy Requirements*; calculations by The Conference Board of Canada.

Chart 16b

Daily Dietary Energy Intake Over Estimated Requirement, Girls Aged 14 to 18, 2004

(kcal/day)



Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 13–26; Health Canada, *Estimated Energy Requirements*; calculations by The Conference Board of Canada.

Men and women consume significantly less than the recommended amount of fruits and vegetables.

Sub-Element: Food Consumption

Canadians Consume Less Than Recommended Levels of Fruits, Vegetables, Fish, and Seafood

Fruit, vegetable, fish, and seafood consumption are proxy indicators of a healthy diet. Overall, Canadians consume at least three to five fewer servings of fruits and vegetables than the minimum level recommended by Canada's Food Guide.[8] In addition, data from Statistics Canada show that on a daily basis, Canadians eat more servings of vegetables than servings of fruit. Interestingly, information from Health Canada suggests that Canadians tend to meet adequate intake levels of Omega-3 fatty acids, which are commonly found in fish and seafood.[9] As this report card shows, however, Canadians do not meet fish and seafood intake guidelines recommended by Canada's Food Guide.[10]

Metric 17: Fruit and Vegetable Intake

Provinces and territories are evaluated on how closely they follow fruit and vegetable consumption guidelines in Canada's Food Guide (8 servings per day for Canadians aged 14 and older). All provinces received a D grade as none met the recommended guidelines. Men and women in all provinces consume significantly less than the recommended amount of fruits and vegetables (See charts 17a and 17b.) However, produce consumption is higher for women. Indeed, a 2013 review of produce consumption in Canada shows intake is lower for males, low income-education groups, baby boomers, and individuals who are single, smoke, have weak social interactions, and who live in households with no children.[11]

8 Health Canada, *Eating Well With Canada's Food Guide*, 1; Canadian Aquaculture Industry Alliance, *Farmed Seafood and Canadian Health*, 7; calculations by The Conference Board of Canada.

9 Health Canada, *Do Canadian Adults Meet Their Nutrient Requirements?* Health Canada, *Do Canadian Children Meet Their Nutrient Requirements?*

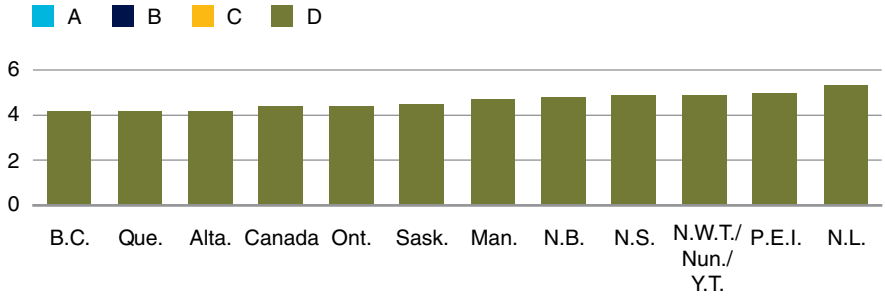
10 Health Canada, *Eating Well With Canada's Food Guide*, 1.

11 Le Vallée, *Programs, Policies, and Promotional Strategies*.

Chart 17a

Intake Below Recommended Daily Consumption of Fruits and Vegetables, Men, 2014

(number of servings)

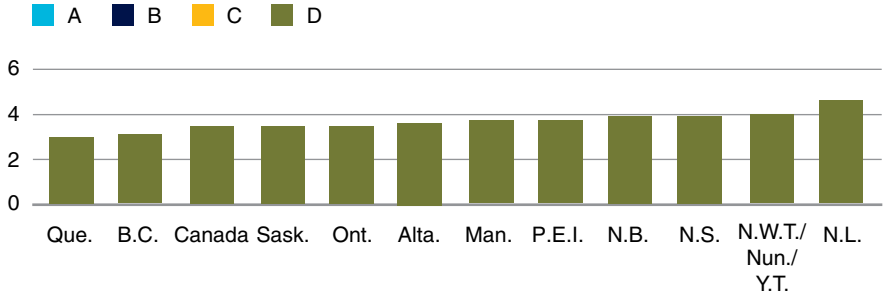


Source: Statistics Canada, *Canadian Community Health Survey 2014*.

Chart 17b

Intake Below Recommended Daily Consumption of Fruits and Vegetables, Women, 2014

(number of servings)



Source: Statistics Canada, *Canadian Community Health Survey 2014*.

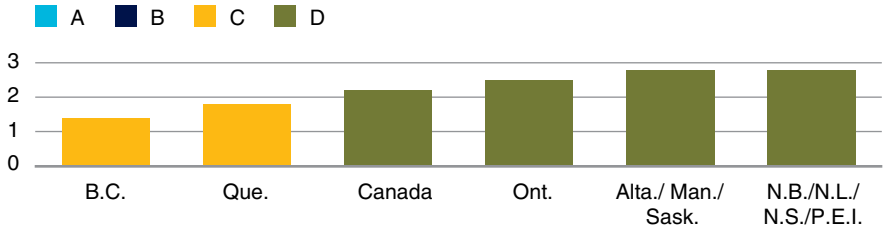
Metric 18: Fish and Seafood Intake

Canada's Food Guide recommends consuming two 75g fish and seafood servings per week, or roughly eight servings per month. Findings show no province meets the recommended guidelines. As the strongest performers, closest to recommended levels of per capita fish and seafood intake, British Columbia and Quebec receive C grades. (See Chart 18.)

Chart 18

Monthly Intake of Fish and Seafood Below Recommended Guidelines, 2011

(number of servings)



Sources: Canadian Aquaculture Industry Alliance, *Farmed Seafood and Canadian Health*, 7; calculations by The Conference Board of Canada.

Many provinces come close to meeting the WHO's 10 per cent recommendation on added sugar intake.

Sub-Element: Sodium, Carbohydrate, Saturated Fat, and Added Sugar Intake

Canadians Over-Consume Sodium But Match Closely Recommended Levels of Saturated Fat and Added Sugar

Previous Conference Board research notes that excessive consumption of some foods and ingredients—sodium, sugar, red and processed meat, alcohol, saturated fat, and trans fat—can increase the risk of developing chronic diseases.[12] On sodium consumption, no Canadian province meets, or is below, the upper limit of 2,300 mg of sodium per day, the approximate sodium content in a teaspoon of table salt.[13]

Carbohydrates are important sources of energy. Health Canada recommends that Canadian adults 19 years of age and older obtain between 45 and 65 per cent of their total daily energy intake from carbohydrates. In contrast to sodium intake, however, this report card shows that many Canadian adults do not consume enough carbohydrates.[14]

Regarding saturated fat, many provinces come close to meeting the World Health Organization's (WHO) recommendation that saturated fats constitute no more than 10 per cent of total dietary energy intake.[15] Similarly, many provinces come close to meeting the WHO's 10 per cent recommendation on added sugar intake.[16]

12 The Conference Board of Canada, *Improving Health Outcomes*.

13 Health Canada, *Sodium in Canada*.

14 Data for Nova Scotia and Newfoundland and Labrador (men), and for Prince Edward Island, New Brunswick, and Manitoba (women) were suppressed due to concerns over data quality. See Statistics Canada, *Nutrient Intakes From Food, Volume. 1, 56–59, 62*.

15 World Health Organization, *Healthy Diet*.

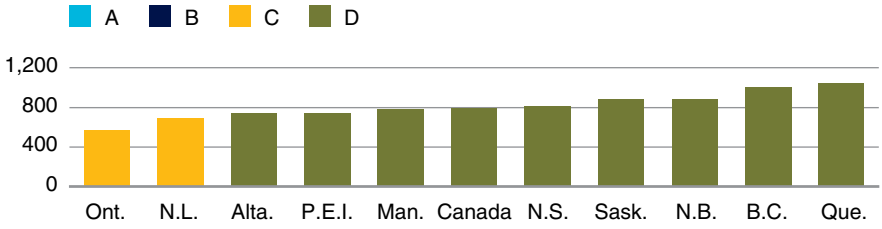
16 World Health Organization, *WHO Calls on Countries to Reduce Sugars Intake*.

Metric 19: Sodium Intake

Based upon the upper daily limit of 2,300 mg of sodium per day, the best performers, Ontario and Newfoundland, exceed the limit by 571 milligrams and 694 milligrams per day, respectively, and receive a C. All other provinces receive a D given their excess intake above the recommended upper daily limit. (See Chart 19.)

Chart 19

Sodium Intake, Milligrams Over the Daily Upper Limit, 2004
(mg per person, per day)



Sources: Statistics Canada, *Chart 4: Average Daily Sodium Intake*; calculations by The Conference Board of Canada.

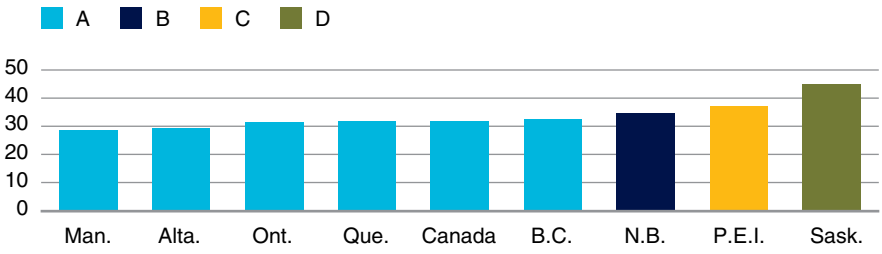
Metric 20: Carbohydrate Intake

In Manitoba and Alberta, men have the lowest percentage under the acceptable range of carbohydrate intake, and those provinces receive an A. Saskatchewan lags other provinces, and receives a D. For women, Ontario, Saskatchewan, and Newfoundland and Labrador have the lowest percentage under the acceptable daily intake, and receive an A. (See charts 20a and 20b.)

Chart 20a

Men Aged 19+, Below Acceptable Macronutrient Distribution Range of Carbohydrates, 2004

(per cent)

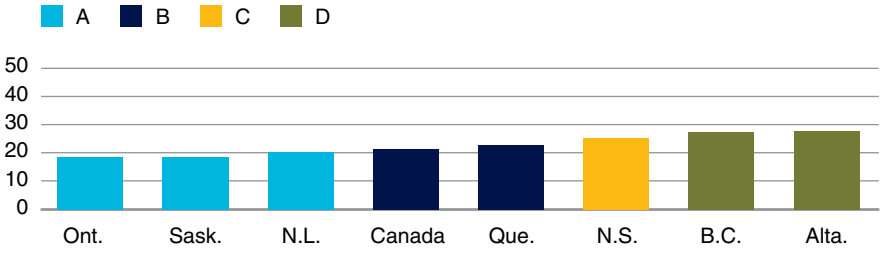


Source: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 73–85.

Chart 20b

Women Aged 19+, Below Acceptable Macronutrient Distribution Range of Carbohydrates, 2004

(per cent)



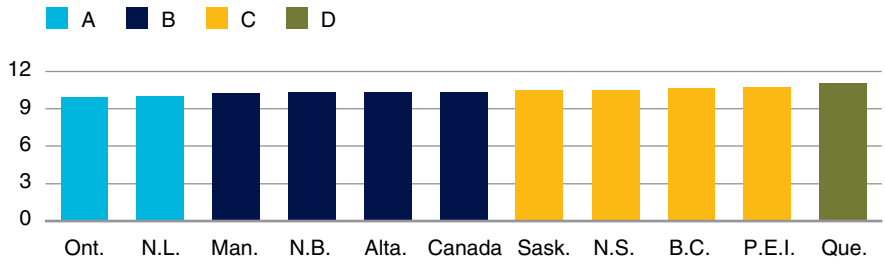
Note: Data for P.E.I. are not available
Source: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 73–85.

Metric 21: Saturated Fat Intake

Canada is a top international performer on saturated fat intake. At slightly more than 10 per cent, it ranks third out of 14 peer countries.[17] As the only two provinces to meet the World Health Organization's recommendation on saturated fat intake, Ontario and Newfoundland and Labrador receive an A. (See Chart 21.)

Chart 21

Daily Dietary Energy Intake From Saturated Fats, by Province, 2004
(per cent)



Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 70–82; Statistics Canada, *Canadian Community Health Survey 2004, Cycle 2.2, Nutrition.*

17 Le Vallée and Grant, *Canada's Food Report Card 2015*, 44.

Metric 22: Added Sugar Intake

Provincially comparable data are not available for consumption of added sugars. This report card uses 2004 data on total sugar intake to estimate consumption of added sugar.[18] Estimates of calories from added sugar assume a maximum of four Calories per gram of sugar.[19] We then compare intake to an average daily dietary intake of 2,420 Calories for men and 1,775 Calories for women.

Canada ranks 12th out of 17 peer countries on added sugar intake.[20] In most provinces, men are A performers for consuming less than the WHO's recommendation of less than 10 per cent of total daily dietary energy intake from added sugar.[21] Women in four provinces meet the WHO's recommendation, and receive an A. (See charts 22a and 22b.)

18 This report card assumes that approximately 50 per cent of total sugar intake is derived from added sugar.

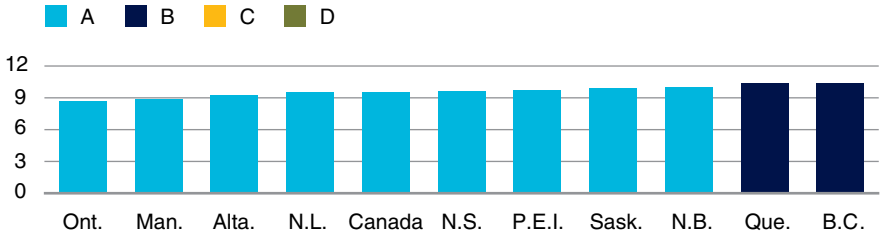
19 Canadian Sugar Institute, *Nutritional Value*.

20 Le Vallée and Grant, *Canada's Food Report Card 2015*, 45.

21 World Health Organization, *WHO Calls on Countries to Reduce Sugars Intake*.

Chart 22a

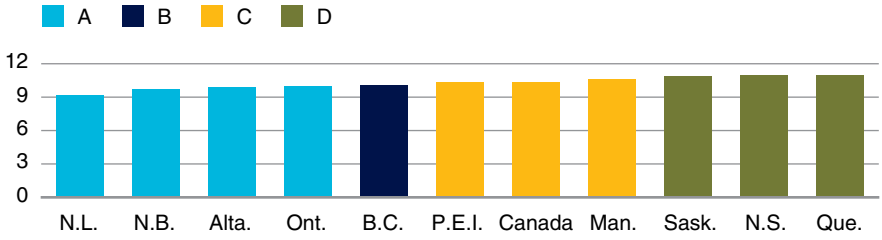
Estimated Intake of Added Sugar as Percentage of Daily Dietary Energy Intake, Men, 2004
(per cent)



Sources: Statistics Canada, *Nutrient Intakes From Food*, *Volume 3*, 158–170; Nutrition and Health, *Estimated Intakes of Added Sugars in Canada*, 4; calculations by The Conference Board of Canada.

Chart 22b

Estimated Intake of Added Sugar as Percentage of Daily Dietary Energy Intake, Women, 2004
(per cent)



Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 3*, 158–170; Nutrition and Health, *Estimated Intakes of Added Sugars in Canada*, 4; calculations by The Conference Board of Canada.

Sub-Element: Micronutrients: Vitamins A and D, Iron, Calcium Intake

Many Canadians Deficient in Micronutrients

Micronutrients—such as vitamins A and D, iron, and calcium—are important components of dietary health. Vitamin A helps maintain immune and reproductive systems, eyesight, and cellular communication.[22] However, many Canadians do not consume enough vitamin A. Vitamin D helps the body absorb calcium and maintain healthy teeth, bones, and body function. Iron assists with metabolism, development, and cellular functioning, and is commonly found in meat and seafood.[23] In Canada, more women than men have inadequate iron intakes.

Calcium helps maintain bone strength. As they age, Canadians need more calcium-rich foods, many of which include dairy products.[24] Of particular significance, Canada's population continues to age, making calcium and vitamin D intake monitoring essential.

22 National Institutes of Health, *Vitamin A*.

23 National Institutes of Health, *Iron*.

24 Osteoporosis Canada, *Calcium*.

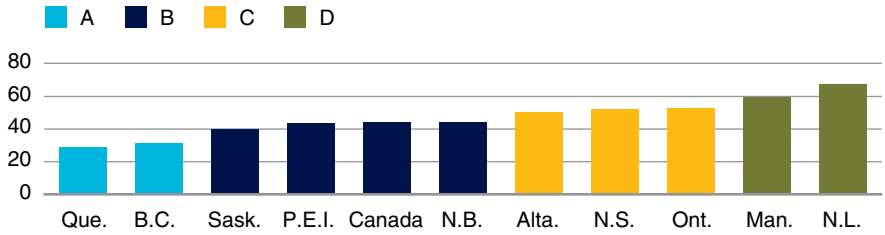
Metric 23: Vitamin A Intake

For vitamin A intake, men and women in Quebec get top marks, as do men in British Columbia. Conversely, inadequate intake levels of vitamin A are highest among men and women in Newfoundland and Labrador. (See charts 23a and 23b.)

Chart 23a

Men Aged 19+, Below Estimated Average Requirement of Vitamin A, 2004

(per cent)

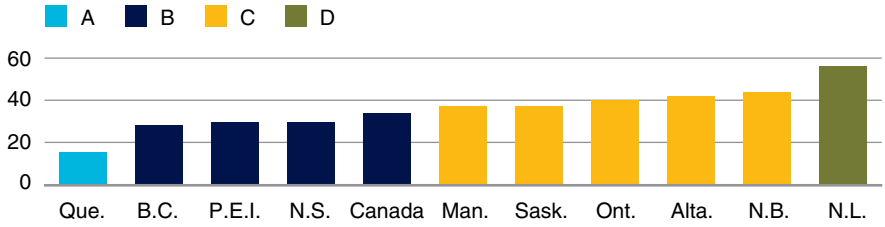


Source: Statistics Canada, *Nutrient Intakes From Food, Volume 1,* 139–152.

Chart 23b

Women Aged 19+, Below Estimated Average Requirement of Vitamin A, 2004

(per cent)



Source: Statistics Canada, *Nutrient Intakes From Food Volume 1*, 139–152.

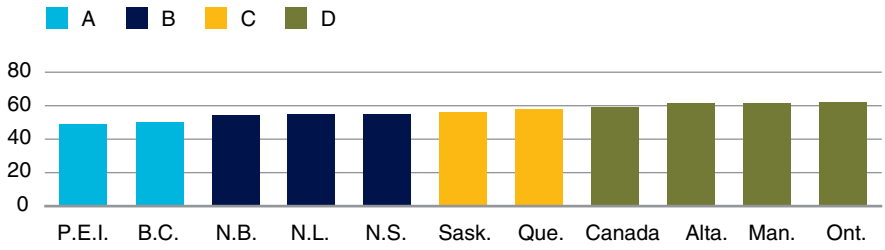
Metric 24: Vitamin D Intake

We show results for adults aged 19 years and older, but the story is quite similar across all age groups in Canada. The average intake is below the recommended daily allowance (i.e., between 50 and 70 per cent) and is higher among women.[25] (See charts 24a and 24b.)

Chart 24a

Vitamin D Intake Below Recommended Daily Allowance, Men Aged 19 and Over, 2004

(per cent, average)

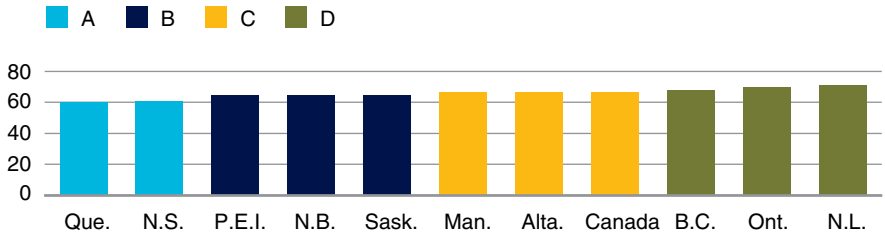


Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 2*, 176–188; Health Canada, *Vitamin D and Calcium*; calculations by The Conference Board of Canada.

Chart 24b

Vitamin D Intake Below Recommended Daily Allowance, Women Aged 19 and Over, 2004

(per cent, average)



Sources: Statistics Canada, *Nutrient Intakes From Food, Volume 2*, 176–188; Health Canada, *Vitamin D and Calcium*; calculations by The Conference Board of Canada.

25 These results only consider vitamin D consumed through food. Public data that include additional vitamin D through sunlight were not available by province.

Metric 25: Iron Intake

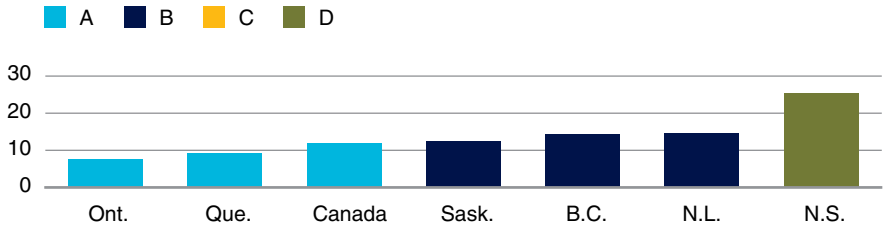
Iron Intake of Concern for Canadian Women

Across Canada, fewer than 3 per cent of men have inadequate iron intake levels. Levels are much higher for women. For example, inadequate iron intake levels for females aged 14 to 18 range from 10 per cent in Quebec and Ontario to more than 25 per cent in Nova Scotia. Performance also changes by age group. Women in Prince Edward Island lead other provinces with 10 per cent in the 19 to 30 age group, while over 25 per cent in Ontario show inadequate iron intake levels. Quebec, Manitoba, and British Columbia lead other provinces in the 31 to 50 age group. (See charts 25a, b, and c.)

Chart 25a

Women Aged 14 to 18, Below Adequate Iron Intake Level, 2004

(per cent)

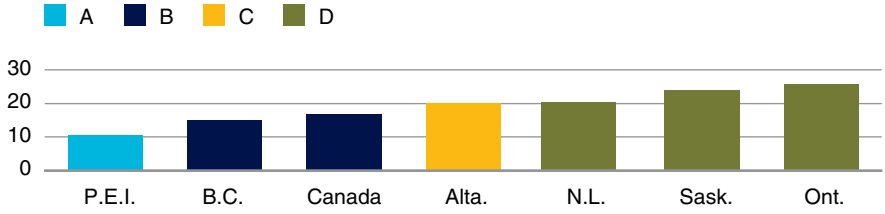


Source: Statistics Canada, *Nutrient Intakes From Food, Volume 2*, 17–30.

Chart 25b

Women Aged 19 to 30, Below Adequate Iron Intake Level, 2004

(per cent)

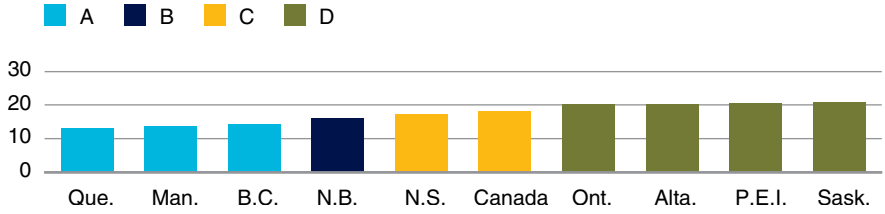


Source: Statistics Canada, *Nutrient Intakes From Food, Volume 2*, 17–30.

Chart 25c

Women Aged 31 to 50, Below Adequate Iron Intake Level, 2004

(per cent)



Source: Statistics Canada, *Nutrient Intakes From Food, Volume 2*, 17–30.

Metric 26: Calcium Intake

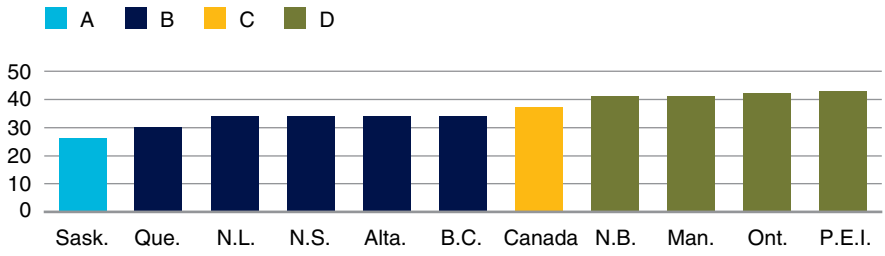
Older Canadians Fall Behind on Calcium Intake, Particularly Women

Among men aged 71 and over, Saskatchewan leads the rest of Canada as the only province to receive an A for the proportion of its population with adequate calcium intake. (See Chart 26a.) Among women, however, all provinces except Nova Scotia receive a D. (See Chart 26b.)

Chart 26a

Average Percentage Below Daily Adequate Intake of Calcium, Men Aged 71+, 2004

(per cent)

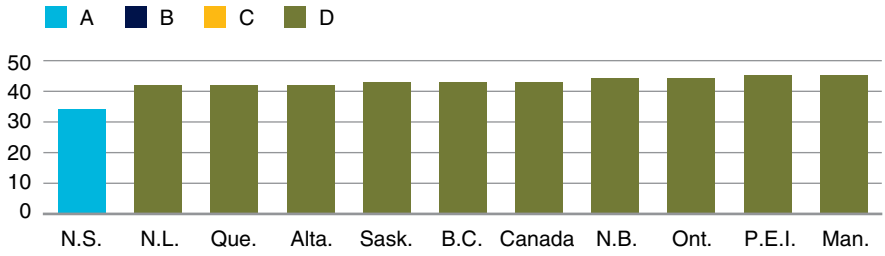


Source: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 167–180.

Chart 26b

Average Percentage Below Daily Adequate Intake of Calcium, Women Aged 71+, 2004

(per cent)



Source: Statistics Canada, *Nutrient Intakes From Food, Volume 1*, 167–180.

Eating disorders are generally more prevalent among women than men.

Sub-Element: Chronic Diet-Related Health Conditions

Diet-Related Health Conditions Have Significant Social and Economic Impacts

Canadians suffer from a variety of diet-related health conditions. According to the Government of Canada, there are over 60,000 new cases of type 2 diabetes every year.[26] Obesity numbers are also on the rise: one estimate is that more than 48,000 Canadians die each year from "conditions linked to excess weight."[27] Approximately 13 per cent of children aged 5 to 12 are also obese.[28]

Diet-related health conditions also include anorexia nervosa, bulimia nervosa, and other eating disorders. The National Eating Disorder Information Centre notes that eating disorders are generally more prevalent among women than men.[29] Gastrointestinal (GI) diseases also have significant impacts on Canadians' lives. The most common GI diseases in Canada include lactose intolerance, gastroesophageal reflux disease, irritable bowel syndrome, stomach ulcers, and pancreatitis. And while many Canadians have become increasingly concerned about consuming too much gluten, in 2009 only 330,000 Canadians, or less than 1 per cent, suffer from celiac disease.[30] GI diseases have a significant impact on productivity, workforce participation, and family and daily life. They also add an estimated $2.6 billion in annual treatment costs.[31]

26 Government of Canada, *Type 2 Diabetes*.

27 The Standing Senate Committee on Social Affairs, Science and Technology, *Obesity in Canada*, iv.

28 Ibid., 1.

29 National Eating Disorder Information Centre, *Statistics*.

30 Canadian Digestive Health Foundation, *Establishing Digestive Health*, 7.

31 Ibid., 13.

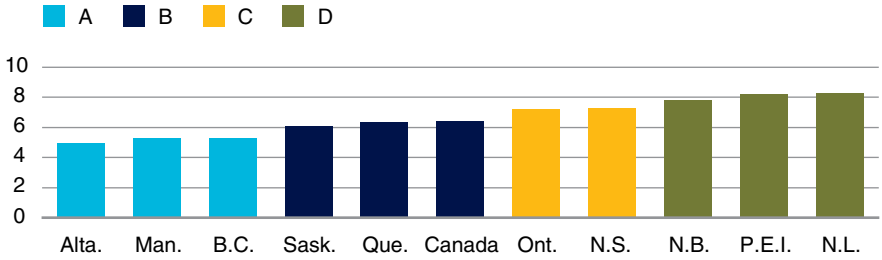
Metric 27: Type 2 Diabetes

Alberta, Manitoba, and British Columbia lead the country with the lowest rates of type 2 diabetes, while Atlantic Canada suffers from the highest rates in Canada. (See Chart 27.)

Chart 27

Rate of Type 2 Diabetes, 2014

(percentage of population)



Source: Statistics Canada, *Canadian Community Health Survey 2014.*

Metric 28: Obesity

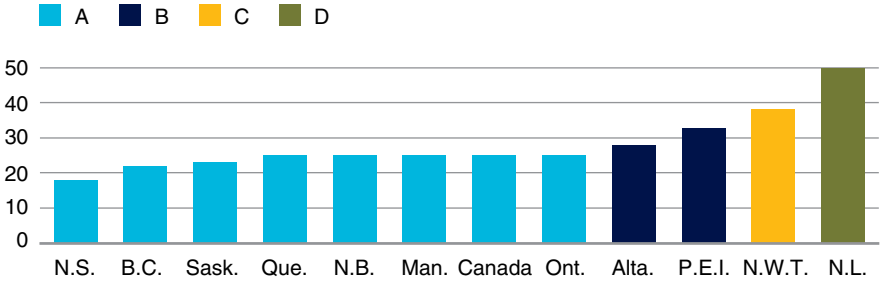
Obesity Rates Highest in Newfoundland and Labrador

British Columbia receives top marks on all four obesity indicators, with the lowest rates of obesity among men and women aged 18 and over. And, the province is the second-best performer among men and women aged 12 to 17. Quebec also receives top marks, partly due to strong performance among men and women aged 18 or over. However, obesity is of concern in Newfoundland and Labrador, which performed poorly across all age categories. (See charts 28a, b, c, and d.)

Chart 28a

Rate of Obesity, Male Youth Aged 12 to 17, 2014

(per cent)

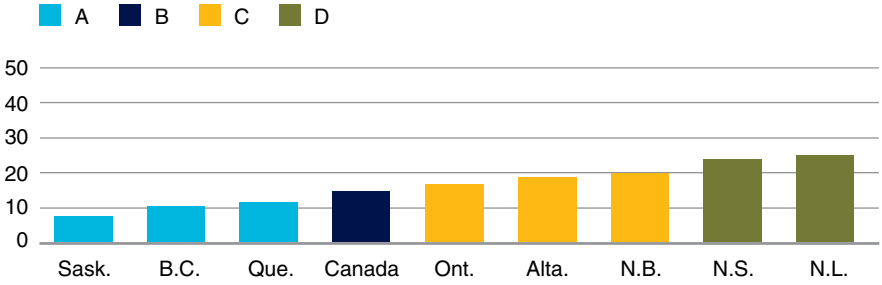


Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

Chart 28b

Rate of Obesity, Female Youth Aged 12 to 17, 2014

(per cent)

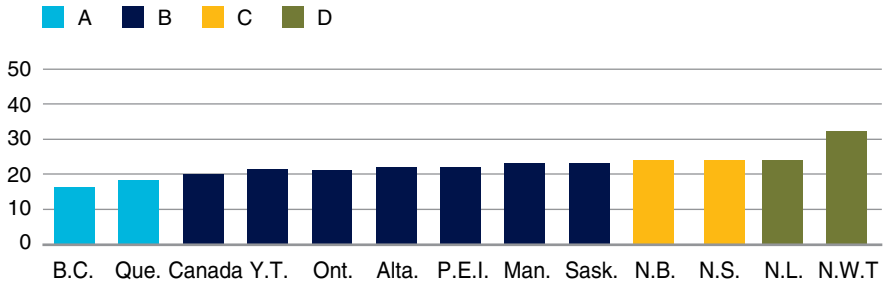


Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

Chart 28c

Rate of Obesity, Male Adults Aged 18 and Over, 2014

(per cent)

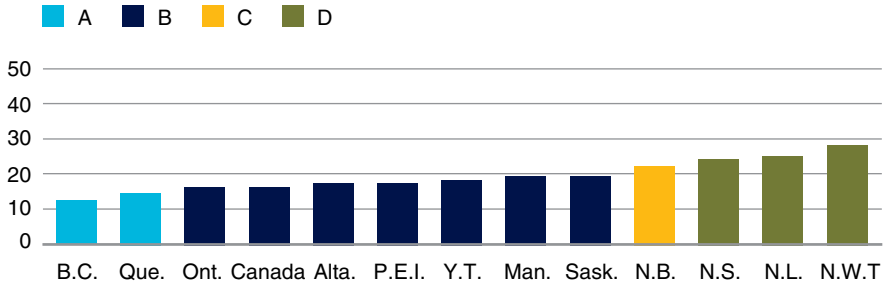


Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

Chart 28d

Rate of Obesity, Female Adults Aged 18 and Over, 2014

(per cent)



Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

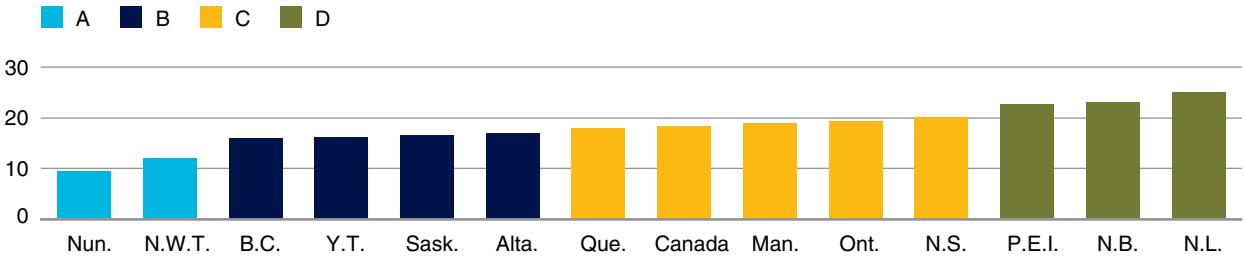
Metric 29: High Blood Pressure

High blood pressure and hypertension are leading risk factors for stroke and heart disease.[32] Healthy eating through diets higher in fruits and vegetables and lower in sodium, in addition to physical activity, can reduce this risk. Nunavut and the Northwest Territories have the lowest prevalence of high blood pressure among all provinces and territories. At more than 20 per cent, Prince Edward Island, New Brunswick, and Newfoundland and Labrador receive D grades. (See Chart 29.)

Chart 29

Rate of High Blood Pressure, 2014

(per cent of population)



Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

32 Heart and Stroke Foundation, *Getting Your Blood Pressure in Check*.

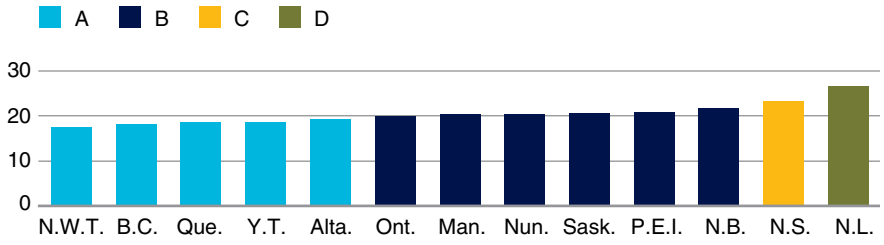
Metric 30: Diagnosed Hypertension

Over 20 per cent of Canadians suffer from hypertension. (See Chart 30.) The condition increases the risk of heart attack and stroke, and increases the burden on Canada's health care system through doctor's visits, medication, and laboratory testing. In 2003, costs for these services totalled more than $2.3 billion.[33] Reducing sodium intake and leading a healthy, active lifestyle can help decrease the incidence of hypertension, prevent cardiovascular disease, and generate health care savings.[34]

Chart 30

Rate of Diagnosed Hypertension, 2014

(per cent of population)



Source: Robitaille and others, "Diagnosed Hypertension in Canada", E54.

33 Public Health Agency of Canada, *Hypertension Facts and Figures*.

34 Mayo Clinic, *10 Ways to Control High Blood Pressure*.

Atlantic Canadians have the highest rates of GI diseases.

Metric 31: Gastrointestinal Diseases

Gastrointestinal Disease Prevalence Highest in Atlantic Canada

Provincially comparable data are not available for many common gastrointestinal (GI) diseases. This report card evaluates provincial and territorial performance on GI diseases for which data are available. To calculate the weighted grade, a province or territory's performance on the four diseases shown here is weighted according to the number of Canadians affected by each disease.

All provinces and territories have rates of irritable bowel syndrome, inflammable bowel syndrome, and stomach ulcers of less than 4 per cent. For colon cancer, the number of new cases per 100,000 people ranges from 28.9 (in Alberta) to 73.9 (in Newfoundland and Labrador). Overall, Atlantic Canadians have the highest rates of GI diseases. Newfoundland and Labrador performed poorly relative to the rest of Canada, on each GI disease, and receives an overall D grade. (See Table 16.)

Table 16

Prevalence of Selected Gastrointestinal Diseases, 2013 and 2014

	Irritable bowel syndrome (per cent of population, 2014)	Inflammable bowel syndrome (per cent of population, 2014)	Colon cancer (number of new cases per 100,000 population, 2013)	Stomach ulcers inflammable bowel syndrome (per cent of population, 2014)	Weighted grade
Man.	2.0	0.5	41	1.8	A
Alta.	1.9	0.66	29	2.4	A
Que.	1.7	0.59	48	2.2	A
Y.T./N.W.T./Nun.	1.7	0.91	30	3.2	A
B.C.	2.3	0.94	42	2.2	A
Canada	2.3	0.73	42	2.5	B
Ont.	2.5	0.71	39	2.8	B
Sask.	2.8	0.72	49	1.8	B
N.S.	3.7	0.75	55	2.3	C
P.E.I.	3.3	1.11	58	2.7	C
N.B.	3.4	1.36	52	3.6	C
N.L.	3.7	1.42	74	3.4	D

Sources: Statistics Canada, *Canadian Community Health Survey 2014*; Statistics Canada, CANSIM table 051-0001; Statistics Canada, CANSIM table 103-0550; calculations by The Conference Board of Canada.

Sub-Element: Alcohol Consumption

Metric 32: Heavy Drinking

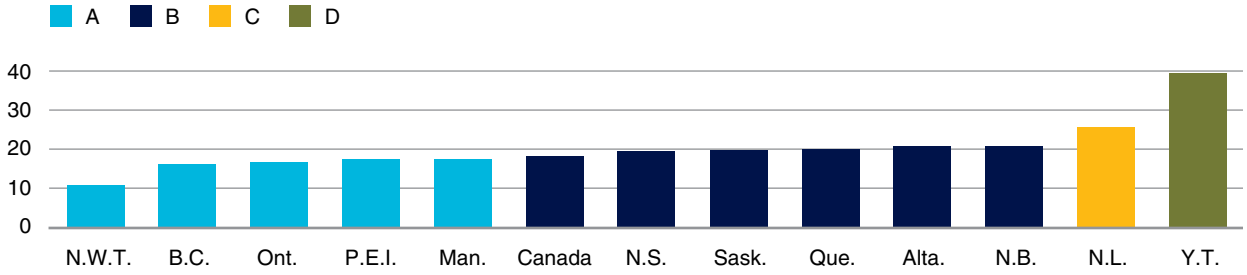
Alcohol Consumption of Concern in Yukon

Dr. Gregory Taylor, Canada's Chief Public Health Officer, estimates that in 2013, nearly 80 per cent of Canadians 15 years of age or older consumed alcohol in the past year.[35] He also notes that many Canadians increase their risk of developing chronic health issues (such as liver cirrhosis or cancer) and suffer injuries by over-consuming alcohol.[36]

It is important to drink responsibly, as excessive alcohol consumption can have serious health and social consequences. Statistics Canada defines heavy drinking as "males who reported having five or more drinks, or women who reported having four or more drinks, on one occasion, at least once a month in the past year."[37] The Northwest Territories have the lowest rate of heavy drinking among Canada's provinces and territories, while Yukon has a significantly higher rate of heavy drinking than the rest of Canada. (See Chart 31.)

Chart 31

Prevalence of Heavy Drinking, Population Aged 12 and Over, 2014
(per cent of population)



Sources: Statistics Canada, CANSIM table 105-0501; Statistics Canada, CANSIM table 051-0001.

35 Taylor, *Alcohol Consumption in Canada*, 5.
36 Ibid., 3.
37 Statistics Canada, CANSIM table 105-0501.

Metric 33: Mortality From Alcoholic Liver Disease

Mortality Rates Highest in Yukon and British Columbia

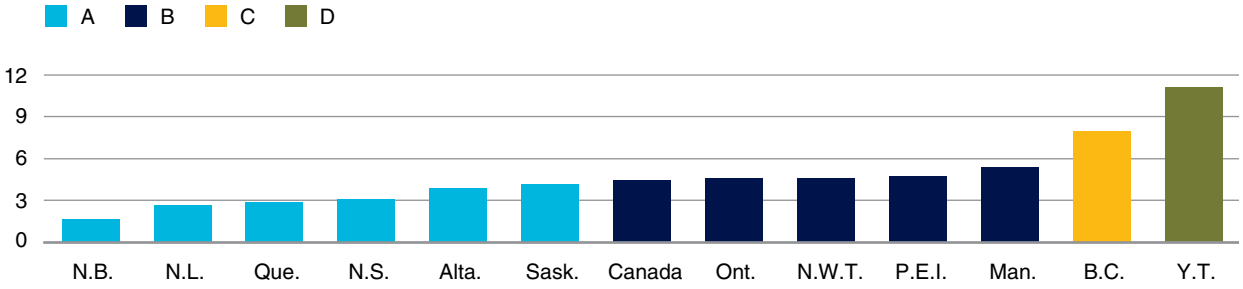
Alcoholic liver disease is the result of excessive alcohol consumption. People may suffer from either alcoholic hepatitis or cirrhosis. It is one of several significant liver diseases in Canada responsible for morbidity and mortality. In 2002, estimates show that alcohol abuse cost Canadians approximately $14.6 billion, which accounted for 36.6 per cent of the total costs of substance abuse. Alcohol-related costs include $7.1 billion for lost productivity due to illness and premature death; $3.3 billion in direct health care costs; and $3.1 billion in law enforcement costs.[38]

New Brunswick has the lowest mortality rates from alcoholic liver disease, and earns an A, while Yukon performs poorly compared to its provincial and territorial peers and receives a D. (See Chart 32.)

Chart 32

Age-Standardized Mortality Rate From Alcoholic Liver Disease, 2012

(number of deaths per 100,000 persons)



Source: Statistics Canada, CANSIM table 102-0552.

38 Rehm and others, *The Costs of Substance Abuse in Canada 2002*, 9.

Sub-Element: Food Literacy

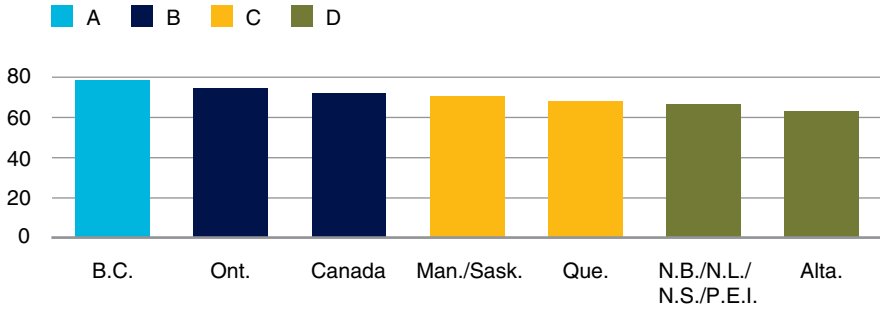
Metric 34: Reading Food Labels While Shopping

Most Canadian Households Read Nutritional Content Food Labels While Shopping

Food and nutrition knowledge is a vital component of a healthy diet. Last year, we found that fewer than half of Canadians are adequately food-literate.[39] This knowledge could be improved, especially by following Canada's Food Guide recommendations on fruit and vegetable consumption, properly interpreting food labels, planning meals more effectively, and encouraging children to assist in preparing family meals.[40]

Provincial comparisons are difficult due to a lack of adequate data. However, The Conference Board of Canada's 2011 Household Food Survey shows that most Canadians look at nutritional content food labels while shopping and make food choices accordingly, but that there is room for improvement. British Columbia is awarded an A with the highest percentage (79 per cent) of households that always or often read nutritional content food labels while shopping. (See Chart 33.)

Chart 33
Households That Always or Often Look at Food Labels While Shopping, 2011
(per cent)



Source: The Conference Board of Canada, Household Food Survey, 2011.

39 Le Vallée and Grant, *Canada's Food Report Card 2015*, 50.
40 Howard, Edge, and Munro, *What's to Eat?*

CHAPTER 4

Element: Food Safety

Chapter Summary

- Approximately 4 million Canadians suffer from food-borne illnesses acquired within Canada ever year. These illnesses cause 240 related deaths annually.
- Food-borne illness incidence is highest in Prince Edward Island, while food recalls per 100,000 inhabitants were lowest in Quebec, relative to its peers.
- Poultry condemnation rates are highest in British Columbia and Alberta, while Quebec and Eastern Canada top the hog and cattle condemnation rates.

Food safety relates to risks from various hazards to human health and the environment.

In 2014, The Conference Board of Canada developed a global food safety ranking of 17 OCED countries. The global ranking evaluates common elements among national food safety systems and is illustrated by 10 indicators.[1] Both Canada and Ireland received high marks relative to their peers. In addition, the global ranking points to areas where countries can improve their respective food safety performance. For Canada, such areas include additional reporting on chemical risks in food consumption, more frequent nutrition and dietary studies, as well as additional improvements to traceability and radionuclide standards.

In essence, food safety is a function of the ways that food, commodities, animals, and related products are grown, handled, transformed, distributed, prepared, stored, and cooked along the supply chain to minimize or eliminate risks from various hazards to human health and the environment. Food safety relates to exposure to these risks and how they are managed and communicated.[2]

This chapter covers metrics on incidences of reported food-borne illness, food recalls, and animal welfare. Other worthy food safety metrics that merit future study—data permitting—may include chemical risk and exposure, assurance schemes, inspection ratios, audits, compliance, labelling, and food safety education programs. These metrics will help enhance our understanding of Canada's domestic food safety performance.

1 Le Vallée and Charlebois, *2014 World Ranking*.

2 Origins, trade, hygiene, safe handling practices, labelling, ingredients, inspections, certification, regulatory compliance, traceability, public and private standards, recalls, and other elements are constituents of the food safety system.

Sub-Element: Microbial Risk

Metric 35: Incidences of Reported Food-Borne Illness

Incidence of Food-Borne Illness Highest in Prince Edward Island

Food poisoning hazards include biological pathogens (e.g., *Salmonella*, *E. coli*, *Listeria*, and *Campylobacter*); chemical hazards (e.g., concentrations of pesticides above safe limits); and allergens (e.g., nut and seafood allergies). While food-borne illnesses are often underreported and exact figures remain unknown, the Public Health Agency of Canada estimates there are 4 million annual cases of domestically acquired food-borne illnesses in Canada, causing 240 deaths per year.[3]

Table 17 highlights data on the incidence of illness due to four key biological pathogens for Canada. Canada's National Enteric Surveillance Program (NESP) provides incidences that reflect the true rates of *Salmonella*, *E. coli*, and *Listeria monocytogenes*. However, as the bacterial pathogen *Campylobacter* is not routinely reported, our results are based on notifiable disease counts that were collected. Table 17 shows that, in 2014, the incidence of reported food-borne illness was highest in Prince Edward Island and lowest in Newfoundland and Labrador, followed by Saskatchewan.

3 Thomas and others, "Estimates of the Burden of Foodborne Illness in Canada," 644.

Table 17

Incidences of Reported Illness by Food-Borne Pathogen per 100,000 Inhabitants, 2014

Province	*Campylobacter spp.*	Grade	*Salmonella spp.*	Grade	*E. coli O157*	Grade	*Listeria*	Grade	Score
B.C.	33.6	D	26.4	D	1.18	A	0.39	B	Average
Alta.	23.7	C	24.3	D	4.49	C	0.24	A	Average
Sask.	16.7	B	16.3	A	0.36	A	0.18	A	Superior
Man.	13.0	A	19.5	B	1.71	B	0.23	A	Superior
Ont.	27.9	C	23.4	C	0.84	A	0.33	B	Average
Que.	35.6	D	17.5	A	0.64	A	0.56	D	Average
N.B.	30.4	D	24.5	D	0.40	A	0.40	B	Average
P.E.I.	28.0	C	23.2	C	6.14	D	0.68	D	Poor
N.S.	19.2	B	22.6	C	0.95	A	0.42	B	Superior
N.L.	7.6	A	16.8	A	0.19	A	0.19	A	Superior
Mean national count	145,350		87,510		12,827		178		
Deaths per year	5		17		8		35		240 total
Food-borne acquired	68 per cent		80 per cent		76 per cent		84 per cent		
Share of overall FBI	8 per cent		5 per cent		1 per cent		<1 per cent		

Notes: FBI = food-borne illness. Grade and score calculations by The Conference Board of Canada.
Sources: Thomas and others; Public Health Agency of Canada; BC Centre for Disease Control; Alberta Health; Saskatchewan Ministry of Health; Manitoba Health; Public Health Ontario; Government of New Brunswick; Government of Prince Edward Island; Government of Nova Scotia; Government of Newfoundland and Labrador.

Sub-Element: Food Recalls

The food system's complexity provides a challenging and changing food safety risk environment. When outbreaks occur, particularly high-profile outbreaks, the consequences can be very serious for consumers. In addition, a food business can experience reduced sales, recall costs, and lower consumer confidence. Impacts can extend across an industry subsector, and could include businesses with good practices that happen to produce the same foods. In extreme cases, outbreaks can undermine the trust of Canadian consumers and trading partners, harm Canada's food brands, and reduce Canada's competitiveness in provincial and global markets. For instance, in its report *Benchmarking for Success*, Deloitte found that "83 per cent of consumers can name a product that was recalled in the last two years because of safety concerns"; and 57 per cent "have stopped eating—either temporarily or permanently—a particular food because of a recall."[4]

4 Deloitte, *Benchmarking for Success*, 20.

Metric 36: Recalls per 100,000 Inhabitants

A more detailed examination and assessment of Canada's food safety system, structure, food recalls, and performance is detailed in The Conference Board of Canada's Centre for Food in Canada's (CFIC) 2012 report on improving food safety in Canada.[5] Compared with its international peers, Canada's food safety system is relatively effective.[6] Table 18 examines the domestic 2015 food recall counts attributed to each province in the Canadian Food Inspection Agency's (CFIA) listing of all recalls and allergy alerts. Counts exclude national food recalls that allocate distribution equally. Food recall compilations in Table 18 show Quebec leading in food safety performance.

Table 18
Food Recalls per 100,000 Inhabitants, 2015

Province/territory	Number of recalls	Recalls per 100,000 people	Grade
Que.	91	1.1	A
Ont.	190	1.38	A
Alta.	111	2.65	B
B.C.	184	3.93	C
N.B./N.L./N.S./P.E.I.	120	5.06	D
Man.	66	5.1	D
Sask.	59	5.2	D

Note: Food recall numbers by province do not include recalls listed by CFIA as national, possibly national, or not specified. For instance, the 82 national recalls were not attributed to each province in the above compilations.
Sources: CFIA, *Complete Listing of All Recalls and Allergy Alerts*; Statistics Canada, CANSIM table 051-0001; calculations by The Conference Board of Canada.

5 Munro, Le Vallée, and Stuckey, *Improving Food Safety in Canada*.
6 Le Vallée and Charlebois, *2014 World Ranking*.

Animal health conditions during transport result in high numbers of animal condemnations before slaughter.

Sub-Element: Animal Welfare

Animal welfare is included in this section because it plays a critical role in food safety and human health. Several animal diseases are known to cause harm to human consumers, including salmonellosis, brucellosis, and Bovine Spongiform Encephalopathy (BSE)—also known as mad cow disease.[7]

Each year, millions of animals are condemned before entering slaughterhouses and processing plants, either because they die during transport or develop health conditions that make them unfit for human consumption. In 2015, more than 45 million chickens were condemned before slaughter, as were approximately 1.5 million turkeys. The same year saw approximately 1.4 million hogs and 170,000 cattle condemned before slaughter.[8]

7 European Food Safety Authority, *Animal Health*.

8 Canadian Food Inspection Agency, *Poultry Condemnation Report*; Canadian Food Inspection Agency, *Red Meat Condemnation Report*.

Metric 37: Animal Condemnations

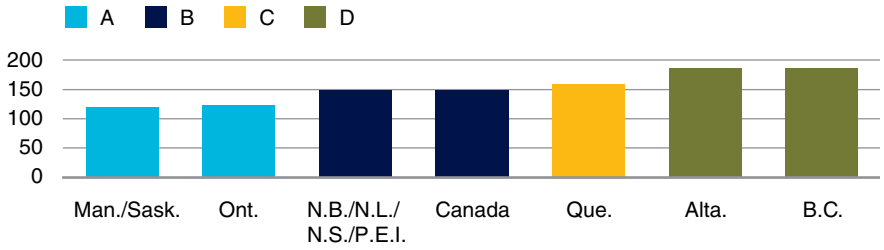
Poultry Condemnation Rates Highest in West; Eastern Canada Tops Hog and Cattle Condemnation Rates

Animal health conditions and deaths during transport result in high numbers of animal condemnations before slaughter. Saskatchewan and Manitoba (combined) had the lowest chicken and turkey condemnation rates in Canada, while British Columbia and Alberta have the highest rates. (See charts 34a and 34b.) On hog and cattle condemnations, the Western provinces have the fewest condemnations, whereas Quebec and Atlantic Canada lag their provincial counterparts with a D in both categories. (See charts 34c and 34d.)

Chart 34a

Rate of Chicken Condemnation, 2015

(number condemned per 10,000 slaughtered)

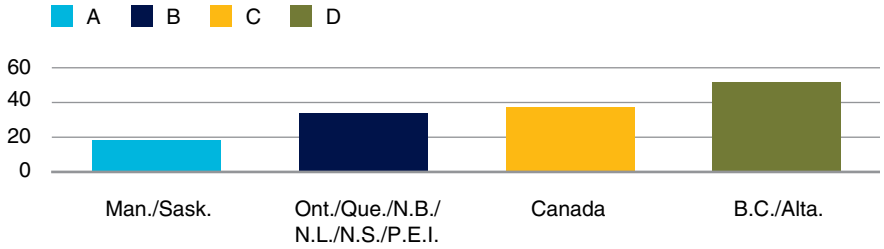


Source: Canadian Food Inspection Agency, *Poultry Condemnation Report.*

Chart 34b

Rate of Turkey Condemnation, 2015

(number condemned per 10,000 slaughtered)

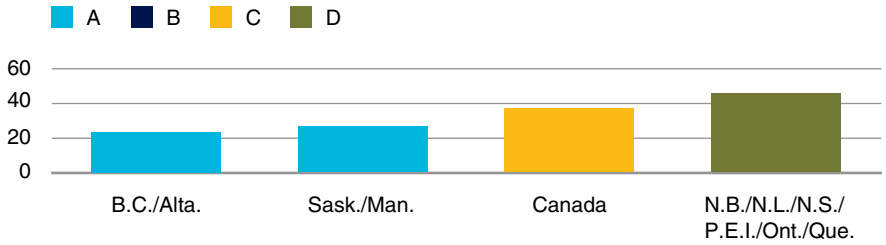


Source: Canadian Food Inspection Agency, *Poultry Condemnation Report.*

Chart 34c

Rate of Hog Condemnation, 2015

(number condemned per 10,000 slaughtered)

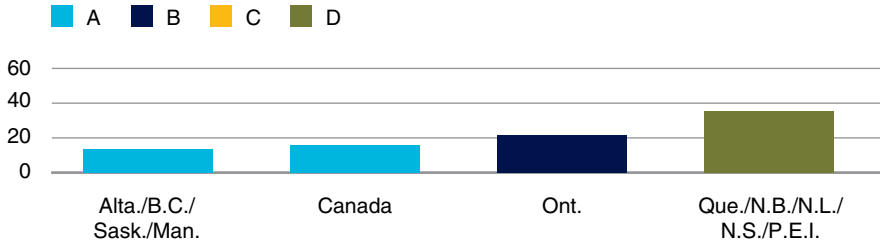


Source: Canadian Food Inspection Agency, *Red Meat Condemnation Report*.

Chart 34d

Rate of Cattle Condemnation, 2015

(number condemned per 10,000 slaughtered)



Source: Canadian Food Inspection Agency, *Red Meat Condemnation Report*.

CHAPTER 5

Element: Household Food Security

Chapter Summary

- Nunavut is affected more than any other province or territory by household food insecurity, and needs remedial action.
- Food is most affordable in Saskatchewan and Quebec. Conversely, nearly 10 per cent of Prince Edward Islanders reported that they could not afford balanced meals or had run out of food, with no money available to acquire additional food.
- Using a household debt service ratio, the report card shows that households in British Columbia and Ontario are more vulnerable to food emergencies.

Access to safe and nutritious food is a basic human right.

At the national level, food insecurity in Canada is not based on food availability. In terms of food affordability and accessibility, however, many specific geographical areas, societies, and vulnerable peoples in Canada experience acute or chronic food insecurity.

Access to safe and nutritious food has been internationally acknowledged as a basic human right.[1] People in remote areas; hunting and gathering societies, such as the Inuit; single parents; inner-city poor; and low-income Canadians are at increased risk of food insecurity. Previous Conference Board research also notes that low-income households are especially sensitive to increases in commodity prices including food, because food is one of their largest expenses.[2] Rising shelter and transportation costs also consume an increasing share of household spending, which is a particular concern for low-income Canadians with limited budgets.[3] Food price variability in Canada is also higher than in peer OECD countries, although prices relative to average income compare quite well.[4]

Furthermore, food insecurity can generate serious physical and emotional consequences. Food-insecure households often tend to choose less nutritious and lower-quality foods, which can increase the risk of chronic diseases and mental conditions.[5] In children, food insecurity can lead to slower development, weaker school performance, and emotional and cognitive problems.[6] In teenage years, food insecurity and associated poor diets can lead to serious emotional problems such as anxiety, depression, and suicide.[7]

1 United Nations, *The Universal Declaration of Human Rights*.
2 Howard and Edge, *Enough for All*, ii.
3 Burt, Grant, Le Vallée, and Butler, *The Sky's the Limit*, 7.
4 Le Vallée and Grant, *Canada's Food Report Card 2015*, 56.
5 Howard and Edge, *Enough for All*, i; Walton and Taylor, *Prince Edward Island*, 9.
6 Child Trends, *Food Insecurity*.
7 Zamecnik, "Canadian Women and Children," 3; Howard and Edge, *Enough for All*, i.

As described above, food insecurity can be expressed through different measures, not solely or commonly referenced as daily food availability in energy terms (calories or joules). This chapter focuses on food insecurity among Canadian households, single parents, children, and Indigenous peoples. The report card also retains the use of food banks as a food relief metric, which often receives attention by media and Canadians. But it is not a food security metric and reflects roughly one in four food-insecure Canadians. The chapter also underscores the importance of accessibility, worry, hunger, and weight loss. It ends by highlighting household emergency preparedness as a measure of food defense or resilience.

Sub-Element: Household Food Insecurity

Metric 38: Moderate to Severe Household Food Insecurity

Nunavut Lags Far Behind the Rest of Canada on Household Food Security

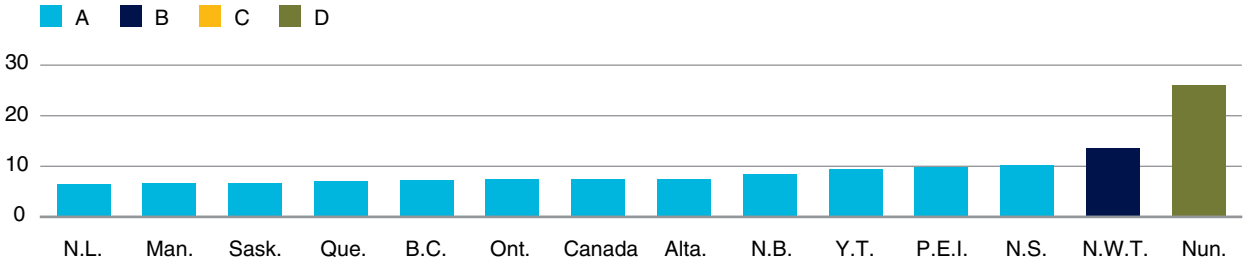
Most Canadians are food-secure and have few problems accessing or affording food. Many Canadians also consume significantly more than their recommended daily food energy intake, as seen in the healthy food and diets chapter in *Nutrient Intakes.*[8] For approximately 4 million Canadians, however, food insecurity is an issue. This forces them to reduce the amount and quality of the food they eat (moderate insecurity) or make major changes to the way they eat (severe insecurity).[9]

This report card measures the percentage of Canadians that self-report moderate or severely food insecurity. With over a quarter of the population reporting moderate to severe levels of food insecurity, Nunavut lags far behind and requires remedial attention. (See Chart 35.)

Chart 35

Youth and Adults 12 Years and Older, Moderately or Severely Food Insecure, 2011–12

(per cent)



Sources: Statistics Canada, CANSIM table 105-0547; Statistics Canada, CANSIM table 051-0001; calculations by The Conference Board of Canada.

8 Statistics Canada, *Nutrient Intakes From Food,* Volume 1, 13–26; Health Canada, *Estimated Energy Requirements*; calculations by The Conference Board of Canada.

9 Le Vallée and Grant, *Canada's Food Report Card 2015*, 56.

Sub-Element: Food Insecurity Among Canadians

Metric 39: Food Insecurity Among Single Parents

Single Parents, Indigenous People Among Most Food-Insecure Canadians

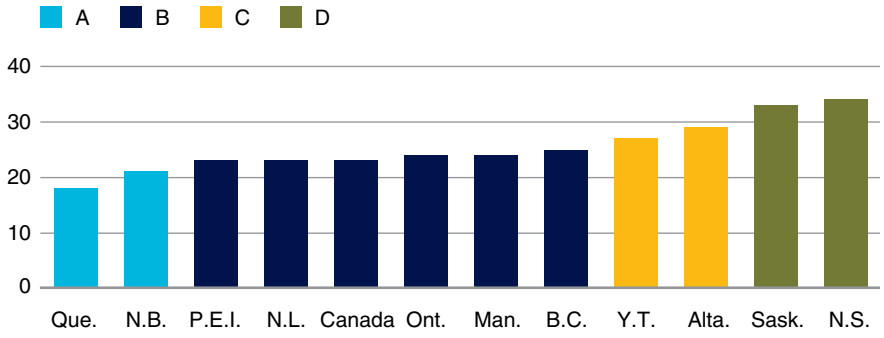
Living arrangements can be a key factor in food insecurity. For example, in 2011–12, 23 per cent of single parents self-reported as moderately or severely food insecure. This is significantly higher than for couples with children (7 per cent) and unattached individuals living alone (11.5 per cent).[10] Food-insecure households are more likely to focus on finding inexpensive food at the expense of other factors, such as nutritional value or personal preference.[11]

Food insecurity among single parents with children is of greatest concern in Nova Scotia and Saskatchewan, with one in three households experiencing food insecurity. (See Chart 36.)

Chart 36

Single Parents With Children Younger Than 18 Years Old, Moderately or Severely Food Insecure, 2011–12

(per cent)



Sources: Statistics Canada, CANSIM table 105-0545; calculations by The Conference Board of Canada.

10 Statistics Canada, CANSIM table 105-0545; calculations by The Conference Board of Canada.

11 PROOF, *Lived Experience of Food Insecurity.*

Metric 40: Child Food Insecurity

Child Food Insecurity Greatest in Prince Edward Island

Previous Conference Board research notes that children from low-income families are especially vulnerable to food insecurity. Canada's child poverty rate stands at approximately 15 per cent, ranking among the poorest performers of 17 peer countries.[12] Children living in poverty are more likely to be food-insecure.

There are several ways of assessing child food insecurity. For instance, Nova Scotia and New Brunswick experience the lowest percentage of children who are moderately or severely food insecure. However, three provinces receive D grades for the inability of their inhabitants to afford to feed their hungry children. Nova Scotia and New Brunswick display the strongest performance across child food insecurity metrics. (See Table 19.)

Table 19
Child Food Insecurity

	Children who are moderately or severely food insecure (per cent)	Grade	Youth and adults whose children were hungry but could not afford more food (per cent)	Grade	Adults who could not feed their children balanced meals (per cent)	Grade
N.S.	2.8	A	7	B	3.4	A
N.B.	3.5	A	2	A	4.0	A
Alta.	4.3	B	6	B	4.9	B
Que.	4.3	B	10	C	4.8	B
Canada	4.9	B	11	C	5.2	B
Sask.	5.3	B	13	D	5.6	B
Ont.	5.5	C	13	D	5.6	B
P.E.I.	8.0	D	15	D	8.6	D

Source: Statistics Canada, *Canadian Community Health Survey 2014*.

12 The Conference Board of Canada, *How Canada Performs: Child Poverty*.

Metric 41: Indigenous Food Security

Indigenous Peoples Experience High Rates of Food Insecurity

Living conditions are a serious concern in many of Canada's Indigenous communities. High food prices in remote and Northern communities, and low incomes for Canada's Indigenous population as a whole, make it difficult for many Indigenous Canadians to acquire safe, healthy, and affordable food.[13]

Canada's Indigenous peoples also experience high rates of food insecurity. Nearly one in five (18 per cent) Indigenous persons had low or very low food security in 2012, more than twice the Canadian average.[14] The high poverty rates in many Indigenous communities make it difficult for residents to afford and access sufficient safe and nutritious food.[15] The effects of high poverty are also compounded by substantial transportation and food costs in many remote and Northern regions.[16]

As a result, food insecurity among Canada's Indigenous peoples is, in many cases, twice the Canadian average for all adults 12 years and older.[17] At 51 per cent, Nunavut is Canada's weakest performer on Indigenous food insecurity. (See Chart 37.) Inuit food insecurity is increased by climate change and environmental change, such as thinning of ice cover and altered animal migration routes. The eroding interest in, and increasing costs of, hunting traditional or country food are also factors.

13 Howard and Edge, *Enough for All*, 21; Statistics Canada, *Health at a Glance*; Assembly of First Nations, *Fact Sheet: First Nations Housing*.

14 Statistics Canada, CANSIM table 577-0009; Statistics Canada, CANSIM table 105-0547; Statistics Canada, CANSIM table 051-0001; calculations by The Conference Board of Canada

15 Power, "Conceptualizing Food Security," 21.

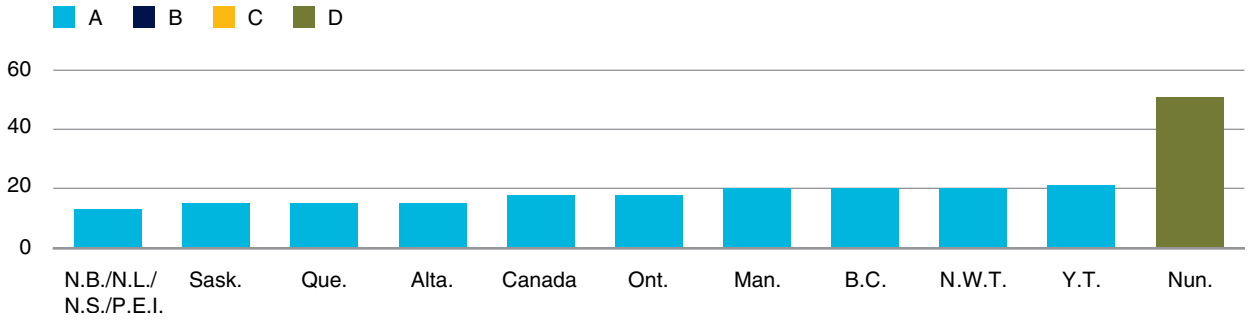
16 Howard and Edge, *Enough for All*, 21.

17 Statistics Canada, CANSIM table 105-0547; Statistics Canada, CANSIM table 051-0001; Statistics Canada, CANSIM table 577-0009; calculations by The Conference Board of Canada.

Chart 37

Indigenous People With Low or Very Low Food Security

(per cent)



Note: Indigenous people includes First Nations, Métis, and Inuit.
Source: Statistics Canada, CANSIM table 577-0009.

Sub-Element: Economic Measures of Food Security

Previous Conference Board research notes that Canada's supply chains are relatively efficient, resulting in somewhat lower prices for Canadian consumers. Many Canadians are spending less on food, compared to other household expenses.[18] In 2014, household expenditures on food and alcoholic beverages ranged from 9.6 per cent in Alberta, to 12.9 per cent in Quebec.[19] The average monthly cost of a nutritious food basket for a family of four also varies, ranging from $847 in Ontario to $974 in British Columbia.[20]

At the same time, the rate of food inflation is nearly twice the rate for all goods and services.[21] Food inflation is especially problematic for Canadians of limited means, many of whom are more likely to select less expensive, but less nutritious, foods over the long term, thus increasing the risk of chronic diseases.[22]

18 Le Vallée and Grant, *Canada's Food Report Card 2015*, 57.

19 Statistics Canada, CANSIM table 203-0021.

20 Cost for a family of four—Walton and Taylor, *Prince Edward Island*, 9.

21 Statistics Canada, CANSIM table 326-0020; Statistics Canada, *Consumer Price Index, December 2015*.

22 Walton and Taylor, *Prince Edward Island*, 9.

Affordability is a key factor in many consumers' food purchases.

Metric 42: Food Affordability

Food Is Most Affordable in Saskatchewan and Quebec; Anxieties Greatest in Prince Edward Island

Affordability is a key factor in many consumers' food purchases, especially those with limited incomes.[23] High prices for nutritious foods, such as fresh produce and meat, make it difficult for some consumers to afford balanced meals. Saskatchewan, Quebec, and Alberta have the lowest percentage of those aged 12 and older who could not afford balanced meals. They are also top performers as the provinces with the lowest percentage of people who ran out of food and could not acquire more. Among all provinces, food affordability anxieties are greatest in Prince Edward Island. (See Table 20.)

Table 20

Food Affordability Among Youth and Adults Aged 12 Years and Older

	Could not afford balanced meals (per cent)	Grade	Ran out of food, with no money for more (per cent)	Grade
Sask.	5.9	A	4.9	A
Que.	6.6	A	5.7	A
Alta.	6.9	A	6.1	B
Canada	7.1	A	6.5	B
Ont.	7.3	B	7.1	B
N.S.	9.1	C	7.5	C
N.B.	9.1	C	8.2	C
P.E.I.	10.6	D	9.4	D

Source: Statistics Canada, *Canadian Community Health Survey 2014*.

23 Region of Waterloo, *The Cost of Eating Well*.

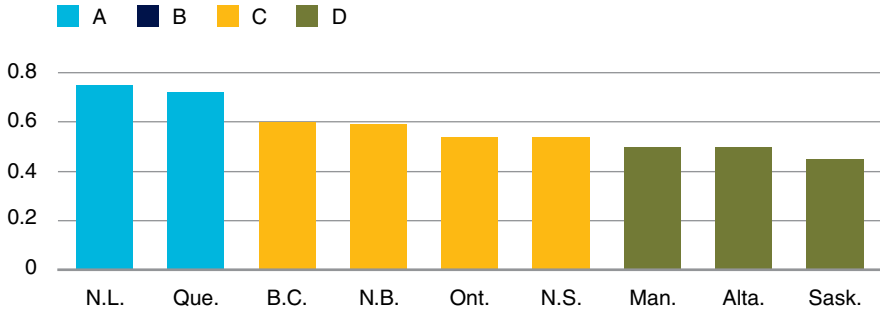
Metric 43: Urban Retail Food Accessibility

Retail Food Access Greatest in Urban Newfoundland and Labrador, and Quebec

Physical accessibility is also a key factor in food security. Some Canadians live in food "deserts"—food-distressed districts in urban areas with limited accessibility to affordable, fresh, and healthy foods. Accessibility is especially important for older Canadians, single parents, and low-income Canadians, for whom it may be difficult to travel to buy nutritious food. Residents of food "deserts" are more likely to go hungry or to select unhealthy foods, simply because unwholesome foods are more accessible than healthy foods.[24]

This report card evaluates food accessibility by measuring the number of food stores per 1,000 people, in census metropolitan areas (CMAs) across Canada. CMAs are grouped by province. At slightly more than 0.7 stores per 1,000 people, Newfoundland and Quebec lead the country with the highest average retail food accessibility ratio in Canada. (See Chart 38.)

Chart 38
Number of Food Stores per 1,000 People, 2016
(number)



Source: Statistics Canada, *Business Register*; Statistics Canada, CANSIM table 051-0001; Statistics Canada, CANSIM table 051-0056.

24 Canadian Environmental Health Atlas, *Poorer Mental and Physical Health*.

Metric 44: Household Debt Service Ratio

British Columbia and Ontario Households More Vulnerable to Food Emergencies

The debt service ratio measures the share of disposable income required to meet interest payments on household debt. It is a better measure than the debt to income ratio since it considers the cost of borrowing.

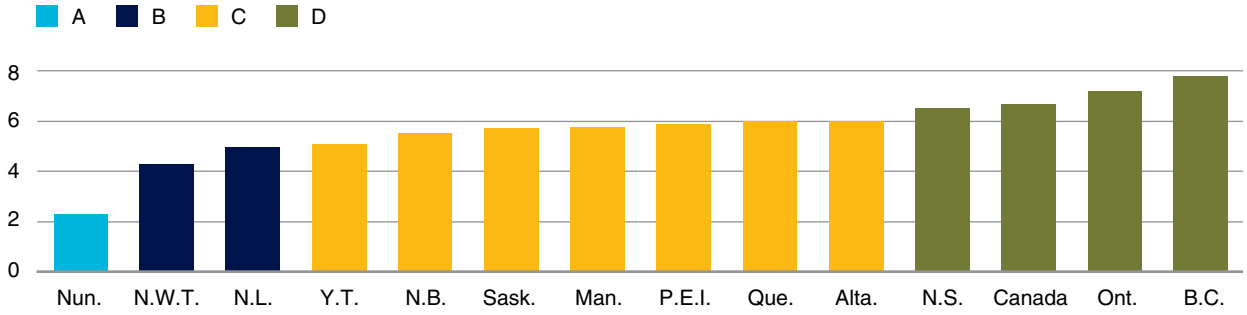
The debt service ratio affects spending habits on food. Households with lower ratios have greater capacity to spend more on food, which affects their food choices and the quality of food they select.

British Columbia and Ontario exhibit the highest ratios in Canada, and are the only two provinces above the national average. (See Chart 39.) The higher ratios are of greater concern as households in these provinces allocate less to savings and are therefore more vulnerable to natural hazards, financial shocks, and related food emergencies.

Chart 39

Average Provincial Household Debt Service Ratio, 2014

(per cent)



Source: Statistics Canada, CANSIM table 384-0042.

Sub-Element: Mental and Physical Effects

Metric 45: Worry, Hunger, and Weight Loss Due to Food Insecurity

Nearly One in Six Canadians Were Hungry But Could Not Afford to Eat

Household food security includes several measures related to Canadians' mental and physical well-being. For instance, the 2014 Canadian Community Health Survey asked Canadians if they were worried food would run out at any point in the past year. On this measure, Alberta, Saskatchewan, and Quebec lead all provinces with prevalence rates of less than 8 per cent, and receive A grades.

With more than 15 per cent of people admitting that they had gone hungry but could not afford to eat, at least once in the preceding 12 months, most provinces performed poorly on hunger. In extreme cases, a lack of money for food can cause Canadians to lose weight. For this metric, weight loss measures ranged from a low of 5.6 per cent in Prince Edward Island to 17.8 per cent in Nova Scotia. (See Table 21.)

Table 21
Worry, Hunger, and Weight Loss Due to Lack of Food

	Worried food would run out (per cent)	Grade	Hungry but could not eat (per cent)	Grade	Lost weight due to lack of money for food (per cent)	Grade
Sask.	7.6	A	8.8	A	7.4	A
P.E.I.	11.9	D	16.4	C	5.6	A
Que.	7.7	A	15.6	C	11.2	B
Alta.	7.3	A	18.2	C	10.8	B
Canada	8.7	B	18.6	C	11.0	B
Ont.	9.5	B	20.5	D	10.5	B
N.B.	10.6	C	22.4	D	15.1	D
N.S.	9.3	B	22.9	D	17.8	D

Source: Statistics Canada, *Canadian Community Health Survey 2014.*

Sub-Element: Food Relief

Metric 46: Use of Food Banks

Food Bank Usage Greatest in Manitoba, and Newfoundland and Labrador

In March of 2015, approximately 850,000 Canadians accessed food banks. Nearly 80,000 of those were first-time users, having faced a job loss, illness, or rent increase.[25] Canadians also receive meal assistance from soup kitchens, shelters, and breakfast programs, among others.

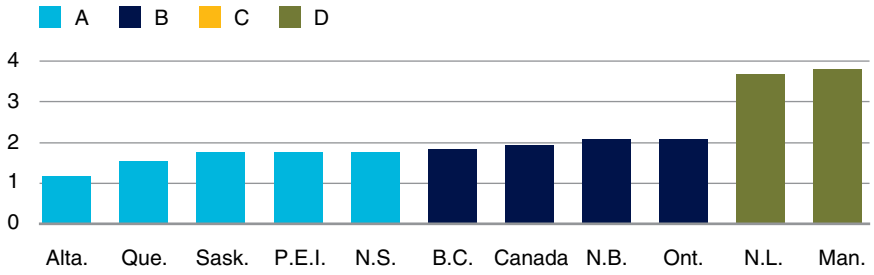
The 2008 financial crisis was a key factor in the increased use of food banks in Canada.[26] Such increases suggest that household food insecurity is also on the rise. However, food bank usage reflects a measure of sought-after food relief, not food security. For both adults and children, food bank usage is highest in Manitoba, and Newfoundland and Labrador. (See charts 40a and 40b.)

25 Food Banks Canada, *Hunger Count 2015*, 3.

26 Ibid.

Chart 40a

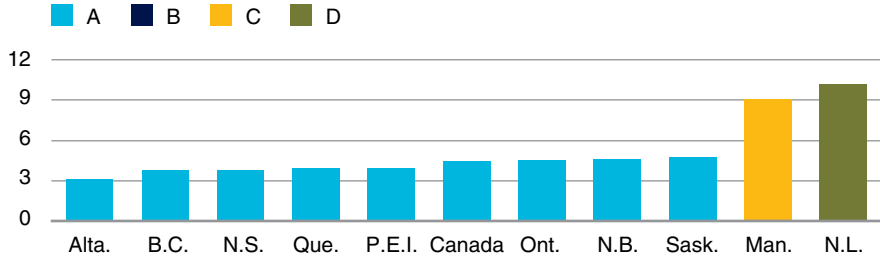
Adults Aged 18 Years and Over Who Used Food Banks, 2015
(per cent)



Sources: Food Banks Canada, *Hunger Count 2015*, 3; Statistics Canada, CANSIM table 051-0001; calculations by The Conference Board of Canada.

Chart 40b

Children Aged 0 to 17 Years Who Used Food Banks, 2015
(per cent)



Sources: Food Banks Canada, *Hunger Count 2015*, 3; Statistics Canada, CANSIM table 051-0001; calculations by The Conference Board of Canada.

The Government of Canada recommends that households prepare an emergency kit that includes enough food and water to last 72 hours.

Sub-Element: Food Emergency Preparedness

Metric 47: Household Emergency Supply Kits

Over Half of Canadian Households Are Poorly Prepared for Food Emergencies

Food security investments in domestic food emergency preparedness and resilience-building are indispensable.[27] However, food system resilience metrics are rare. Stock-to-use ratios are one option, as they show the tightness of the food supply. However, Canada is not distressed by national food availability. But, Canada could benefit from establishing long-term food contingency and continuity plans with associated capacity and implementation measures. Such measures would include:

- food relief capacities;
- the diversity and reliability of transportation and energy supplies;
- the share of consumption met through local and imported foods;
- regulatory compliance;
- methods to protect crops and animals from drought, pests, and diseases;
- other measures.

Indeed, communities across Canada face risks posed by natural hazards and disasters such as flooding, earthquakes, wildfires, and ice storms, among others.[28] Albertans will be familiar with the wildfires in Fort McMurray or the flooding in Calgary, for instance. Preparedness is key to mitigating the negative effects of such disasters, and the Government of Canada recommends that households prepare an emergency kit that includes enough food and water to last 72 hours.[29]

As Chart 41 shows, however, many Canadians are ill-equipped for food-related emergencies. Aside from British Columbia and Newfoundland and Labrador, over half of Canadian households across Canada do not have an emergency supply kit.

27 Le Vallée, *Achieving Food Security Through Food System Resilience*.

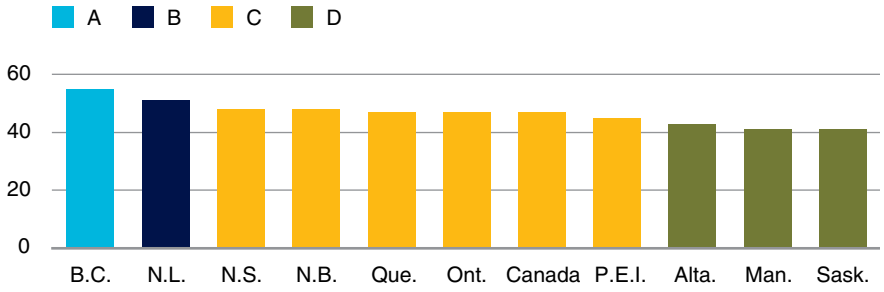
28 Government of Canada, *Your Emergency Preparedness Guide*.

29 Basic emergency kits also include flashlights, radios, batteries, a first aid kit, and other essential items. For a complete list, see Government of Canada, *Your Emergency Preparedness Guide*.

Chart 41

Households With an Emergency Supply Kit, 2014

(per cent)



Source: Taylor-Butts, *Emergency Preparedness in Canada*, 30.

CHAPTER 6

Element: Environmental Sustainability

Chapter Summary

- Food waste, particularly household food waste, is a key sustainability issue, and represents close to half of all the waste along the supply chain. Compared with their peers, Alberta and New Brunswick lag in household organic waste diversion efforts.
- Half of Canada's provinces registered a small increase in greenhouse gases (GHGs) over a 30-year period, while Alberta and Ontario are the largest emitters of agricultural GHGs.
- Ontario stands out among provinces on coliform contamination, while the highest risks of water contamination by pesticides are in Prince Edward Island and Ontario. For soil health, Quebec had the largest risk from residual soil nitrogen, while almost all farmland in Newfoundland and Labrador is at risk of phosphorus contamination.

While changes have been made to improve environmental sustainability, there is room for improvement.

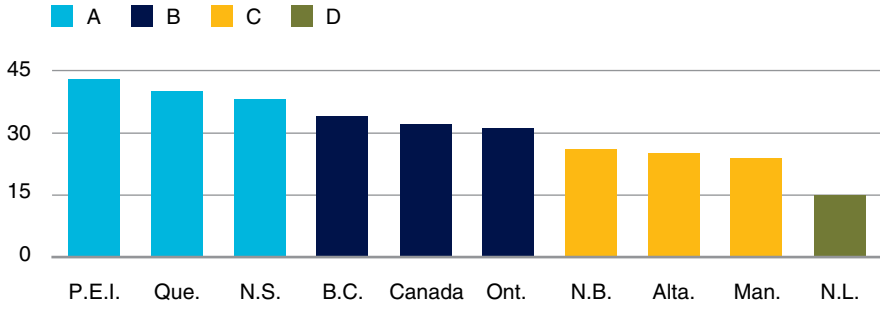
The food system impacts the environment through the production, processing, distribution, preparation, and disposal of food. We take from, or add to, the environment every time we eat, harvest, process, and discard food. There is also growing concern about the environmental footprint caused by the food system, leading to the need for increased sustainability, while decreasing the environmental impact.

As highlighted in CFIC's 2013 report, *Reducing the Risk: Addressing the Environmental Impacts of the Food System*, different subsectors of the food supply chain affect four key risk areas: water, air, soil, and waste. The reduction of food waste crosses each of these areas, and is most affected by households. The Canadian food industry, governments, and consumers have made changes to improve environmental sustainability over time; however, there is still much room for improvement.

Many businesses in Canada still do not see improving environmental performance as a very important or extremely important key factor of success. Top-performing provinces—Prince Edward Island, Quebec, and Nova Scotia—see between 38 and 43 per cent of businesses ranking improving environmental performance as very important or extremely important, in contrast to 15 per cent of Newfoundland and Labrador businesses. (See Chart 42.) Typically, businesses act when environmental risk overlaps with business or profit risks. For example, processing and retail businesses are adopting "eco-efficiency" measures, which reduce environmental impacts while delivering competitively priced products.

Chart 42

Businesses That Ranked "Improving Environmental Performance" as a Very Important or Extremely Important Key Factor of Success, 2012
(per cent)



Source: The Conference Board of Canada, *CFIC Food Industry Survey*.

This report card highlights several environmental impacts resulting from the activities of different subsectors of the food supply chain as well as household consumption. Impacts in several risk areas are considered, with a focus on food waste, air quality, water contamination, soil health, and farm environmental planning. Overall, Canadian provinces performed well on organic waste diversion and soil health, while work remains on improving air quality performance and household food waste.

Sub-Element: Household Food Waste

Investigating the Reasons for Household Food Waste

Food waste is a significant environmental and sustainability challenge. The Canadian food system wastes approximately 40 per cent of all food, equivalent to $31 billion annually.[1] This figure solely represents the cost of food, which represents only 29 per cent of the overall waste-related cost. Factoring in all other associated waste costs, the overall annual estimate totals $107 billion.

In Canada, consumers waste 47 per cent of food, while the packaging and processing sector wastes 20 per cent. The retail and farm sectors each waste 10 per cent. Food waste in landfills also breaks down and becomes a source of greenhouse gas emissions or methane, which is 21 times more harmful to the environment than carbon dioxide.[2]

Canada received a D for total household food waste in *Canada's Food Report Card 2015: International Comparison*. Moreover, Canada ranks 16th of 17 peer OECD countries, with 40 per cent of food wasted in food losses along the supply chain, pre-consumption, and in household food waste post-purchase.[3]

Reasons for food waste are many, and can be partly explained by CFIC's 2012 household survey. According to the survey, the top five reasons for food waste in the "some" and "most" categories were:

- food was not eaten by "best before" or "use by" dates (29.2 per cent);
- package sizes that were too large (23.7 per cent);
- preparation of too much food (23.1 per cent);
- purchasing food beyond the capacity a household can eat or store (19.7 per cent);
- the presence of a household member who dislikes the taste of certain foods or meals (12.8 per cent).[4]

1 Gooch and Felfel, *$27 Billion" Revisited: The Cost of Canada's Annual Food Waste*.
2 The Economist, "Waste Not, Want Not."
3 Le Vallée and Grant, *Canada's Food Report Card 2015: International Comparison*.
4 Stuckey, Charman, and Le Vallée, *Reducing the Risk*, 33.

Benefits of a tax incentive strategy to divert organic waste include enhanced food security.

Many Canadian municipalities have put food waste reduction initiatives in place to better understand how much food is being wasted, which types of foods are wasted, and how to encourage people to reduce the amount of food waste. The cities of Guelph and Thunder Bay have completed food waste audits to identify their residents' habits and attitudes toward food waste. Thunder Bay found that plate scrapings accounted for the largest amount of household food waste. Guelph's study showed that most of its residents identified that food was ready to be thrown out based on appearance first, then smell, and finally the "best before" date. Intelligence like this assists municipalities when they are creating long-term food waste reduction strategies, as they can determine actionable goals based on the habits of their residents.

In 2015, the National Zero Waste Council released a report on organic waste reduction. The report examines the business case for using a federal tax incentive strategy to increase the diversion of organic waste by incenting businesses to increase their donations of edible food.[5] It suggests encouraging businesses to consider alternatives other than disposing of edible food, including donating to food banks, community kitchens, food hubs, and other charities.[6] Benefits include enhanced food security, improved food and protein source availability, economic gains, and environmental footprint reductions.

5 Howard and Le Vallée, *Study of Organic Waste Reduction*.

6 Edible food is nutritious, healthy, safe, good-quality food. Incentives are not directed to food losses or spoilage.

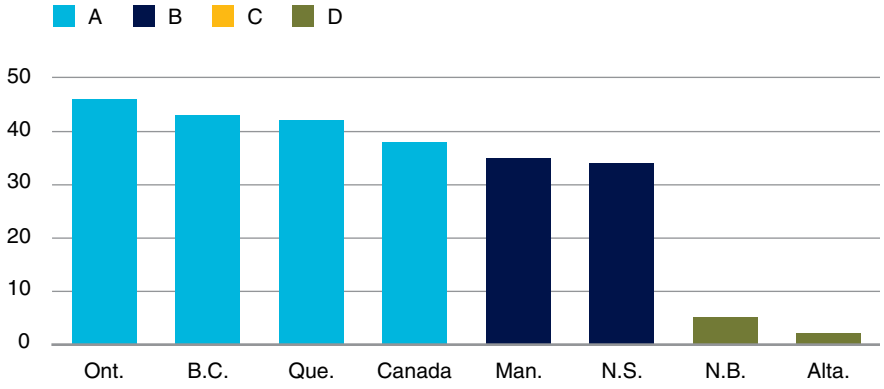
Metric 48: Organic Food Material Diversion

Alberta and New Brunswick Lag Other Provinces on Waste Diversion; Ontario in the Lead

Residential food waste diversion redirects garbage toward reuse, recycling, composting, and other uses. Diversion helps to reduce the waste's environmental footprint and waste management costs, as well as food expenditures. Results show that Ontario, British Columbia, Quebec, and Canada, on average, are top performers for increases in organic food materials diverted by households between 2004 and 2012. Trailing far below the average are New Brunswick and Alberta, with little change over the eight-year period. (See Chart 43.)

Chart 43

Change in Organic Food Materials Diverted by Households, 2004–12
(per cent)



Source: Statistics Canada, CANSIM table 153-0043.

Metric 49: Grocery Bags of Food Thrown Out Weekly

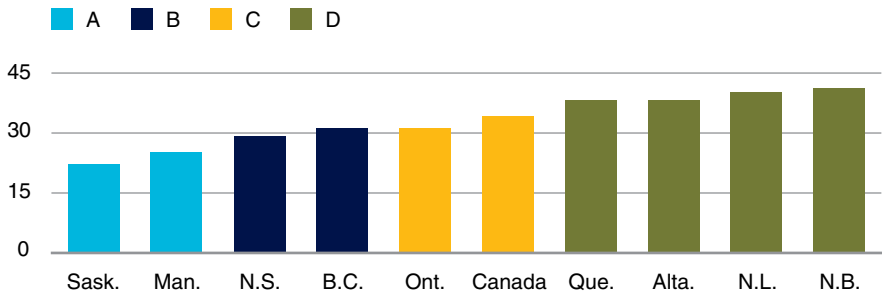
Many Canadians Discard One or More Grocery Bags of Food Each Week

Across Canada, less than half of all responding households dispose of the food equivalent to one or more grocery bags of food each week. However, the provinces displaying the highest levels of food waste are New Brunswick, Newfoundland and Labrador, Quebec, and Alberta, as 38 to 42 per cent of respondents reported having thrown out bought food on a weekly basis. (See Chart 44.)

Chart 44

Households Indicating That One or More Grocery Bags Bought Each Week Are Thrown Out, 2012

(per cent)



Source: The Conference Board of Canada, *Household Food Survey.*

Metric 50: Over-Acquisition of Food

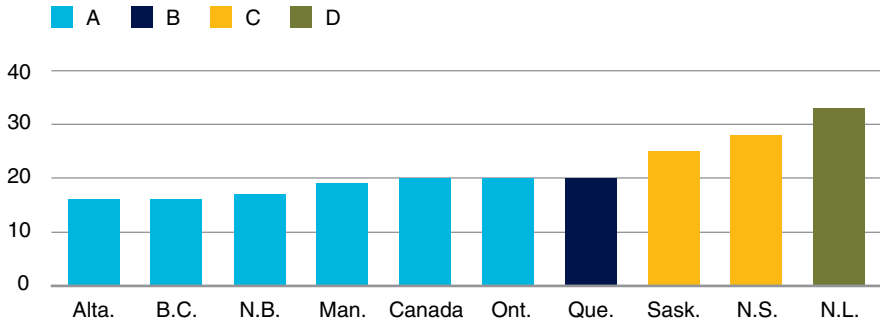
Food Over-Acquisition Leads to Household Waste

Over-acquisition of food is a contributing factor to household food waste, since it is often the case that people do not consume the amount of food they purchased. Among other reasons, they indicated that the "best before" dates on food products played a role. Interestingly, nearly half of Canadian provinces, as well as Canada overall, have received A grades in this metric. Newfoundland and Labrador trails far behind with respondents reporting that they over-acquired 13 per cent more groceries than the Canadian average. (See Chart 45.)

Chart 45

Purchasing Too Much as a Reason for Household Waste, Responded "Some of It and Most of It," 2012

(per cent)



Source: The Conference Board of Canada, *Household Food Survey.*

Metric 51: Food Over-Preparation

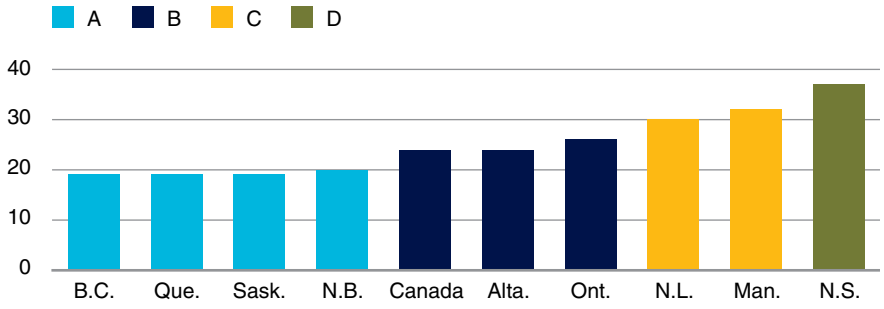
Unused Leftovers Become Organic Waste

Saskatchewan, British Columbia, Quebec, and New Brunswick perform much better than the Canadian average, earning A grades. Five provinces reported that preparing too much food was a significant reason for household food waste. The weakest performer, by far, in this measure is Nova Scotia. (See Chart 46.)

Chart 46

Preparing Too Much Food as a Reason for Household Waste, Responded "Some of It and Most of It," 2012

(per cent)



Source: The Conference Board of Canada, *Household Food Survey.*

Metric 52: Food Expiry Dates

Close to Half the Households in Nova Scotia Often Do Not Consume Food by the "Best Before" Date

CFIC's 2013 report *Reducing the Risk: Addressing the Environmental Impacts of the Food System* highlights the consumer's responsibility in improving environmental performance by taking steps to waste less food. It finds that "confusion over 'best before' dates likely results in a large amount of food being unnecessarily disposed of because of concerns about safety."[7]

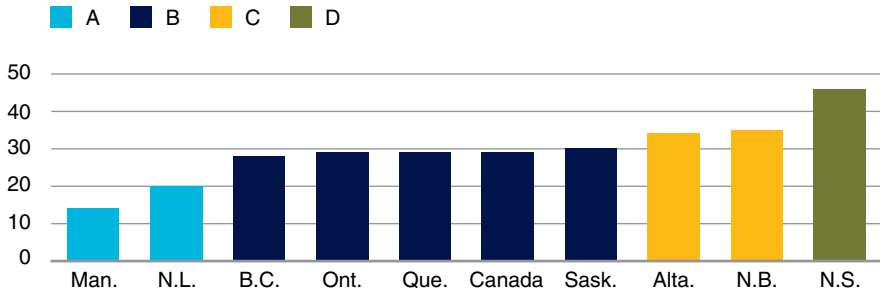
However, consumers should know these dates are not a food safety measure. They refer to an unopened food product's quality and retail shelf life. It reflects the product's estimated optimum quality and nutritional features in normal conditions. In many cases, food products do not require a date or can be safely eaten and enjoyed many weeks or months after the specified "best before" date.

Failure to consume food before its expiry date is the most significant reason for household waste in Canada. Only two provinces receive A grades in this measure—Manitoba and Newfoundland and Labrador. Nova Scotia receives a D, throwing out nearly 33 per cent more waste than Manitoba. (See Chart 47.)

Chart 47

Food Not Eaten by "Best Before" or "Use By" Dates as a Reason for Household Waste, Responded "Some of It and Most of It," 2012

(per cent)



Source: The Conference Board of Canada, *Household Food Survey.*

7 Stuckey, Charman, and Le Vallée, *Reducing the Risk*, iii.

Metric 53: Food Packaging Size

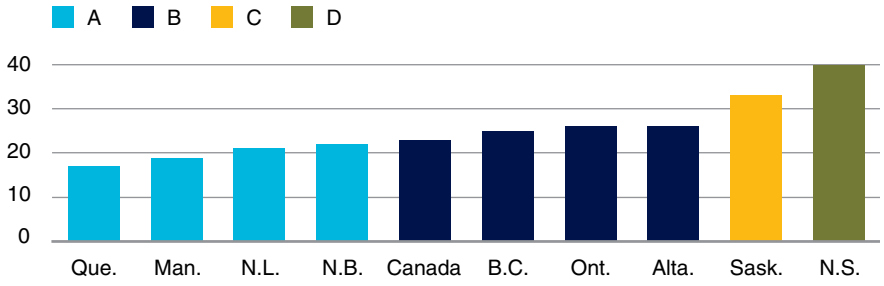
Buying in Bulk Is Not Always Best

Purchasing food in packages that are too large is the third leading cause of household food waste in Canada. The major reasons for food waste relate to household knowledge, skills, and behaviours (food literacy)–except for packaging that is too large. As is also the case with the previous two metrics (Food Expiry and Food Over-Preparation), Nova Scotia trails all other provinces, and the Canadian average, receiving a D grade. (See Chart 48.)

Chart 48

Packaging Too Large as a Reason for Household Waste, Responded "Some of It and Most of It," 2012

(per cent)



Source: The Conference Board of Canada, *Household Food Survey.*

Sub-Element: Air Quality

Agriculture is a significant source of greenhouse gas (GHG) emissions, particulate matter (PM) emissions, and ammonia. According to CFIC's *Canada's Food Report Card 2015*, Canada is one of only three peer countries that registered an increase in GHG emissions from 2000 to 2010. In 2015, the United States was the only country ranking behind Canada among comparator nations.[8] This report card looks at four air quality metrics. Saskatchewan is the only consistent performer in these measures, receiving A grades in all but one indicator—particulate matter emissions—in which it receives the lowest grade of all provinces providing data.

8 Le Vallée and Grant, *Canada's Food Report Card 2015: International Comparison*, 66.

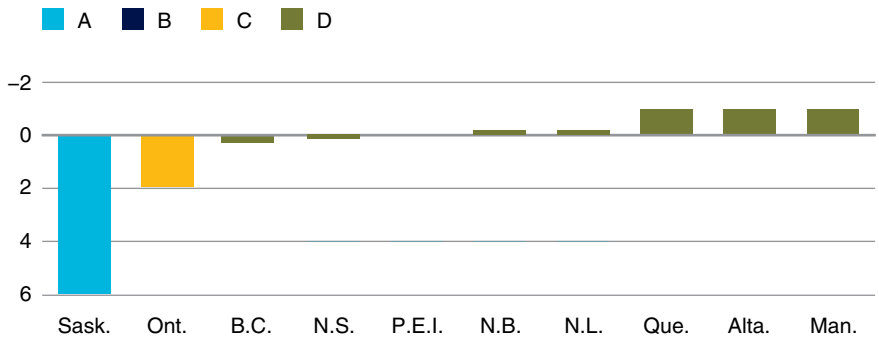
Metric 54: Reductions in Agricultural Greenhouse Gas Emissions 1981–2011

Half of Canada's Provinces Registered an Increase in GHG Over a 30-Year Period

Five of Canada's provinces registered an increase in GHG emissions from 1981 to 2011. The increase was small, with the largest increase of 1.2 per cent occurring in Manitoba. The most remarkable change occurred in Saskatchewan, where emissions were reduced by nearly 6 per cent. (See Chart 49.)

Chart 49

Change in Canadian Agricultural GHG Emissions From 1981 to 2011
(per cent)



Note: Greenhouse gas emissions (GHGs) include N_2O, CH_4, and soil CO_2. The national difference in megatonnes of carbon dioxide equivalent (Mt CO_2e) between 1981 and 2011 is -4.7 per cent.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator Report Series—Report #4*, 177.

By 2030, Canada has committed to reducing GHG to 30 per cent below the levels registered in 2005. The Government of Alberta reported that many of their farmers are now using "Beneficial Management Practices" to reduce emissions or replace them with renewable energy. Practices used by Alberta farmers include "... genetic improvements in cattle increase feed utilization [which also reduce] GHG emissions and feeding costs" [and] " ... management that improves soil carbon levels also improves moisture infiltration and nutrient cycling, increasing resilience to changing climates. Both of these voluntary practice improvements can

A software tool called Holos tests possible scenarios to reduce emissions that are unique to the farmer's operations.

provide extra income in sales of carbon offsets if verifiable records are in place."[9] Farmers can also use technological tools to track, increase, or maintain their GHG emission reduction efforts. The Government of Canada released a free software tool called Holos in October 2015. It is designed to estimate a farm's GHG emissions based on information entered by farmers. Holos tests possible scenarios to reduce emissions that are unique to the farmer's operations, and the farmer can select and implement these options.

9 Government of Alberta, *Climate Change and Agriculture*.

Metric 55: Greenhouse Gas Emissions in 2011

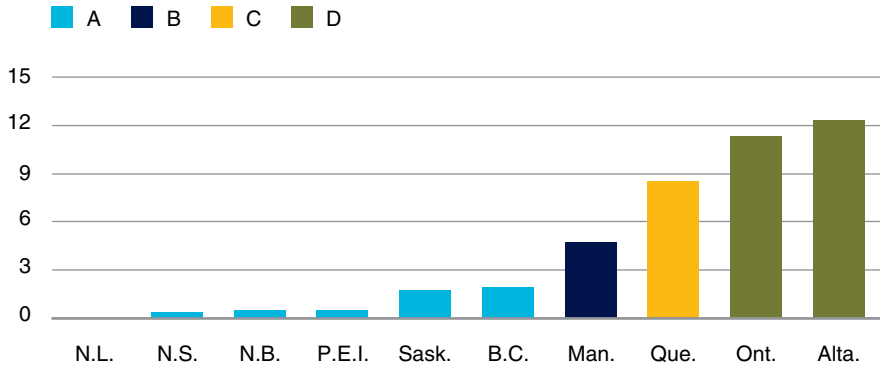
Alberta and Ontario Largest Emitters of Agricultural GHGs

Large differences can be seen when the 2011 data are analyzed. Ontario and Alberta are producing the largest amount of GHG emissions of any province. Conversely, five provinces, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Saskatchewan, and British Columbia, receive A grades. In 2011, these provinces produced two million metric tonnes or less of carbon dioxide equivalent. There is a clear trend over time for Alberta to produce more GHGs (it also receives a D grade in the previous measure). Although Ontario produced the second-highest amount of GHG in Canada, it has seen an overall decrease of GHG over a 30-year period—the second-highest decrease over time in Canada, trailing only Saskatchewan. (See Chart 50.)

Chart 50

Canadian Agricultural GHG Emissions, 2011

(Mt CO_2e)



Note: Greenhouse gas emissions (GHGs) include N_2O, CH_4, and soil CO_2.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 177.

Metric 56: Particulate Matter Emissions

Saskatchewan and Alberta Largest Emitters of $PM_{2.5}$ Emissions

Particulate matter (PM) emissions contribute to stratospheric ozone depletion, acid rain, and smog, which adversely affect human health and the environment. Agriculture operations emit particulate matter that can be harmful to the health of agricultural workers and animals. Many agriculture operations contribute to PM emissions, such as crop harvesting, fertilizer and chemical application, crop residue burning, grain handling, and animal feeding operations.[10]

Since PM is directly attributed to agriculture operations and production, it is to be expected that provinces with the largest percentage of farmland would see the highest PM emissions per year. This is the case for Saskatchewan and Alberta. But British Columbia, Atlantic Canada, Quebec, and Ontario all receive A grades. The difference between the highest- and lowest-producing provinces is striking: British Columbia produces only 1 kilotonne per year, whereas Saskatchewan produces 139 kilotonnes. (See Chart 51.)

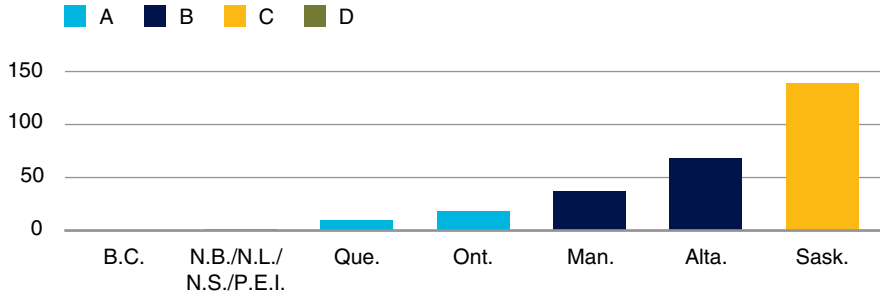
The potash sector significantly contributes to PM emissions. Therefore, the sector in Saskatchewan and New Brunswick partnered with the provinces and Environment and Climate Change Canada to create a Code of Practice. The Code focuses on identifying and promoting best practices, as well as implementing a new Air Quality Management System and Base Level Industrial Emissions Requirements. The primary sources for PM emissions from potash production are drying and compacting, which make up approximately 80 per cent of emissions. The Code provides strategies to reduce emissions from these activities, such as preventing dust from escaping by ensuring that there are no leaks in the air discharge system and that compactor hoods are fitted properly. The Code includes implementation and reporting instructions and procedures. The Code was developed in 2016, and its effects will be reported on in the future.

10 Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 195–96.

Chart 51

Particulate Matter Emissions ($PM_{2.5}$) From Canadian Agricultural Operations, 2011

(kilotonnes per year)



Note: Canadian total of $PM_{2.5}$ emissions in 2011 is 276 kilotonnes per year.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 202.

Metric 57: Ammonia Emissions

Ammonia Emissions Intensity Greatest in Quebec and Ontario

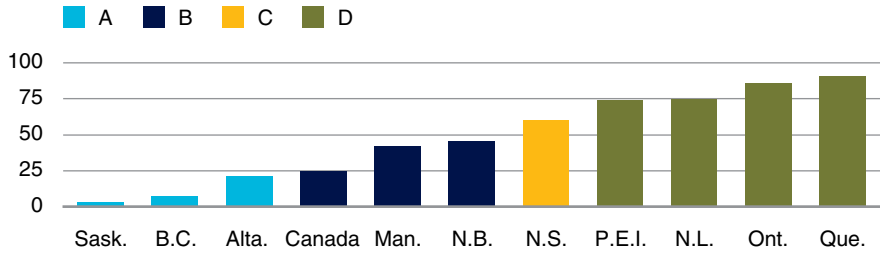
Canada's Food Report Card 2015 illustrated how Canada is one of only two countries (the other country is Finland) to have increased emissions annually from 2000 to 2010.[11] Indeed, Canada performs worst overall in terms of ammonia emissions per unit of GDP. Nearly 85 per cent of ammonia emissions are related to agriculture.[12] A review of emission data shows a quarter of Canada's total farmland falls into the two highest ammonia emission intensity classes. Additionally, half of Canada's provinces see 50 per cent or more of their total farmland falling within the highest ammonia emission intensity classes.

Four provinces, Prince Edward Island, Newfoundland and Labrador, Ontario, and Quebec, receive D grades for their performance in this measure. Agriculture and Agri-Food Canada (AAFC) reports that in 2011, ammonia emissions from livestock accounted for 65 per cent of total ammonia emissions, dropping from 74 per cent in 1981.[13] The Prairie provinces improved significantly since 1981, emitting 30 percentage points less in ammonia, and receiving A grades in 2011. (See Chart 52.)

Chart 52

Total Farmland in Two Highest Ammonia Emission Intensity Classes, 2011

(per cent)



Note: Farmland in 6–10 kg N_{H3} ha-1 and > 10 kg NH_3 ha-1 categories are combined.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 187.

11 Le Vallée and Grant, *Canada's Food Report Card 2015: International Comparison*, 67.
12 Environment and Climate Change Canada, *International Comparison: Air Pollutant Emissions*.
13 Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 184.

A third of Canadians living in rural households that use private wells are affected by contamination.

Sub-Element: Water Contamination

Agricultural production contributes to groundwater contamination—for instance, from over-fertilization or other chemical or manure applications. This poses environmental risks in addition to health risks to Canadians. In fact, around a third of Canadians living in rural households that use private wells are affected by contamination. This number increases to 43 per cent in Saskatchewan. Between 20 and 40 per cent of wells tested show unacceptable levels of bacterial contamination.[14] Furthermore, an additional 25 per cent of Canadians who rely on groundwater are affected by contamination.

14 Stuckey, Charman, and Le Vallée, *Reducing the Risk*, 13.

Metric 58: Water Contamination by Coliforms

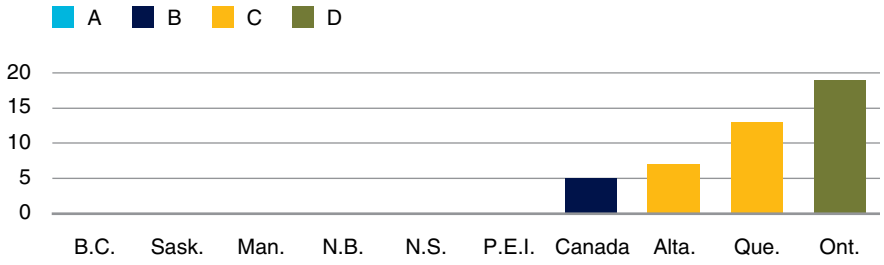
Coliform Contamination Highest in Ontario

Coliform is a type of bacteria found in the intestines of people and animals. This bacterium is transferred from organic materials, such as manure, to water through fertilization during agricultural production. Ontario stands out among the provinces—19 per cent of its farmland falls within the high- or very-high risk classes of water contamination by coliforms. Ontario's position in the ranking is 6 per cent higher than the second poorest scoring province, Quebec. (See Chart 53.)

Chart 53

Proportion of Farmland With High- and Very High-Risk Classes of Water Contamination by Coliforms (IROWC), 2011

(per cent)



Note: Proportion is calculated as percentage of farmland classified for the whole watershed, divided by the total amount of farmland in the province.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 148.

In Ontario, Nutrient Management Plans (NMPs) are now mandatory for farms with livestock numbers totalling 300 nutrient units or above. More than 1,250 Ontario farmers had completed NMPs as of early 2015. It is estimated that these farms represented approximately 36 per cent of farmyard manure production in Ontario.[15] From NMPs, as well as other provincial programs, Ontario is now able to regulate nutrient application on 83,500 hectares of farmland, which is anticipated to have a positive effect on water contamination by manure or fertilizers.

15 Sustainable Farm & Food Initiative, *Farm, Food & Beyond*, 9.

Metric 59: Water Contamination by Pesticides

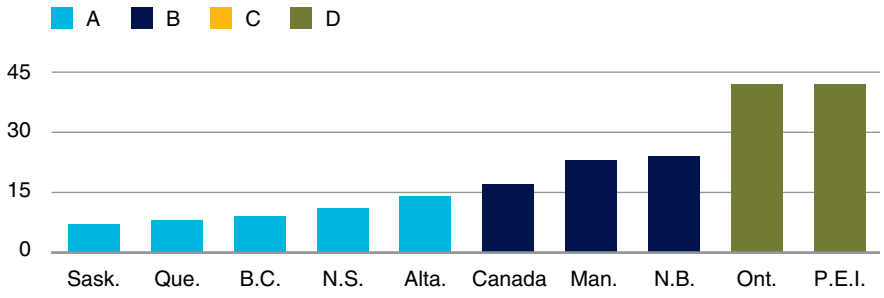
Highest Risks of Water Contamination by Pesticides in Prince Edward Island and Ontario

Most provinces have less than a quarter of farmland at high- or very-high risk of water contamination by pesticides. Ontario and Prince Edward Island display the highest risks with over 42 per cent. Top performers are Saskatchewan, Quebec, and British Columbia, at under 10 per cent. (See Chart 54.)

Chart 54

Proportion of Farmland With High- and Very High-Risk Classes of Water Contamination by Pesticides, 2011

(per cent)



Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 162.

Sub-Element: Soil Health

Agricultural productivity is reliant on healthy soil. It acts as a natural filter, which cleans air and water while providing nutrients to plants through organic matter. This process can be interrupted if soil is degraded, which can happen through erosion and loss of topsoil. According to a 2012 Conference Board of Canada report on environmental sustainability, "1 per cent of all agricultural land in Canada—and as much as 16 per cent in the Prairies—will be in the very-high risk class for toxic impacts from trace elements after 100 years of present practices [salinization]."[16] Progress has been made to reduce the risk, which is apparent in this report's soil health metrics.

16 Stuckey, Charman, and Le Vallée, *Reducing the Risk*, 19.

Metric 60: Nitrogen Balance in Soil

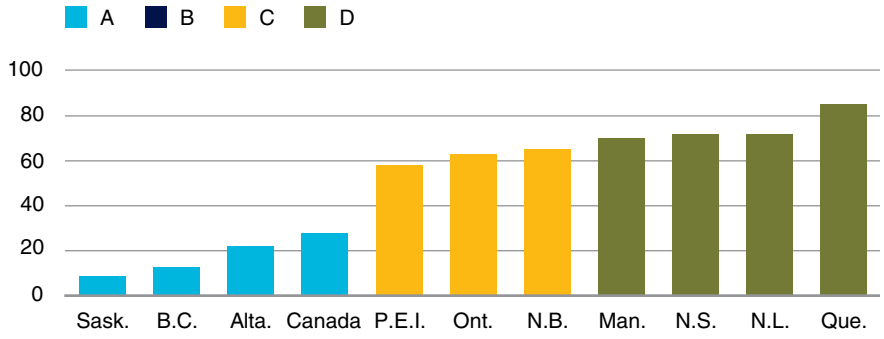
Progress in the Prairies; Greatest Risk From Residual Soil Nitrogen in Quebec

Nitrogen (e.g., from chemical fertilizer and manure) is an essential element for healthy soil. However, excess nitrogen, or residual soil nitrogen, can turn into gas and be released into the atmosphere or leach into groundwater.[17] AAFC describes farmland within the high- and very-high categories as in need of monitoring or remedial action because of the environmental risks this input causes. Overall, Canada receives A grades in all three soil health metrics. However, nearly 30 per cent of Canadian farms fall within the high- and very-high levels of residual soil nitrogen. Prairie provinces, particularly Saskatchewan and Manitoba, scored A grades in all three soil health metrics. In fact, Saskatchewan had the lowest proportion of farmland with high levels of residual soil nitrogen, phosphorus, and erosion. In contrast, Newfoundland and Labrador received D grades in all three metrics, while 85 per cent of farmland in Quebec falls into high-risk and very-high risk categories. (See Chart 55.)

Chart 55

Proportion of Farmland With High- and Very High-Levels of Residual Soil Nitrogen, 2011

(per cent)



Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 118.

17 Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 114.

In Canada, phosphorus contamination has increased significantly since 1981.

Metric 61: Phosphorus Balance

Almost All Farmland in Newfoundland and Labrador at Risk to Phosphorus Contamination

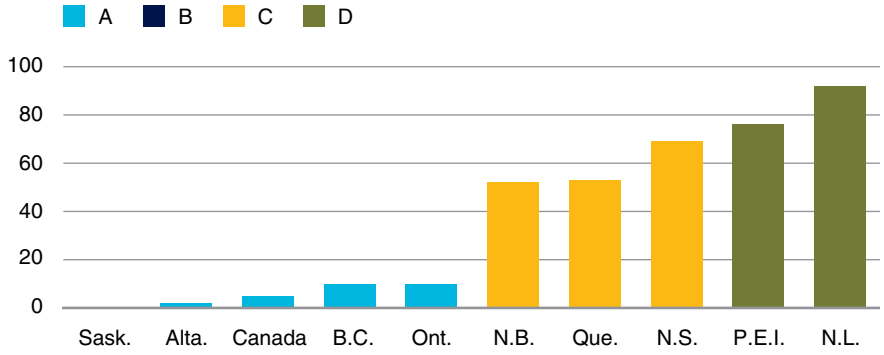
Like nitrogen, phosphorus is a necessary nutrient found in fertilizer and manure that is used to nourish plants. Reducing phosphorus levels takes time, since phosphorus accumulates each season. In Canada, phosphorus contamination has increased significantly since 1981.

As with nitrogen, the Prairie provinces see a significantly lower proportion of farmland falling into the high- and very-high risk classes. Quebec sees a far less significant proportion of farmland with at-risk phosphorus levels versus nitrogen levels. Newfoundland and Labrador, which had only 13 per cent less farmland than Quebec with at-risk nitrogen levels, receives a D for its phosphorus risk levels. In fact, 92 per cent of Newfoundland and Labrador's farmland falls within the high- or very-high phosphorus risk classes. (See Chart 56.)

Chart 56

Proportion of Farmland With High and Very High Phosphorus Source Risk Classes, 2011

(per cent)



Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 137.

Metric 62: Soil Erosion

Ontario With Greatest Share of Cropland at Risk to Soil Erosion, Followed by Newfoundland and Labrador, and New Brunswick

Soil erosion happens naturally, often because of wind and water, and is also affected by tillage. Topsoil is removed by erosion, and leads to decreased soil fertility and yield losses. Ontario is at the greatest share of risk for erosion, with a quarter of all farmland at risk. Also receiving a D is Newfoundland and Labrador, in which 18 per cent of farmland is at risk. The Prairie provinces do not have an issue with soil erosion, and receive A grades, since no farmland falls within the high- and very-high soil erosion risk levels. (See Chart 57.)

The Prairie provinces are a success story in regard to soil erosion, since they have significantly improved their erosion risk levels over the past 30 years. Alberta, Saskatchewan, and Manitoba have changed their erosion risk by implementing land-use practices, such as reducing summer fallowing and tilling intensity.[18] They have also adopted no-till policies in cereal production, which has had an enormous impact, as a significant amount of farm land in the Prairies is devoted to cereals. The Prairie provinces demonstrate that by eliminating or limiting intensive tilling, erosion can be prevented. This is because intensive tilling removes crop residue from soil and leaves vulnerable top soils exposed to the elements, making the top soil more likely to be destroyed by wind or water erosion.[19]

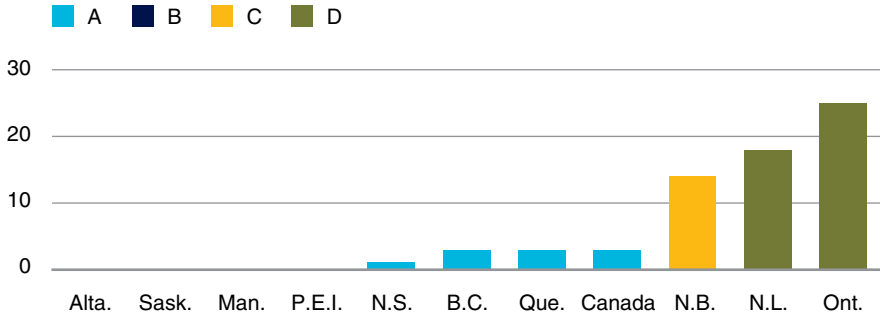
18 Agriculture and Agri-Food Canada, *Soil Erosion Indicator.*

19 Ibid.

Chart 57

Proportion of Cropland in Canada With High and Very High Soil Erosion Risk Classes, 2011

(per cent)



Note: Soil erosion includes water, wind, and tillage erosion.
Source: Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 85.

Sub-Element: Farm Environmental Sustainability

Metric 63: Farms With an Environmental Farm Plan

Quebec Leads Other Provinces in Farm Environmental Planning

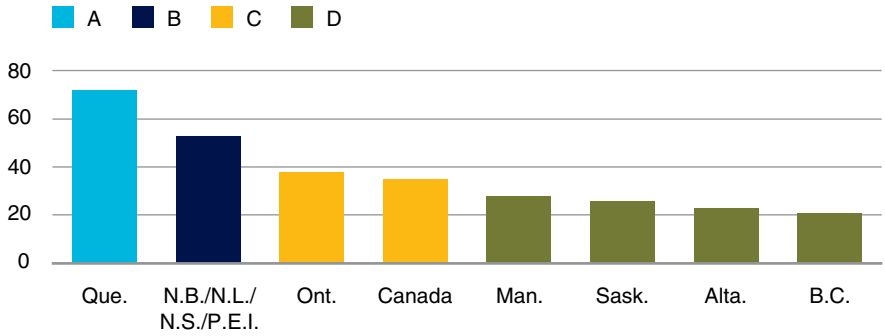
AAFC describes environmental farm plans as a "... plan outlining the environmental concerns related to a given farm and the steps required to address them."[20] Such farm plans are prepared and put into action on a voluntary basis. To date, only 35 per cent of Canadian farmers have environmental farm planning in place. In Ontario, over 35,000 farm families have completed Environmental Farm Plans (EFPs). In a 2011 study of EFP participants, 74 per cent of respondents said their EFP led to improvements in soil quality, and 7 per cent reported that it led to improvements in water quality.[21]

Quebec leads other provinces, giving it top marks, with 72 per cent of farms having an active environmental farm plan. However, all of the Western provinces received D grades with an average of 24.5 per cent of farms with environmental farm plans in place in 2011. (See Chart 58.)

Chart 58

Proportion of Farms With an Environmental Farm Plan, 2011

(per cent)



Source: Statistics Canada, *Table 1: Environmental Farm Plans on Canadian Farms.*

20 Agriculture and Agri-Food Canada, *Environmental Sustainability of Canadian Agriculture*, 232.

21 Sustainable Farm & Food Initiative, *Farm, Food & Beyond*, 8.

APPENDIX A

Detailed Food Report Card Metrics

Table 1

Provincial Food Report Card Metrics by Sub-Element and Theme of the Canadian Food Strategy

(grade)

Metric	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.	Canada	Y.T.	N.W.T.	Nun.
ELEMENT: INDUSTRY PROSPERITY														
Sub-Element: Endowments														
Farm Area	D	A	A	C	D	D	D	D	D	D	–	–	–	–
Farm Size	D	B	A	B	D	D	D	D	D	D	–	–	–	–
Sub-Element: Capitalization														
Net Capital Stock in Farming	D	A	A	C	A	B	D	D	D	D	–	–	–	–
Farming—Net Value-Added	D	B	A	C	A	B	D	D	D	D	–	–	–	–
Sub-Element: Farm Revenue Structure														
Enterprise Viability, Revenue Under $100,000	D	C	A	A	C	A	C*	C*	C*	C*	–	–	–	–
Enterprise Viability, Revenue at Least $500,000	D	D	B	A	D	D	A*	A*	A*	A*	–	–	–	–
Farming—Return on Assets	D	D	A	B	C	B	B	C	B	C	–	–	–	–
Solvency Ratio, Debt	D	D	D	B	D	B	C	B	A	A	–	–	–	–
Viability Through Government Programs, Crop Programs	B	B	B	C	B	B	C	A	D	A	–	–	–	–
Viability Through Government Programs, Animal Programs	A	A	A	C	A	D	A	B	A	D	–	–	–	–
Sub-Element: The Food Manufacturing Sector														
Per Capita Food Manufacturing Sales	D	C	B	B	C	C	C	D	A	D	–	–	–	–
Growth in Food Manufacturing—Value-Added	C	B	A	D	B	B	A	C	A	B	–	–	–	–
Manufacturing Research and Development Expenditures	D	D	B	D	B	A	A	C	A	D	–	–	–	–
Food Manufacturing Exports	D	D	A	C	D	D	C	D	A	B	–	–	–	–
Food and Beverage Retailing														
Per Capita Grocery Sales	B	B	D	C	D	D	B	B	B	A	–	–	–	–
Food and Beverage Store Gross Margin	A	C	B	B	B	C	C	B	B	D	–	–	–	–
Food Service Establishment Operating Margin	D	A	A	D	D	C	C	C	C	D	–	–	–	–
ELEMENT: HEALTHY FOOD AND DIETS														
Sub-Element: Daily Dietary Energy Intake														
Dietary Energy Intake, Boys, Aged 14-18	C	B	C	C	B	D	C	B	B	B	C	–	–	–
Dietary Energy Intake, Girls, Aged 14-18	B	B	D	C	D	D	B	B	C	C	C	–	–	–

(continued ...)

Table 1 (cont'd)

Provincial Food Report Card Metrics by Sub-Element and Theme of the Canadian Food Strategy

(grade)

Metric	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.	Canada	Y.T.	N.W.T.	Nun.
ELEMENT: HEALTHY FOOD AND DIETS														
Sub-Element: Food Consumption														
Fruit and Vegetable Intake, Men	D	D	D	D	D	D	D	D	D	D	D	D*	D*	D*
Fruit and Vegetable Intake, Women	D	D	D	D	D	D	D	D	D	D	D	D*	D*	D*
Fish and Seafood Intake	C	D*	D*	D*	D	C	D*	D*	D*	D*	D	–	–	–
Sub-Element: Sodium, Carbohydrate, Saturated Fat, Added Sugar Intake														
Sodium Intake	D	D	D	D	C	D	D	D	D	C	D	–	–	–
Carbohydrate Intake, Men, Aged 19+	A	A	D	A	A	A	B	–	C	–	A	–	–	–
Carbohydrate Intake, Women, Aged 19+	D	D	A	–	A	B	–	C	–	A	B	–	–	–
Saturated Fat Intake	C	B	C	B	A	D	B	C	C	A	B	–	–	–
Added Sugar Intake, Men	B	A	A	A	A	B	A	A	A	A	A	–	–	–
Added Sugar Intake, Women	B	A	D	C	A	D	A	D	C	A	C	–	–	–
Sub-Element: Micronutrients: Vitamin A & D, Iron, Calcium Intake														
Vitamin A Intake, Men, Aged 19+	A	C	B	D	C	A	B	C	B	D	B	–	–	–
Vitamin A Intake, Women, Aged 19+	B	C	C	C	C	A	C	B	B	D	B	–	–	–
Vitamin D Intake, Men, Aged 19+	A	D	C	D	D	C	B	B	A	B	D			
Vitamin D Intake, Women, Aged 19+	D	C	B	C	D	A	B	A	B	D	C			
Iron Intake, Women, Aged 14-18	B	–	B	–	A	A	–	D	–	B	A	–	–	–
Iron Intake, Women, Aged 19-30	B	C	D	–	D	–	–	–	A	D	B	–	–	–
Iron Intake, Women, Aged 31-50	A	D	D	A	D	A	B	C	D	–	C	–	–	–
Calcium Intake, Men, Aged 71+	B	B	A	D	D	B	D	B	D	B	C	–	–	–
Calcium Intake, Women, Aged 71+	D	D	D	D	D	D	D	A	D	D	D	–	–	–
Sub-Element: Chronic Diet-Related Health Conditions														
Type 2 Diabetes	A	A	B	A	C	B	D	C	D	D	B	–	–	–
Obesity, Male, Aged 12-17	A	B	A	A	A	A	A	A	B	D	A	–	C	–
Obesity, Female, Aged 12-17	A	C	A	–	C	A	C	D	–	D	B	–	–	–
Obesity, Male, 18+	A	B	B	B	B	A	C	C	B	D	B	B	D	–
Obesity, Female, 18+	A	B	B	B	B	A	C	D	B	D	B	B	D	–
High Blood Pressure	B	B	B	C	C	C	D	C	D	D	C	B	A	A
Diagnosed Hypertension	A	A	B	B	B	A	B	C	B	D	–	A	A	B
Gastrointestinal Diseases	A	A	B	A	B	A	C	C	C	D	B	A*	A*	A*

(continued ...)

Table 1 (cont'd)

Provincial Food Report Card Metrics by Sub-Element and Theme of the Canadian Food Strategy

(grade)

Metric	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.	Canada	Y.T.	N.W.T.	Nun.
ELEMENT: HEALTHY FOOD AND DIETS														
Sub-element: Alcohol Consumption														
Heavy Drinking, Aged 12+	A	B	B	A	A	B	B	B	A	C	B	D	A	–
Mortality From Alcoholic Liver Disease	C	A	A	B	B	A	A	A	B	A	B	D	B	–
Sub-Element: Food Literacy														
Reading Food Labels While Shopping	A	D	C*	C*	B	C	D*	D*	D*	D*	B	–	–	–
ELEMENT: FOOD SAFETY														
Sub-Element: Microbial Risk														
Incidence of *Campylobacter*	D	C	B	A	C	D	D	B	C	A	–	–	–	–
Incidence of *Salmonella*	D	D	A	B	C	A	D	C	C	A	–	–	–	–
Incidence of *E. coli*	A	C	A	B	A	A	A	D	A	A	–	–	–	–
Incidence of *Listeria*	B	A	A	A	B	D	B	B	D	A	–	–	–	–
Sub-Element: Food Recalls														
Recalls Per 100,000 Inhabitants	C	B	D	D	A	A	D	D	D*	D	–	–	–	–
Sub-Element: Animal Welfare														
Rate of Chicken Condemnation	D	D	A*	A*	A	C	B*	B*	B*	B*	B	–	–	–
Rate of Turkey Condemnation	D*	D*	A*	A*	B*	B*	B*	B*	B*	B*	C	–	–	–
Rate of Hog Condemnation	A*	A*	A*	A*	D*	D*	D*	D*	D*	D*	C	–	–	–
Rate of Cattle Condemnation	A*	A*	A*	A*	B	D*	D*	D*	D*	D*	A	–	–	–
ELEMENT: HOUSEHOLD FOOD SECURITY														
Sub-Element: Household Food Insecurity														
Household Moderate to Severe Food Insecurity	A	A	A	A	A	A	A	A	A	A	A	A	B	D
Sub-Element: Food Insecurity Among Peoples														
Food Insecurity, Single Parents With Children	B	C	D	B	B	A	A	D	B	B	B	C	–	–
Child Food Insecurity	–	B	B	–	C	B	A	A	D	–	B	–	–	–
Children Hungry But Could Not Afford More Food	–	B	D	–	D	C	A	B	D	–	C	–	–	–
Could Not Feed Children Balanced Meals	–	B	B	–	B	B	A	A	D	–	B	–	–	–
Indigenous Food Security	A	A	A	A	A	A	A*	A*	A*	A*	A	A	A	D
Sub-Element: Economic Measures of Food Security														
Could Not Afford Balanced Meals	–	A	A	–	B	A	C	C	D	–	A	–	–	–
Ran Out of Food, With No Money for More	–	B	A	–	B	A	C	C	D	–	B	–	–	–
Food Accessibility, Food Stores Per 1,000 People	C	D	D	D	C	A	C	C	–	A	–	–	–	–

(continued ...)

Table 1 (cont'd)

Provincial Food Report Card Metrics by Sub-Element and Theme of the Canadian Food Strategy

(grade)

Metric	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	N.L.	Canada	Y.T.	N.W.T.	Nun.
ELEMENT: HOUSEHOLD FOOD SECURITY														
Household Debt Service Ratio	D	C	C	C	D	C	C	D	C	B	D	C	B	A
Sub-Element: Mental and Physical Effects														
Worried Food Would Run Out	–	A	A	–	B	A	C	B	D	–	B	–	–	–
Hungry but Could Not Eat	–	C	A	–	D	C	D	D	C	–	C	–	–	–
Lost Weight	–	B	A	–	B	B	D	D	A	–	B	–	–	–
Use of Food Banks, Adults, Aged 18+	B	A	A	D	B	A	B	A	A	D	B	–	–	–
Use of Food Banks, Children, Aged 0-17	A	A	A	C	A	A	A	A	A	D	A	–	–	–
Sub-Element: Household Food Emergency Preparedness														
Household Emergency Supply Kits	A	D	D	D	C	C	C	C	C	B	C	–	–	–
ELEMENT: ENVIRONMENTAL SUSTAINABILITY														
Improving Business Environmental Performance	B	C	–	C	B	A	C	A	A	D	B	–	–	–
Sub-Element: Household Food Waste														
Organic Food Material Diversion	A	D	–	B	A	A	D	B	–	–	A	–	–	–
Grocery Bags Thrown Out Weekly	B	D	A	A	C	D	D	B	–	D	C	–	–	–
Over-Acquisition of Food	A	A	C	A	A	B	A	C	–	D	A	–	–	–
Food Over-Preparation	A	B	A	C	B	A	A	D	–	C	B	–	–	–
Food Expiry Dates	B	C	B	A	B	B	C	D	–	A	B	–	–	–
Food Packaging Size	B	B	C	A	B	A	A	D	–	A	B	–	–	–
Sub-Element: Air Quality														
Greenhouse Gas Emissions Reduction, 1981-2011	D	D	A	D	C	D	D	D	D	D	–	–	–	–
Greenhouse Gas Emissions in 2011	A	D	A	B	D	C	A	A	A	A	–	–	–	–
Particulate Matter Emissions	A	B	D	B	A	A	A*	A*	A*	A*	–	–	–	–
Ammonia Emissions	A	A	A	B	D	D	B	C	D	D	B	–	–	–
Sub-Element: Water Contamination														
Water Contamination by Coliforms	A	C	A	A	D	C	A	A	A	–	B	–	–	–
Water Contamination by Pesticides	A	A	A	B	D	A	B	A	D	–	B	–	–	–
Sub-Element: Soil Health														
Nitrogen Balance in Soil	A	A	A	D	C	D	C	D	C	D	A	–	–	–
Phosphorus Balance	A	A	A	–	A	C	C	C	D	D	A	–	–	–
Soil Erosion	A	A	A	A	D	A	C	A	A	D	A	–	–	–
Sub-Element: Farm Environmental Sustainability														
Farms with an Environmental Farm Plan	D	D	D	D	C	A	B*	B*	B*	B*	C	–	–	–

Note: Grades with an asterisk (*) reflect a regional metric applied to each of the region's corresponding provinces.
Source: The Conference Board of Canada.

APPENDIX B

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