

The role of beef in school-aged children's nutrition in Canada

Canada Beef conducted a research review in response to a government consultation on the pan-Canadian school food policy. This toolkit is a snapshot of the key findings of the nutritional role of beef in meals for school-aged children and teens. The results of Canada Beef's review provide a compelling rationale for including beef in school food programs. They also uncover more broadly significant diet quality issues for children and youth.

National School Food Program Investment

In April 2024, the Liberal government announced \$1 billion in funding over five years for provinces and territories to implement the National School Food Program.¹ It is expected to provide meals for more than 400,000 kids each year. The federal government has committed to working with provincial, territorial, and Indigenous partners to deliver the National School Food Program, and support began in 2024.

Government's vision: "That all children and youth in Canada have access to nutritious food at school, in an inclusive, non-stigmatizing environment that fosters healthy practices, while strengthening connections with local food systems, the environment and culture."²

The government cites the following benefits for a national school food policy:²

- reducing hunger and food-related spending for families
- improving learning as well as nutrition and health outcomes
- supporting local economies and promoting sustainability



Key Findings and Priority Considerations

- 1.** Nutrition during childhood can have a lasting impact on physical and cognitive development and future health.
- 2.** While vegetables and fruit tend to be the focus of improving nutrient intakes, protein foods and the nutrients they provide are also under-consumed by many children in Canada.
- 3.** There is substantial evidence that iron, zinc, and vitamin B₁₂ are shortfall nutrients for many school-aged children in Canada.
- 4.** New data shows iron deficiency affects even more Canadians than previously recognized. The move to more plant-based diets is likely exacerbating this.
- 5.** Meat differs from plant foods in that it provides complete protein along with vitamin B₁₂ and more bioavailable iron and zinc.
- 6.** Research shows the best-quality diets include both animal and plant foods. Balancing animal and plant foods leads to better nutritional profiles.
- 7.** Guidelines focused on nutrients to limit, and not on meeting needs for shortfall nutrients, risk unnecessarily limiting intakes of nutrient-dense foods.
- 8.** To be sustainable, diets must balance many factors, including preventing malnutrition and considering the beneficial roles ruminants play in sustainable food systems.

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School Food Programs in Canada: The Current Landscape

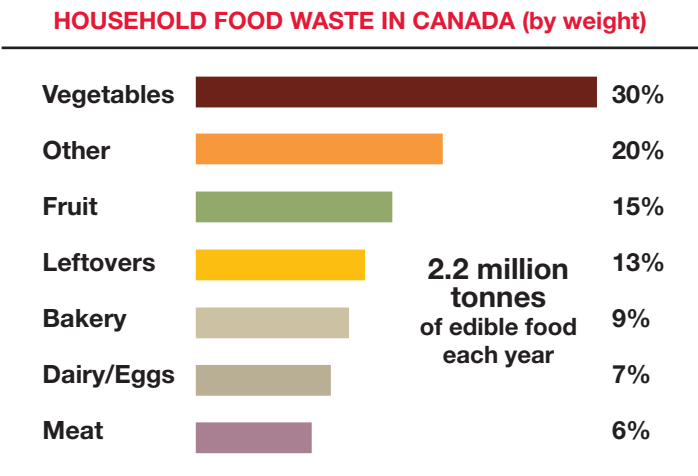
School food programs in Canada vary by province and territory due to provincial and territorial governance, with differences in scope, guidelines, and monitoring. Some programs provide only snacks, while others offer full meals, and access is uneven across regions. Many programs rely on volunteers and donations to operate, and there has been a notable increase in demand.²

Based on a review of school food programs across Canada, the following observations were made about how beef fits into existing programs:

1. Lean, unprocessed beef typically meets nutrition guidelines, but program limits on saturated fat and sodium may exclude some ground beef options.

2. School policies tend to focus on reducing saturated fat, salt, and sugar, rather than addressing gaps in key nutrients such as iron, vitamin B₁₂, and zinc, which are vital for children's health.

3. Sustainable food efforts often emphasize plant-based proteins; however, ruminants can play a positive role in sustainable systems, there is little food waste associated with meat, and animal-sourced foods offer unique nutritional benefits.



Source: National Zero Waste Council. 2022. Food waste in the home.

KEY INSIGHT: Food is only nutritious if kids eat it. The fact that beef is a familiar and well-liked food in Canada is an important consideration. Efforts to improve the diets of children and youth, including school food programs, should consider taste preferences in addition to health and sustainability—keeping food waste in mind as both an economic and environmental issue.

Time to Act: Many Kids Are Not Getting the Nutrition They Need

Good nutrition in childhood is essential for learning, growth, and development including brain and mental health and future health. However, the reality is that poor childhood nutrition is common. In short, rates of food insecurity are high,³ and kids eat too many highly processed foods⁴ and not enough nourishing foods.⁵⁻⁸ A study on what Canadian kids eat at school found that meals and snacks with less sugar and salt, and more calcium, fibre, and iron, could help improve their health.⁹

Canada ranks 37th out of 41 member countries of the Organisation for Economic Co-operation and Development (OECD) for children's food and nutrition security.¹⁰



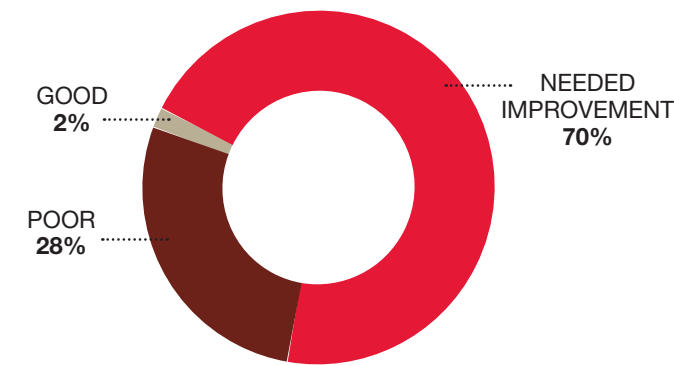
Hungry Kids Can't Learn: Canada's Childhood Food Insecurity Crisis

Up to 1 in 5 young people in Canada say they go to school or bed hungry at least sometimes because there is not enough food at home.¹¹

More than 50% of the calories in the diets of children and adolescents come from highly processed foods.⁴

The 2023 Food and Agriculture Report found that diets lower in ultra-processed foods have a smaller environmental footprint, suggesting that school food programs that aim to curb ultra-processed foods will improve both health and sustainability.¹²

A Look at the Diets of Manitoba's Grade 9 Students⁵

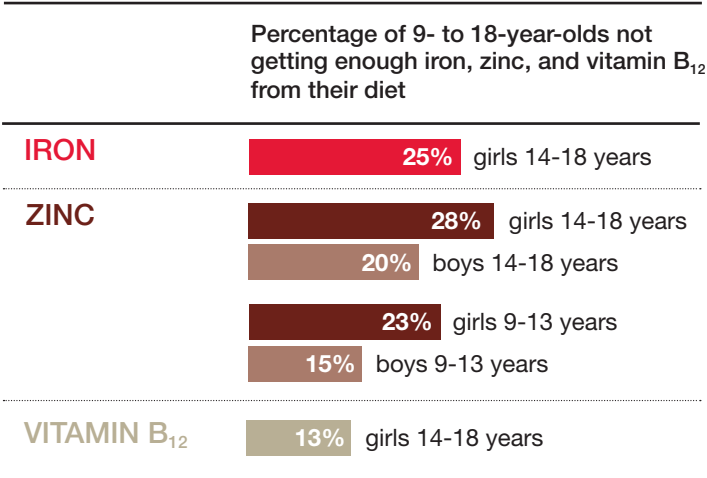


Nutrient Gaps in Canadian Children and Teens

Research shows that many children and teens aren't eating the recommended servings of veggies and fruit, dairy, and protein-rich foods.⁶ At the same time, many are not getting enough of these key nutrients:⁵⁻⁸

- Iron
 - Zinc
 - Vitamin B₁₂
 - Calcium
 - Vitamin A
- Vitamin C
 - Vitamin D
 - Folate
 - Fibre
 - Potassium

Spotlight on Iron, Zinc, and Vitamin B₁₂⁷



Not getting enough of these nutrients can affect:

GROWTH

Mental well-being

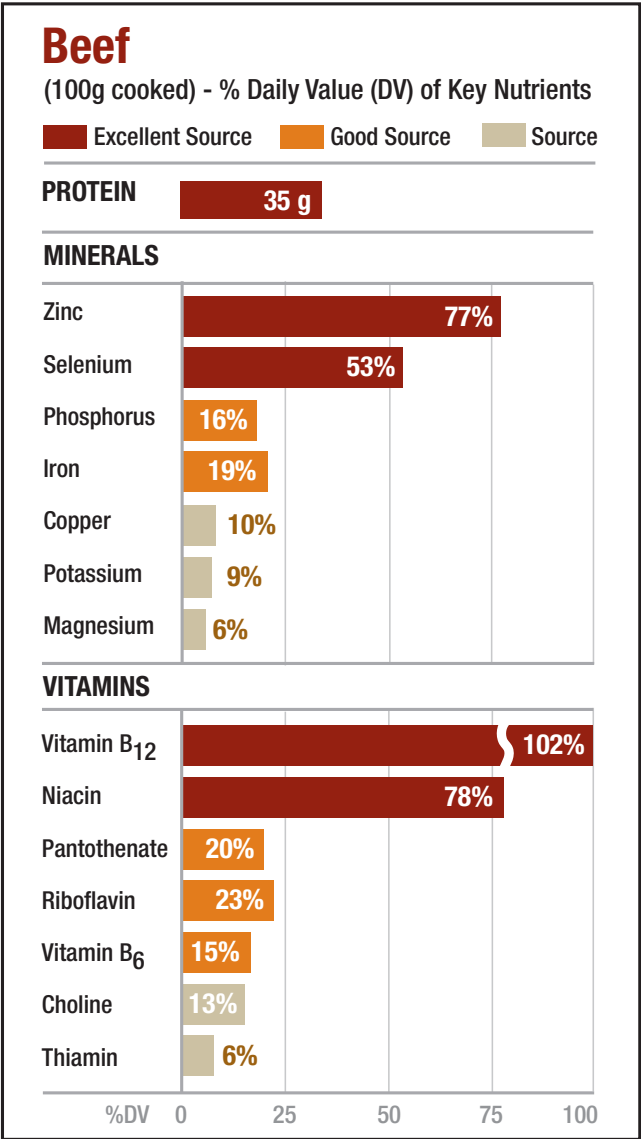
energy levels

Learning and concentration

Immune health

The Case for Beef

Beef is an excellent source of protein, zinc, and vitamin B₁₂ and a good source of iron, providing a natural solution to address several of the nutrient shortfalls.



Nutrient values from Health Canada, Canadian Nutrient File, 2015. Food Code 6172.



The Meat and Mental Health Connection

- Some research shows that people who eat meat tend to have lower rates of depression and anxiety compared to those who don't eat meat.¹³
- Current evidence suggests several nutrients found in meat,¹⁴ including iron,¹⁵⁻¹⁷ zinc,¹⁸ and creatine,¹⁹ are associated with a lower risk of depression.

Around 75% of lifetime mental disorders begin in adolescence.²⁰

Poor nutrition is a key risk factor for depression—and one we can change.

Plant-based Diets Could Worsen Existing Nutrient Shortfalls

Plant-based diets tend to offer a lower quality and quantity of protein and lower levels and bioavailability of zinc and iron.

Replacing meat with plant-based foods and “Meatless Mondays” offerings could further reduce intake of these nutrients. This is concerning for food-insecure children—many are already low on iron²¹ and protein.²²



Iron Deficiency: A Concern for Young Minds and Bodies

“Iron deficiency can cause delayed cognitive and physical development, poor acquisition of language and learning skills, and increases risk of infection in children and adolescents.”²³

—Canadian Paediatric Society

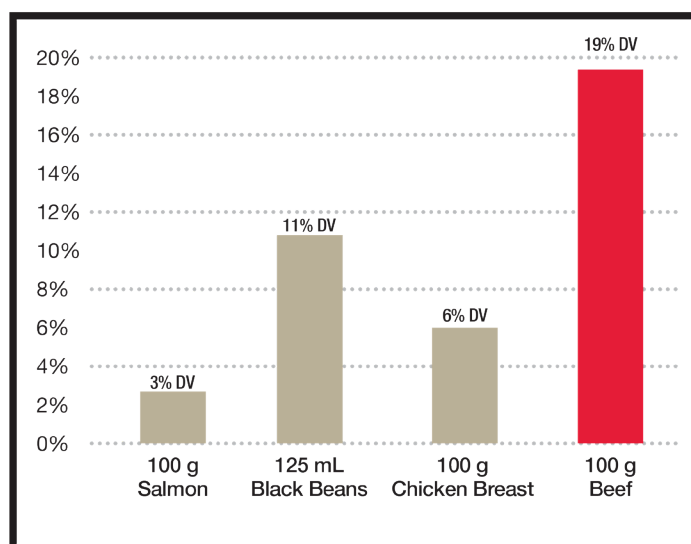
FACT: Rates of iron deficiency in Canada are higher than previously reported.⁸



The Type and Amount of Iron in Foods Vary

Meat, fish, and poultry provide heme iron, the most bioavailable form of iron. Other foods like eggs, leafy greens, tofu, legumes, and grains provide non-heme iron, the less bioavailable form.

% Daily Values for Iron in Various Foods

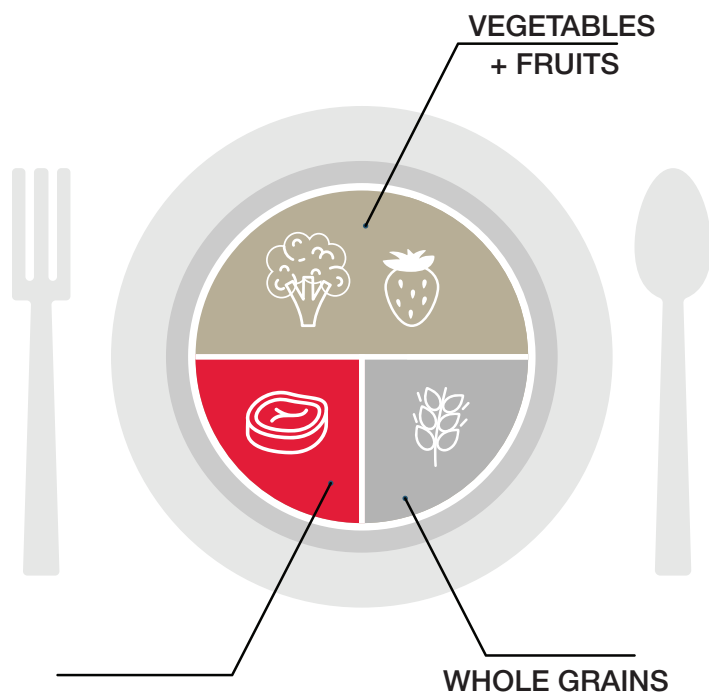


Source: Health Canada. Canadian Nutrient File, 2015. Food Codes: 3053, 3377, 842, 6172.

According to the Canadian Paediatric Society, eating foods with low bioavailable iron is likely the primary factor contributing to the development of iron-deficiency anemia in children.²³

Protein Matters

While vegetables and fruits are often the focus of nutrition interventions targeted to kids, many kids, food-insecure children in particular, aren't getting enough protein.²²



PROTEIN is essential for growth, immunity, bone health, and brain health.

Many Teens Are Eating Fewer Than Recommended Meat and Alternatives⁶



Limiting Meats Can Impact Diet Quality

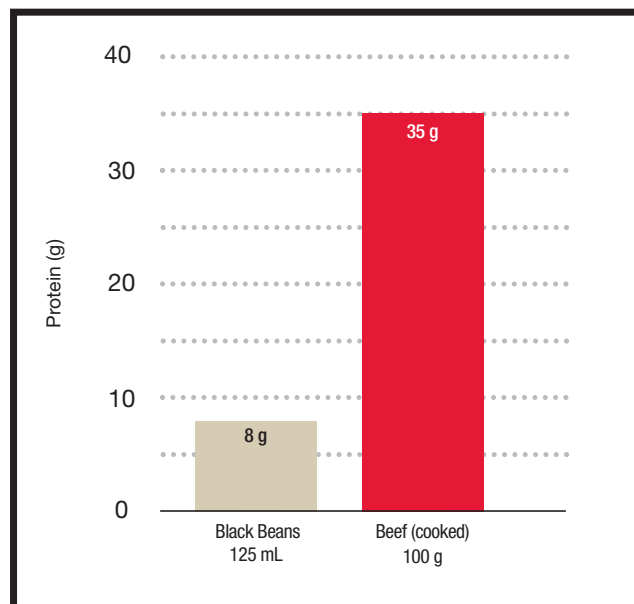
A study of teen girls in Sweden showed that those who limit meat are more likely to be low on iron. Those who eat more red meat are less likely to have an iron deficiency.²⁴

School Food Programs Should Prioritize Protein

Experts suggest school-aged kids may require more protein than current guidelines recommend.²⁵ Not getting enough protein is also linked to eating more overall calories, which could lead some children to becoming overweight.^{26, 27}

1. **Quantity matters:** Meat, fish, and poultry provide more protein per bite than plant-based proteins—important for kids with small appetites.

Compare the Protein in a Serving of Beef and Beans








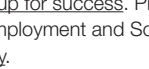


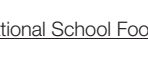
Source: Health Canada. Canadian Nutrient File, 2015. Food Codes: 3377, 6172.

2. **Quality matters:** Complete proteins in animal foods provide all the essential amino acids (EAAs) for healthy childhood development, while most plant proteins are low in one or more EAAs and are considered incomplete.

GOOD TO KNOW: Even when protein quality is addressed by combining plant proteins, there is the issue of protein quantity and density. The fact that children tend to have small appetites needs to be considered.

Research Spotlight: Recent Canadian research shows that the best way for kids aged 9–18 to meet their nutritional needs is with a 3:1 ratio of animal to plant protein.²⁸

Know Your Protein Sources

Amount of protein in common foods								
								
More than 20 g	10 g to 20 g	Less than 10 g						
Beef, pork, lamb, goat, chicken, fish and seafood, turkey, veal, game meats, organ meats	Canned fish, eggs, tempeh, deli meats, cottage cheese, Greek yogurt, edamame	Cheese, plain yogurt, milk, soy milk, nuts and seeds, nut butters, tofu, chickpeas, lentils, beans, hummus						

Based on Health Canada's standard serving sizes.²⁹ Canadian Nutrient File 2015.

2023 FAO report highlights the importance of animal-based proteins:^{30,31}



- 1) "Meat, eggs and milk offer crucial sources of much-needed essential nutrients which cannot easily be obtained from plant-based foods."
- 2) "High quality protein, a number of essential fatty-acids, iron, calcium, zinc, selenium, vitamin B₁₂, choline and bioactive compounds like carnitine, creatine, taurine are provided by foods from terrestrial animals and have important health and developmental functions."
- 3) "This is particularly vital during key life stages such as pregnancy and lactation, childhood, adolescence and older age."
- 4) "Phytates, tannins and oxalates, found in some foods such as legumes and cereals, can interfere with the absorption of minerals [such as iron and zinc] and other nutrients in humans. Consumption of TASF [terrestrial animal source food] has been shown to counteract the effects of these antinutrients."

The FAO notes that this report is "the most comprehensive analysis yet of the benefits and risks of consuming animal source foods and is based on data and evidence from more than 500 scientific papers and some 250 policy documents."

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