

Cost-benefit analysis of providing school-based breakfasts to children in Canada

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Executive summary

- The objective of this study was to measure the net economic contribution of the Club's school breakfast programs in Quebec and in other Canadian provinces.
- To do so, a cost-benefit analysis (CBA) was conducted to determine whether the comprehensive economic benefits of breakfasts served in schools supported by the Club are sufficient to justify the resources mobilized to do so.
- The analysis projected the health and economic outcomes over a 22-year period of a fixed cohort of students (N=78,207) of all levels, i.e., from kindergarten to Grade 12, receiving school breakfasts (Year 1: school year 2024-2025) in Quebec and in the ROC, compared with the same cohort that would not benefit from this program. This economic dynamic is one where an investment (namely, providing breakfasts in schools) is made during a few early years and generates returns for years to come – although the ones bearing the initial costs (i.e., the Club and its financial partners) do not reap most of the ensuing health, social and economic returns.
- In Quebec, over the projection period of 22 years, the quantified benefits of school breakfasts were more than twice as large as program costs (benefit-cost ratio = 2.24). This overall result is due to three sources of benefits. First, the efficiency of the Club's operations provides an increase in disposable income for families (\$315 million) greater than program costs (\$209 million). Second, ex-students become active and earn more due to greater academic achievement (discounted value: \$39 million). Third, school breakfasts are projected to lower obesity rates, which translates into significant savings for the health care system (\$114 million). In the ROC, similar net benefits are observed, albeit lower ones (benefit-cost ratio: 1.605).
- A sensitivity analysis was conducted to assess the robustness of the results. Using 13 different variations of the CBA's key values, in nearly all cases, the benefit-cost ratio is greater than 1.7 after 12 years and nearing or exceeding 2 after 22 years. The consistency of results across many variations reinforces the previous conclusions, namely that school breakfasts are a wise social investment for children, their families, and the rest of society.
- This study is the first one that estimates the economic contribution of school breakfasts in Canada. Governments should be comforted in these results, which validate the relevance and impact of their investment in school nutrition programs throughout Canada. Moreover, they underline the notable efficiency of the Club in Quebec, which delivers breakfasts through centralized operations at a very low cost, hence maximizing the budget impact on families.
- Even though this analysis was performed with the best available data and methods, it is subject to a few limitations that may impact the accuracy of its conclusions, such as the exclusion of some benefits and costs that are difficult to measure or intangible, the use of assumptions and possible causal uncertainty, as well as long-term projections that may deviate over time.
- Nevertheless, even considering these limitations and to the best of our knowledge, the results may be considered a reasonable and valid estimation of the economic contribution to school breakfasts delivered by the Club in Quebec and in the ROC.

1. Introduction

Since its inception in 1994, the Breakfast Club of Canada ("the Club") has strived to ensure that children can start their day with a nutritious meal. Through their own operations, as well as partnerships with numerous organizations, the Club provides breakfasts to schools across Quebec and Canada. During the 2024-2025 school year, more than 895,000 children benefited from the organization's efforts, including nearly 100,000 in Quebec. Despite this reach, more than 1,000 schools located in vulnerable areas are still waiting for support from the Club, which relies on private funding for almost 64% of its budget.

While the health and social benefits of providing breakfasts for children are widely recognized by both the public and the government, the Club is seeking to further assess the overall economic impact of its work. For this purpose, the Club has mandated AppEco to measure the net economic contribution of the Club's school breakfast programs in Quebec and other Canadian provinces.

2. Background

2.1. School breakfast programs across Canada

In recent years, School food programming in Canada has expanded significantly thanks to new provincial investments as well as the launch of the National School Food Program in 2024, introducing the country's first comprehensive, federally coordinated school food policy. The Program responds to concerns about youth nutrition, with the 2021 Canadian Community Health Survey indicating that only 22.1% of Canadians aged 12 to 17 consume at least five servings of fruits and vegetables per day¹. International and national evidence demonstrates the value of such programs: the World Food Programme estimates that each dollar invested in school food yields an economic return of 3 to 10 dollars, while research from the United States and the United Kingdom indicates that every dollar spent generates between 2 and 6 dollars in combined health, social, and economic benefits². These include improved health and learning outcomes, grocery cost savings, support for local economies, and the promotion of sustainability³.

Through Budget 2024, the federal government committed one billion dollars over five years to provide healthy meals to an additional 400,000 children annually. Following this investment, agreements were signed with all provinces and territories by March 2025, to expand and enhance school food programs nationwide. This commitment was reaffirmed in Budget 2025–2026, in which the government led by Prime Minister Mark Carney confirmed the continuation and long-term sustainability of the National School Food Program⁴.

In 2023–2024, approximately 62% of Canadian schools (about 8,100 schools) offered at least one provincial/territorial government-funded school food program, serving roughly 30% of students from junior kindergarten to Grade 12. Coverage, however, varies widely across the country, ranging from 100% of schools in Newfoundland and Labrador, Prince Edward Island, and the territories to only 18% in Alberta⁵.

Delivery models also differ by province and territory, with variations in governance, funding mechanisms, and the extent of integration with local food systems. These structural differences can create challenges in aligning priorities and responsibilities among stakeholders. For example, in Alberta, a 2022–2023 pilot program paired non-

¹ https://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=1293153&UL=1V

² <https://www.canada.ca/en/employment-social-development/programs/school-food/reports/national-policy.html>

³ <https://www.canada.ca/en/employment-social-development/programs/school-food/feeding-future.html>

⁴ <https://budget.canada.ca/2025/home-accueil-en.html>

⁵ https://amberleyruetz.ca/assets/uploads/ruetz_canada-school-food-map-2023-24_may-2025.pdf

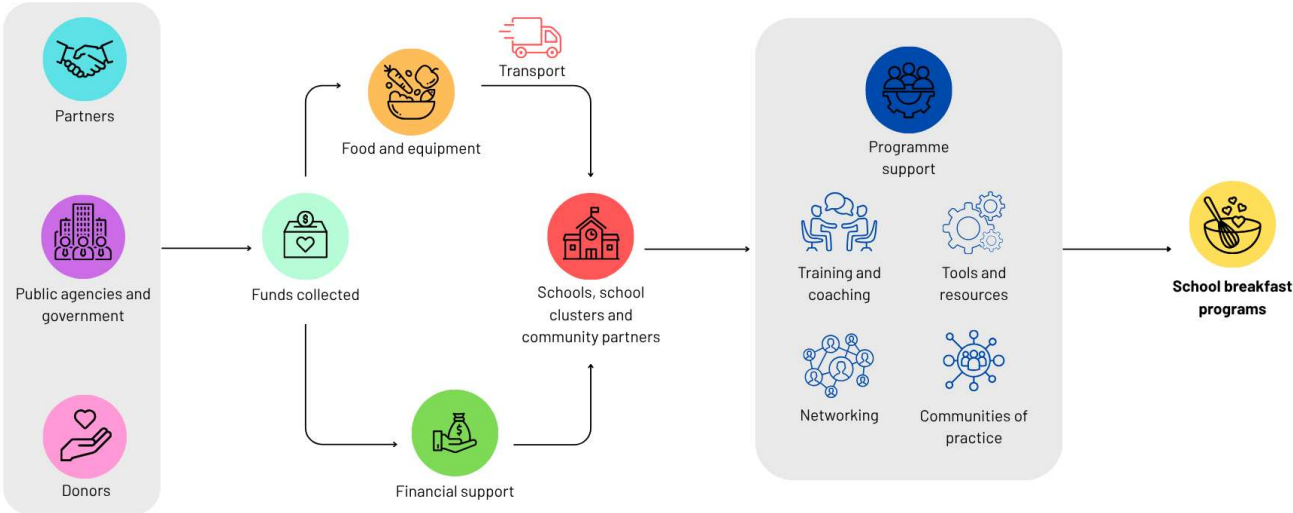
profit organizations with school authorities to deliver nutrition services. However, differing perspectives on control over funding and program delivery underscored the challenges of balancing roles between stakeholders, ultimately leading the province to return full management to school authorities.⁶

In Quebec, despite comparatively substantial funding, access to government-funded school food programming remains limited. In 2023–2024, according to the same source, 27% of schools offered such programs⁷.

2.2. The Breakfast Club of Canada

Operating through a large national network and with the support of diverse stakeholders, the Club is structured around the following operational model.

Figure 1. Workflow of the Club



During the 2023–2024 school year, the Club supported/operated almost 4,000 school food programs across Canada, including 591 in Quebec alone. Among these, the Club played a significant role within Indigenous communities and public schools reaching a high number of Indigenous students, where over 42,000 students benefited from 274 breakfast programs. These programs not only address immediate nutritional needs but also serve as a critical support system for students from vulnerable backgrounds.

School Breakfast Programs (SBPs) stand out as both a solution to promoting school food security and fostering student well-being. Beyond nutrition, SBPs offer a unique environment to build a sense of community and develop essential social and life skills. Through shared meals and program activities, students are exposed to basic cooking techniques, teamwork, and time management –all skills that can positively influence their lifelong trajectories. By providing a reliable source of nourishment and routine, these programs enhance students’ learning experiences and support their overall development.

The Club’s support for SBPs is multi-faceted. Schools benefit from direct financial assistance, access to nutritious resources, and regular engagement with program coordinators through calls and site visits. Additional forms of

⁶ <https://www.alberta.ca/school-nutrition-program>

⁷ <https://amberleyruetz.ca/assets/uploads/ruetz-a.t.-tasala-k.-2025.-the-state-of-school-food-programming-in-canada-2023-24.pdf>

support include in-kind donations, participation in webinars and training sessions, and access to budgeting tools that help schools manage and sustain their programs effectively.

To better understand the impact of its efforts, in 2025, the Club conducted a survey involving 932 participating schools. The results highlighted widespread positive outcomes, as respondents reported reductions in student hunger, improved attendance, enhanced well-being, better academic performance and healthier eating habits. These findings not only validate the Club's approach but also raise important questions about the broader significance and magnitude of these benefits. Specifically, what are the short-, medium-, and long-term impacts of SBPs on children and teens, and how might these be captured in economic terms?

3. Methodology

3.1. Cost-benefit analysis framework

To carry out its mandate, AppEco has conducted a cost-benefit analysis (CBA) of school breakfast programs supported by the Club in Quebec and the rest of Canada (ROC).

The CBA is a systematic method widely used in economics to identify and, to the extent possible, quantify the costs and benefits of projects or policies (in this case: school breakfasts delivered by the Club) compared to the absence of such projects or policies. Its results help to determine whether the comprehensive economic benefits of a proposed scenario (i.e., breakfasts served in schools supported by the Club) are sufficient to justify the resources mobilized to do so.

Once evaluated and monetized over a relevant timeframe, costs and benefits are discounted to reflect the present value of dollars. The sum of present value costs and benefits corresponds to the net present value (NPV) of the scenario studied, and the alternative with the highest positive NPV should be chosen. Expressed otherwise, a ratio of the total quantified benefits to the total quantified costs (both discounted) is calculated to whether benefits exceed costs, in which case the ratio is greater than one. Non-monetizable aspects, or intangible effects, are examined qualitatively to complement the NPV. Lastly, sensitivity analyses are run to gauge the robustness of the results.

3.2. Data collection and review of relevant documentation

A systematic review of the available literature and documentation was conducted to identify key costs and benefits associated with school breakfast programs. Its objective was to develop an economic model (1) based on the activities of the Club and (2) supported by peer-reviewed empirical research on the effect of breakfast consumption and the multidirectional relationship between nutrition, school performance, educational attainment, health and long-term income. It was designed to establish a robust empirical foundation for the economic model, ensuring that assumptions and parameter estimates are grounded in credible and relevant data.

Specifically, this review included peer-reviewed academic research, policy reports and grey literature related to child and adolescent nutrition, educational outcomes, public health, and long-term income drivers. Special attention was paid to studies documenting the links between breakfast consumption and their potential or observed outcomes, including cognitive function, school attendance, academic achievement, and long-term earnings. For each indicator reviewed and calculated, the most relevant source(s) are cited in each section. All data sources were selected based on their methodological rigour, transparency, and relevance to the Canadian context whenever possible.

Certain limitations in the availability and consistency of data were encountered and explicitly addressed in the modelling approach through the application of conservative assumptions, as well as a structured sensitivity analysis framework.

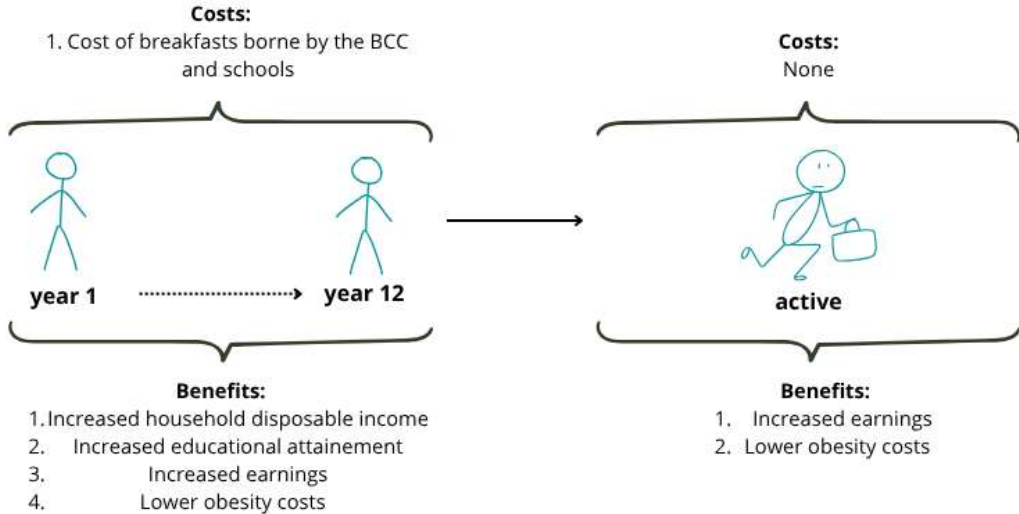
3.3. Study design

The analysis projected the health and economic outcomes over a 22-year period of a fixed cohort of students of all levels from kindergarten to Grade 12 receiving school breakfasts (Year 1 : school year 2024-2025) compared with the same cohort that would not receive them. In doing so, younger children were projected to receive school breakfasts for longer, while older students would receive them for fewer years:

- Kindergarten children would receive breakfasts during 12 schooling years, and continue with their active life for 10 years;
- Grade 1 children would receive breakfasts during 11 schooling years, and continue with their active life for 11 years;
- ...
- Grade 12 children (teenagers) would receive breakfasts during 1 schooling year and continue with their active life for 21 years.

Therefore, the longer children were exposed to school breakfasts, the more they would benefit from their observed positive consequences during their active years, as illustrated below (Figure 2).

Figure 2. Study design



During schooling years, the model evaluates program impacts on educational attainment and health, as well as savings for families. Once members of the cohort start exiting the school system, the analysis broadens to include the impact of receiving regular breakfasts during childhood and adolescence on their long-term income. On the cost side, however, breakfasts only generate costs during schooling years. As a result, the economic dynamic is one where an investment is made during a few early years and generates returns for years to come – although the ones

bearing the initial costs (i.e., the Club and its financial partners) do not reap most of the ensuing health, social and economic returns.

3.4. Study parameters

Here are the study parameters used for the CBA:

- **Scope:** Province of Quebec for the Quebec scenario and the rest of Canada for that scenario – some parameters are specific to each territory, knowing that in all cases, the CBA pertains to Canada.
- **Monetary unit:** Constant Canadian dollars of 2024 (\$ 2024)⁸.
- **Real discount rate:** 3%, a real societal discount rate commonly used in health and social projects⁹.
- **Duration:** 22 years, starting in the school year 2024-2025, including 12 years during which breakfasts are served, and 10 years of follow-up.
- **Cohort size:** 78,207 children receiving breakfasts in year 1, based on the Club’s data for Quebec breakfasts delivered in 2024-2025, and adjusted over time to account for dropout rates¹⁰. To better compare differences between Quebec and the ROC, the ROC cohort size was also set at 78,207 in year 1 – note that the true number of students receiving breakfasts in other provinces was 796,145 in 2024-2025, see Table 1.
- **Days of school per year:** based on a 190-day school year, as indicated on the Club’s data.

Table 1. Children receiving breakfasts

	n
Kindergarten	1,942
Primary	68,229
Secondary	8,036
Total	78,207

Source: BCC data. The number of children in kindergarten, primary, and secondary levels is based on the proportions observed in the 2023–2024 school year.

4. Description and estimation of benefits and costs

4.1. Benefits

Following discussions with the Club and an in-depth review of the available literature, key benefit drivers were identified. The three main, quantifiable and science-backed benefits were increased household disposable income,

⁸ Adjustment for inflation using Statistics Canada, Table 18-10-0004-01: food inflation for food-related parameters, and All-items for the other ones.

⁹ Treasury Board of Canada Secretariat. *Canada’s Cost-Benefit Analysis Guide for Regulatory Proposals*. Available at https://publications.gc.ca/site/archivee-archived.html?url=https://publications.gc.ca/collections/collection_2022/sct-tbs/BT58-5-2022-eng.pdf.

¹⁰ Based on <https://statistique.quebec.ca/vitrine/15-29-ans/theme/education/sorties-sans-diplome-ni-qualification-au-secondaire>, overall dropout rate of 15,1 %.

increased long-term employment income and increased healthcare system savings associated with lower obesity rates.

Increased disposable income of households

Research has shown that implementing a national school breakfast and lunch program can increase the disposable income of households, essentially by reducing their overall food expenses and freeing up money for other needs. According to the World Food Programme, relieving parents from budgeting for meals can result in savings of approximately 10 % for vulnerable families.¹¹ A 2015 study of Scotland’s school lunch model revealed that families saved approximately £330 [or approximately CA\$614] annually per child on food costs.¹² For Canadian families, some sources forecast savings between CA\$130 and CA\$190 per month per child, directly increasing household disposable income.¹³

To estimate costs, household consumption expenditure data from Statistics Canada were used. The calculation proceeds in three steps. First, the annual household expenditures attributed to breakfast are identified. Second, these expenditures are divided by the average household size to obtain per capita annual expenditures. Finally, this figure is divided by the number of days in a year, yielding an estimate of the average daily cost of breakfast per individual. The food items considered in this estimation reflect those most commonly consumed at breakfast by the general population. They are not intended to represent the Club’s food offerings or to align with its nutritional guidelines.

This approach provides a standardized and nationally comparable estimate, ensuring that the results are both methodologically consistent and reflective of average household consumption patterns across Canada.

Table 2. Parameters - Increase in disposable income for families (Adjusted 2024 \$)

	Quebec	Rest of Canada
<i>Breakfast expenses by dwellings</i>		
Bread	226 \$	189 \$
Unsweetened rolls and buns	147 \$	160 \$
Other bakery products (except frozen)	280 \$	216 \$
Other frozen bakery products	43 \$	57 \$
Breakfast cereal and other grain products (except infant)	314 \$	348 \$
Fresh fruit	708 \$	860 \$
Preserved fruit and fruit preparations	292 \$	237 \$
Fluid whole milk	45 \$	49 \$
Fluid low-fat milk	221 \$	147 \$
Eggs	59 \$	180 \$
Bacon and ham	89 \$	86 \$
Peanut butter and other nut butters	31 \$	34 \$
Total breakfast cost by dwellings	2,456 \$	2,564 \$
Average household size	2.2	2.6
Breakfast cost per person per day	3.06 \$	2.73 \$

To quantify the value of increased disposable income within the model, the following formula is applied:

¹¹ <https://www.wfp.org/school-meals>

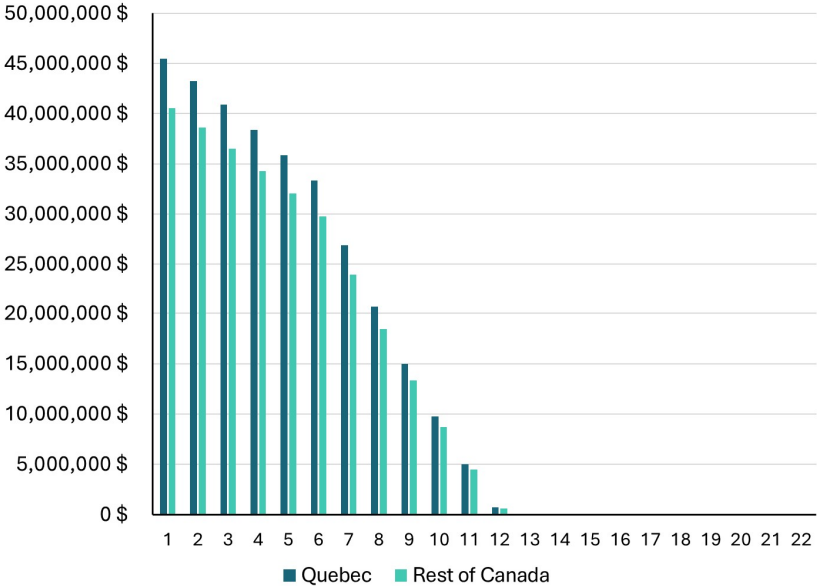
¹² <https://newsroom.co.nz/2025/03/06/school-lunch-savings-dont-offset-the-social-cost-of-hunger-say-experts/>

¹³ <https://policyoptions.irpp.org/magazines/january-2024/school-food-program/>

$$\text{Increase in disposable income} = \text{Breakfast cost per per day} \times \text{Number of children receiving breakfast} \times \text{Number of school days}$$

This calculation assumes that the provision of breakfast in schools offsets an equivalent household expenditure, hence freeing resources that would otherwise have been allocated to food. The resulting measure reflects the aggregate financial benefit to households, expressed as an increase in disposable income. Because this is based on the number of children in the cohort receiving breakfasts via the Club in a given year, this benefit is highest in Year 1, then decreases every year until Year 12, to then become zero for the remainder of the projection period (Figure 3).

Figure 3. Benefits of increase in disposable income by year - discounted



For Quebec, the estimated increase in disposable income amounts to \$315 million (discounted at 3%) during the 1-to-12-year horizon. Extending the horizon to 22 years yields the same value of \$315 million, as no additional benefit received once children complete their schooling.

For the ROC, the corresponding increase in disposable income is \$281 million (discounted) during years 1 to 12, with no additional cost after that. These benefits are lower in the ROC, because the costs spent by families in these provinces on breakfast items are also lower than in Quebec.

On a per-child basis, these results correspond to annual savings of \$581 per child per year. Because the most recent 2021 Census data indicates that Quebec families with children have an average of 1.8 children, this implies annual savings of \$1,046 per family in Year 1¹⁴. Based on these Census figures, more than 43,000 families are reached by the Club’s programs.

Increased long-term employment income

To assess the link between regular breakfast consumption and long-term employment income, educational attainment was used as a proxy. Although the direct relationship is rarely studied – largely due to the difficulty of isolating causal effects amid numerous confounders –, research has frequently examined both the relationship

¹⁴ Statistics Canada Table 98-10-0124-01

between healthy eating and better educational outcomes¹⁵, and between higher educational attainment and improved income levels.

Studies have shown that participation in school breakfast programs is associated with higher levels of educational attainment. For instance, a study by Lundborg et al.¹⁶ found that nine years of participation in such programs is linked to an increase of 0.28 years in schooling. For the purposes of the model and consistent with what this research found, this relationship was assumed to follow a linear progression for those with less than nine years of program participation.

For the second portion of the analysis, i.e., the impact of educational attainment on income, data from Statistics Canada was used to estimate the financial return of each additional year of schooling. This enabled a forecast of the salary impact for cohort members up to the age of 37 for the oldest members.

The increase in income associated with each additional year of education is estimated through a linear calculation based on Canadian Census data. While the Census does not provide direct information on the number of years of schooling completed, it does report the highest level of educational attainment (e.g., high school diploma, college degree, bachelor’s degree, etc.), which are used as a proxy for years of schooling. For example, completion of a high school diploma is treated as the baseline (= 0 years), a college diploma corresponds to approximately two additional years, and a bachelor’s degree corresponds to approximately five additional years compared to a high-school diploma, and so forth.

Note the earnings trajectory of individuals aged 20 to 24. In this age group, average incomes of an additional year of education are lower (this is more pronounced in Quebec), reflecting the fact that (a) at these ages, many technical or short-term professional diplomas are available and allow young adults to earn good salaries with few school years, and (b) higher education implies that most individuals defer short-term earnings during these years. In the long run, this temporary reduction in income is eventually offset by the higher earnings associated with advanced diplomas.

Table 3. Parameters - Higher educational attainment

	Quebec	Rest of Canada	Others	Source
<i>Increase in years of schooling gained from 9 years of exposure to breakfast programs</i>				
n years	-	-	0.28	Lundborg, P. et al. (2022)
<i>Increase in income for each additional year of education (Adjusted 2024 \$)</i>				
15 to 19 years	168 \$	183 \$	-	AppEco calculation, based on Statistics Canada table 98-10-0411-01
20 to 24 years	-627 \$	-140 \$	-	
25 to 29 years	1,083 \$	981 \$	-	
30 to 34 years	2,532 \$	3,431 \$	-	
35 to 44 years	4,998 \$	5,477 \$	-	

To assess the potential long-term impact of school-provided breakfasts on labour market outcomes, the following formula is applied to each age group:

¹⁵ The underlying causal mechanism is assumed to comprise two parts: first, healthy eating improves immediate attention and learning capability; and second, regular improvements in attention and learning capability improve long-term educational attainment. While there is ample research on these two parts, Lundborg et al. analyzed several outcomes of long-term exposure to school breakfast programs.

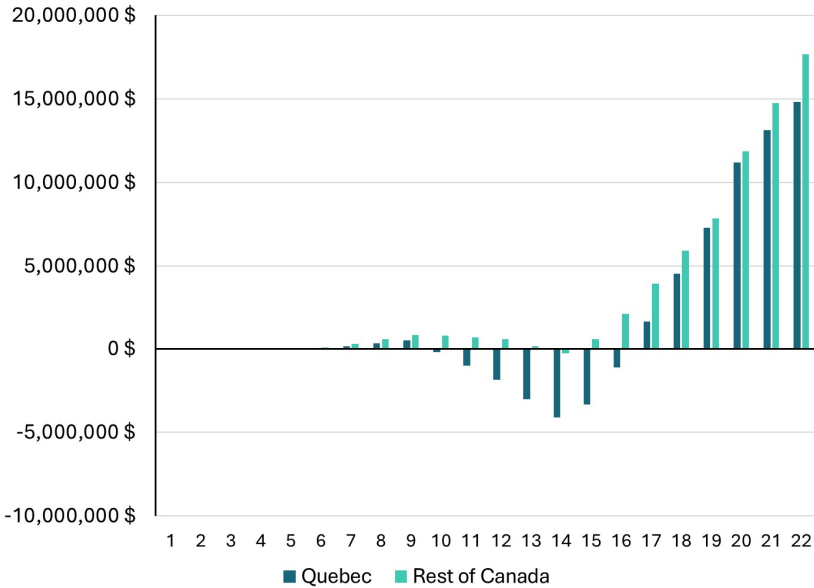
¹⁶ Lundborg, P., Rooth, D. O., & Alex-Petersen, J. Long-Term Effects of Childhood Nutrition: Evidence from a School Lunch Reform. *The Review of Economic Studies*, Volume 89, Issue 2, March 2022, Pages 876–908, <https://doi.org/10.1093/restud/rdab028>

$$\text{Increase in salary resulting from higher education attainment} = \text{Number of individuals who receive or have received breakfast} \times 0.28 \times (\text{Number of years receiving breakfasts} / 9) \times \text{Increase in income per additional year of education, by age (\$ 2024)}$$

Note : To remain conservative, even if some children can receive breakfasts for 10, 11 or 12 years, this parenthesis is set at a maximum of 1 (= maximum impact of 0.28 years after 9 years of breakfasts).

This calculation captures the mechanism through which nutritional support during childhood contributes to higher educational attainment and, ultimately, increased lifetime earnings.

Figure 4. Benefits of higher educational attainment by year - discounted



For Quebec, the estimated impact on labour incomes is negative over the short term, with a discounted value of minus \$2 million over the 1-to-12-year horizon, reflecting the temporary reduction in earnings among young adults who pursue longer studies instead of entering the labour market immediately. Over the longer 22-year horizon, however, the benefits of longer schooling become substantial, with a discounted increase in earnings due to greater educational attainment of \$39.1 million.

For the ROC, the estimated effect is \$4 million (discounted) over the first 12 years, and a discounted increase in labour incomes of \$68.6 million over the entire study period.

These results highlight the dynamic nature of the education–earnings relationship: short-term trade-offs in income during schooling years are outweighed by significant long-term gains in labour market outcomes.

Increased healthcare savings

To estimate long-term healthcare system savings associated with regular breakfast consumption, obesity-related healthcare costs were used. Although it is difficult to isolate direct causal effects due to complex health trajectories and confounding variables, a well-established body of research supports a strong link between childhood eating

habits and lifelong health outcomes, such as obesity¹⁷. Specifically, the model uses BMI-defined obesity as a proxy for excess adiposity and obesity-related chronic conditions at the populational level, as recommended by the Lancet Commission (2025)¹⁸. BMI is not sufficient on its own to diagnose obesity, but it is used as a surrogate measure of health risk at a population level, for epidemiological studies. Although definitions of obesity are evolving, current Canadian and international costs and prevalence data are still largely BMI-based.

One of these studies observed that consistent breakfast consumption in childhood and adolescence can lower the likelihood of adult obesity by up to 71%¹⁹. Given that obesity is a major contributor to chronic disease and healthcare expenditures in Canada, this preventative effect translates into substantial potential savings in health care costs. The model draws on published estimates of the annual cost of obesity to the Canadian healthcare system, combined with national obesity prevalence data from Statistics Canada (2019 is the most recent year) to project avoided healthcare costs over time (Table 4).

Table 4. Parameters – Healthcare savings due to decrease of prevalence of obesity

	Canada	Others	Source
<i>Obesity rate</i>			
5 to 11 years	9,1%	-	2019 - Statistics Canada Table 13-10-0373-01
12 to 17 years	11,2%	-	
18 to 39 years	19,8%	-	
Cost of obesity per year per person (Adjusted 2024 \$)	2 608 \$	-	Butalia, S. et al. (2023)
Skipping breakfast is associated with higher risk of obesity for children and adolescents	-	37%	Wang, K. et al. (2023)
Poor breakfast habits at age 16 is associated with more central obesity at age 43	-	71%	Wennberg, M. et al. (2013)

The impact of school-provided breakfasts on healthcare system expenditures is assessed through projected reductions in obesity-related costs. Two distinct formulas are applied, corresponding to different age groups.

For children and adolescents under 17 years of age, healthcare savings are calculated as follows:

Healthcare savings (under 17) =

N children or adolescents receiving breakfast ×

Obesity rate × 0.37 ×

Cost of obesity per person (\$ 2024)

In this formulation, 37% represents the proportion of obesity cases estimated to be preventable through improved nutrition, based on Wang et al.

¹⁷ Among them, Butalia, S. et al. (2023). Health care cost of severe obesity and obesity-related comorbidities: a retrospective cohort study from Alberta, Canada. *Obesity Research & Clinical Practice*. 2023 Sep;17(5):421–427, established the cost per person-year linked to obesity-related health conditions. Also, Wang, K. et al. (2023). The effect of breakfast on childhood obesity: a systematic review and meta-analysis ,*Frontiers in Nutrition*. 2023 Sep 6;10:1222536 found that skipping breakfast is positively associated with overweight in children and adolescents, namely in about 37 % of cases.

¹⁸ Source : <https://pubmed.ncbi.nlm.nih.gov/39824205/>

¹⁹ Wennberg, M. et al. (2013) Poor breakfast habits in adolescence predict the metabolic syndrome in adulthood. *Public Health Nutr*. 2015 Jan;18(1):122–9.

For adolescents and adults aged 17 and over, the formula incorporates an age-adjusted factor to reflect the declining influence of school-based interventions with increasing age:

$$\begin{aligned}
 \text{Healthcare savings (17 and over)} = & \\
 & N \text{ individuals who have received breakfast} \times \\
 & \text{Obesity rate} \times (43 - \text{Age}) / 43 \times 0.71 \times \\
 & \text{Cost of obesity per person (\$ 2024)}
 \end{aligned}$$

In this expression, the term $(43 - \text{Age}) / 43$ accounts for the diminishing effect of childhood interventions over the life cycle, while 71% reflects the estimated share of obesity cases that can be mitigated through sustained improvements in nutrition.

These equations calculate direct healthcare cost savings attributable to the reduction of obesity prevalence associated with school breakfast programs.

Figure 5. Projected decrease prevalence in obesity by year, n cases

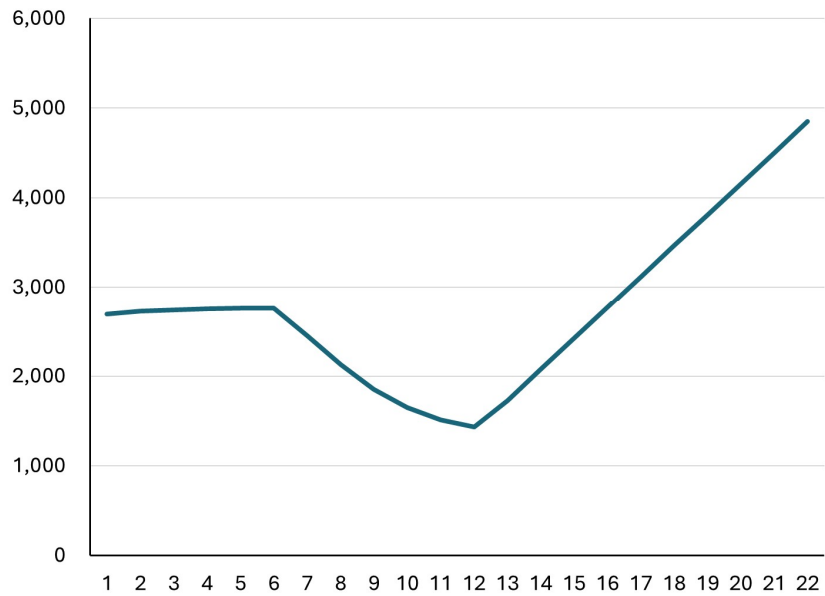
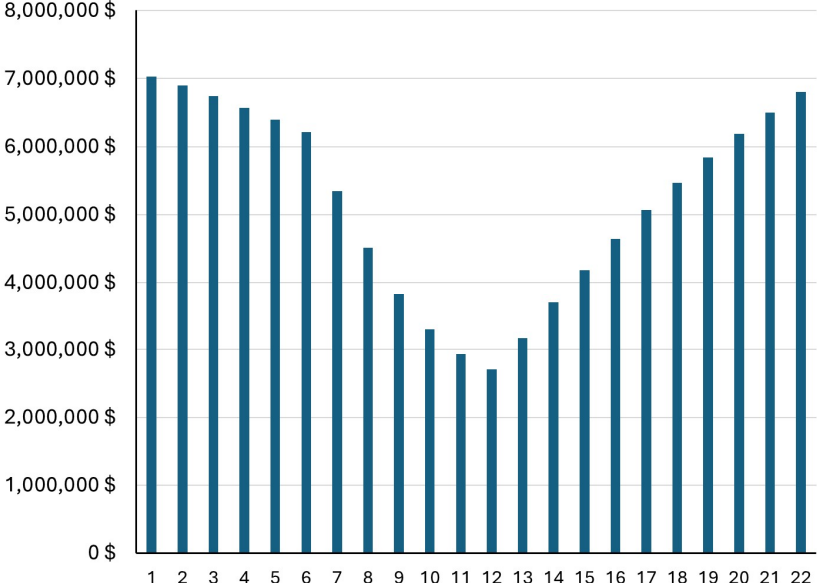


Figure 6. Healthcare savings due to decrease of obesity by year - discounted



For both Quebec and the ROC, the estimated healthcare system savings associated with reductions in obesity due to school-provided breakfasts are calculated at the national level, as obesity cost data are only available for Canada as a whole. Also, because the number of children set in Year 1 is the same in both jurisdictions, the results are precisely the same in both cohorts.

Over the 1-to-12-year horizon, the discounted savings amount to \$62.5 million. Extending the horizon to 22 years increases the estimated discounted savings to \$114 million, reflecting the cumulative benefits of improved nutrition on obesity-related health outcomes over the life course.

These results underscore the significant long-term fiscal impact of school-based nutritional interventions, highlighting their potential to reduce healthcare expenditures nationally.

4.2. Costs

The only quantified economic cost of the model pertains to delivering breakfasts to schools. In Quebec, this is relatively straightforward to establish, as the Club bears nearly all these costs – with schools contributing only about 3 cents per breakfast, on average. In other provinces, while the financial data of the Club is sound, establishing an overall cost per breakfast delivered per school proved insurmountable. This is due to the numerous organizations involved in delivering these breakfasts and the lack of a reliable, provincial-based aggregation of these costs.

For Quebec, the per-breakfast cost of producing and delivering school breakfasts, including all associated employee and operational expenses, is calculated for the period covering the 2024-2025 school year. This estimate excludes the share of Club personnel working in or for other provinces. In addition, the cost of breakfasts borne directly by Quebec schools was added to the Club’s costs, based on a survey conducted among participating schools. This approach ensures that the cost estimates capture both centrally funded program expenditures and school-level contributions, providing a comprehensive picture of total program costs.

The Club established three cost scenarios covering the 2024–2025 school year, as seen in Table 5²⁰.

²⁰ CSS organizations are « centres de services scolaires », or school boards, in Quebec.

Table 5. Cost scenarios

Scenarios	Exclusion	Note
1	None	Number of breakfasts served based on the monthly average of program attendance per day
2	Certain community partnerships and CSS organizations are excluded from the average number of breakfasts served and the associated costs.	For certain CSS organizations, costs are higher and set by the Quebec government, making them unrepresentative of the Club's standard business model. Community partnerships incur higher costs due to additional resources required for food and delivery, including staff and administration. Commodities delivered as a complement do not constitute a full menu, and therefore their costs are lower.
3	Certain remote or northern community partnerships are excluded from the average number of breakfasts served and the associated costs.	For certain CSS organizations and community partnerships, the same assumptions as in scenario 2 apply. Remote or northern communities have exceptionally high delivery costs.

Scenario 2 is the one that most accurately reflects the Club's actual activities, as it removes certain costs that do not necessarily represent the Club's core operations. This is the scenario that will be used for the remainder of the analysis, although the other scenarios will still be considered later in the report as part of the sensitivity analysis. The cost per breakfast is therefore set at \$2.03 per breakfast, with \$2.00 covered by the BCC and \$0.03 covered by the schools.

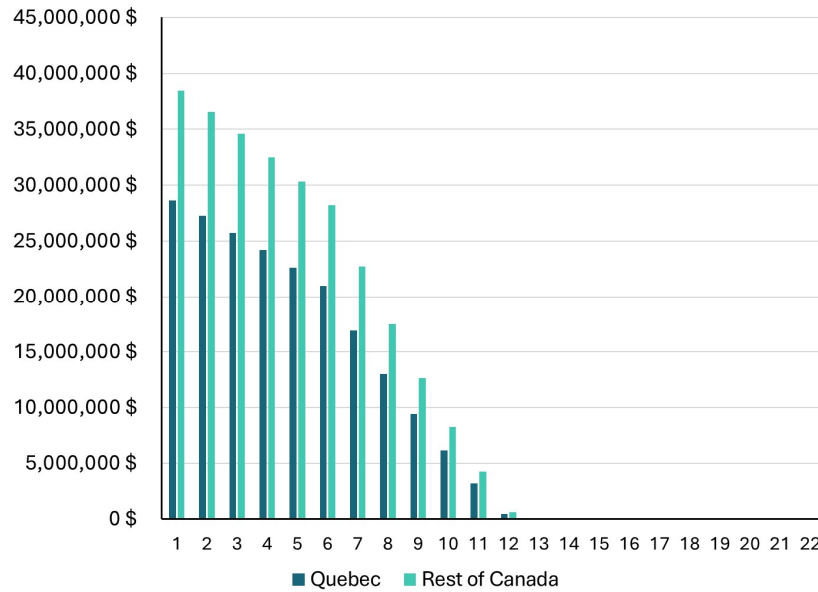
Table 6. Cost parameters

	Scenario 1	Scenario 2	Scenario 3
Numbers of breakfasts served by day	93,720	78,207	75,469
Production and delivery of breakfasts (M \$)	16.9	16.2	15.0
All other employees and other expenses (M \$)	16.5	13.6	13.2
Days of school (July 1st to June 30th)	190	190	190
<i>Cost of breakfasts</i>			
Borne by BCC	1.88 \$	2.00 \$	1.96 \$
Borne by schools	0.03 \$	0.03 \$	0.03 \$
Total	1.91 \$	2.03 \$	1.99 \$

For other provinces, the per-breakfast cost is based on Statistics Canada's cost of breakfast items purchased by families in the ROC (2.73 \$). While imperfect, this amount does reflect the resources typically allocated by Canadian families to this meal and, as such, does properly reveal their overall preference in consuming these food items versus anything else, or saving their money.

At 2.03 \$, the per-children, per-day cost in Quebec is lower than both the estimated ROC cost, as well as the corresponding amount spent by Quebec families on breakfasts (3.06 \$). In principle, this should be the case, due to efficiency gains of centralizing delivery operations, as well as purchasing breakfast items in large amounts, as is the case in Quebec. In the ROC, the production and delivery mechanisms of breakfasts are less straightforward and more variable within each province.

Figure 7. Costs - discounted



In Quebec, breakfast costs assumed (essentially) by the Club and (in a very small portion) by schools amounted to \$198.5 million. Because the projected per-breakfast cost is greater in the ROC, total breakfast costs are also higher in these provinces, reaching \$281.4 million. In both cases, in the context of this study design, costs are highest in year 1, then decrease every year until year 12, and become zero after.

5. Results

The consolidated results for Quebec are presented in Table 7. The first period (years 1 to 12) pertains to schooling years of at least one level of the cohort, and the second one (years 1 to 22) aggregates both the schooling years and a minimum follow-up, active period of 10 years.

Table 7. Consolidated CBA – Quebec (M \$)

Benefits	Year 1 to 12	Year 1 to 22
1. Increase in disposable income for families	315,3	315,3
2. Improved educational attainment - higher earnings	-1,9	39,1
3. Healthcare system savings due to decrease of obesity	62,4	114,0
Total benefits	375,8	468,5
Costs		
1. Total breakfast costs, BCC and schools	209,2	209,2
Net benefits	166,6	259,3
Benefits-costs ratio	1,80	2,24

Three main results stem from this analysis. First, due to the efficiency of the Club’s operations in Quebec, the increase in disposable income is greater than the program costs (\$315 million vs. \$209 million), which produces immediate net benefits for families. Therefore, even if school breakfasts produced no other advantage, this effect alone would justify its presence. Second, over time, two other main consequences of school breakfasts generate benefits, mainly (a) for ex-students who become active and earn more due to greater academic achievement, and (b) for the health care system in the form of lower costs. Of note, the obesity reduction effects are greater and

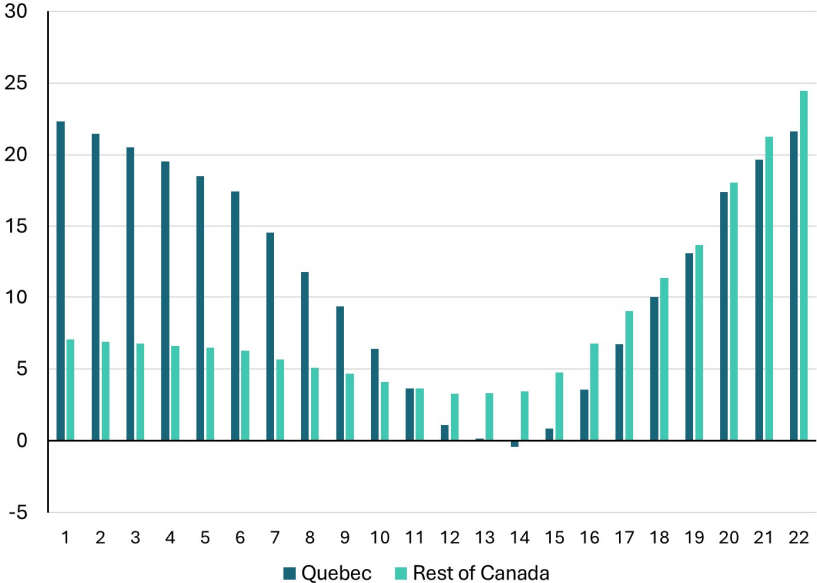
happen sooner than the benefits of higher learning, which take more time to blossom. Thirdly, over the projection period of 22 years, the three quantified benefits of school breakfasts in Quebec are more than twice the program costs (benefit-cost ratio = 2.24). In other words, for each dollar spent on the program, society receives more than two.

Table 8. Consolidated CBA - Rest of Canada (M \$)

<i>Benefits</i>	Year 1 to 12	Year 1 to 22
1. Increase in disposable income for families	281,4	281,4
2. Improved educational attainment - higher earnings	4,0	68,6
3. Healthcare system savings due to decrease of obesity	62,4	114,0
Total benefits	347,8	464,0
Costs		
1. Total breakfast costs, BCC and schools	281,4	281,4
Net benefits	66,4	182,6
Benefits-costs ratio	1,24	1,65

In the ROC (Table 8), because the per-breakfast cost was set at the amount paid by families for these items, the increase in disposable income is simply equal to program costs. While some provinces could generate operational and organizational efficiencies like those observed in Quebec, it was not possible to conclude this due to the lack of available data. Also, the benefits of greater academic achievement are higher in the ROC than in Quebec, consistent with Census data. Lastly, savings in health costs due to lower obesity rates are identical in both jurisdictions, because the baseline costs of obesity are for Canada. Overall, at the end of the projection period of 22 years, the benefit-cost ratio is lower in the ROC (1.65) than in Quebec (2.24), representing a 36% higher ratio for Quebec compared to the ROC.

Figure 8. Net benefits by year – discounted (M \$)



5.1. Sensitivity testing

To assess the robustness of the results, a sensitivity analysis was conducted (for Quebec only) by modifying key parameters one at a time to examine their effect on the benefit–cost ratio (ranges and results: ; comparison of results: Figure 9). For certain parameters, such as the cost of obesity or the prevalence of breakfast skipping, adjustments were made using the confidence intervals reported in the corresponding studies. For other parameters, where no confidence intervals were available, variations were applied based on reasonable arbitrary ranges. This approach makes it possible to evaluate how sensitive the model’s outcomes are to changes in underlying assumptions and to identify which parameters exert the greatest influence on the overall results.

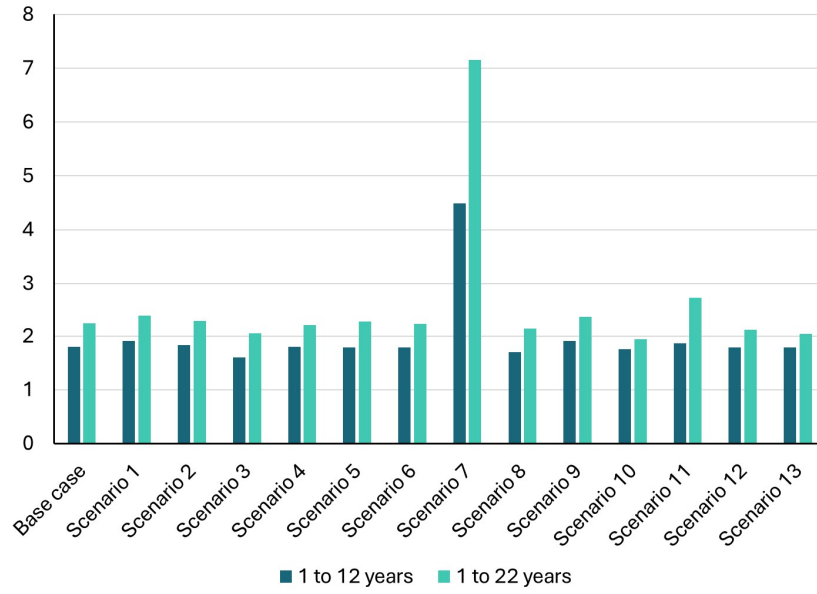
Table 9. Sensibility analysis - Quebec

Scenarios	Parameters	Base value	Modified value	Benefit-cost ratio	
				1 to 12 years	1 to 22 years
Base case				1,80	2,24
1	Cost of breakfast and number of children receiving breakfasts ^a - Scenario 1 Number of children Cost of breakfast	78 207 2,03 \$	93 270 1,91 \$	1,91	2,38
2	Cost of breakfast and number of children receiving breakfasts ^a - Scenario 3 Number of children Cost of breakfast	78 207 2,03 \$	75 469 1,99 \$	1,83	2,28
3	Breakfast cost per person per day (families) ^b	3,06 \$	2,68 \$	1,61	2,05
4 and 5	Increase in schooling years following 9 years of exposure to breakfast programs ^c	0,28	0,23 0,33	1,80 1,79	2,21 2,27
6 and 7	Cost of obesity per year per person (Adjusted 2024 \$) ^d	2 608 \$	2 565 \$ 26 149 \$	1,79 4,49	2,23 7,16
8 and 9	Skipping breakfast is associated with higher risk of obesity for children and adolescents ^c	37%	23% 54%	1,70 1,91	2,14 2,36
10 and 11	Poor breakfast habits at age 16 is associated with more central obesity at age 43 ^c	71%	0% 192%	1,76 1,87	1,95 2,73
12 and 13	Discount rate ^d	3%	5% 7%	1,79 1,79	2,12 2,04

Note :a. Based on the cost scenarios reported by BCC. b. Lowest cost per province, i.e., Ontario. c. Assumption, no confidence interval reported. d. Confidence intervals reported in published research.

In nearly all cases, the benefit-cost ratio is greater than 1.7 after 12 years and exceeding 2 after 22 years. The consistency of results across many variations of the key values underlying the CBA reinforces its conclusions, namely that school breakfasts are a wise social investment for children, their families, and the rest of society.

Figure 9. Benefit-cost ratio - Sensibility analysis



6. Conclusion

The objective of this study was to measure the net economic contribution of the Club's school breakfast programs in Quebec and other in Canadian provinces.

To do so, a CBA was conducted to determine whether the comprehensive economic benefits of breakfasts served in schools supported by the Club are sufficient to justify the resources mobilized to do so. This economic model was elaborated using data from Statistics Canada and the activities of the Club, as well as results from peer-reviewed empirical research on the effect of breakfast consumption and the multidirectional relationship between nutrition, school performance, educational attainment, health and long-term income.

The analysis projected the health and economic outcomes over a 22-year period of a fixed cohort of students (N=78,207) of all levels from kindergarten to Grade 12 receiving school breakfasts (Year 1: school year 2024-2025) in Quebec and in the ROC, compared with the same cohort that would not benefit from this program. In doing so, younger children were projected to receive school breakfasts for longer, while older students would receive them for fewer years. Once members of the cohort exited the school system, the analysis would project the impact of having received breakfasts on long-term income and health outcomes. On the cost side, however, breakfasts only generated costs during schooling years.

As a result, the economic dynamic is one where an investment is made during a few early years and generates returns for years to come – although the ones bearing the initial costs (i.e., the Club and its financial partners) do not reap most of the ensuing health, social and economic returns.

In Quebec, over the projection period of 22 years, the quantified benefits of school breakfasts were more than twice as large as program costs (benefit-cost ratio = 2.24). This overall result is due to three sources of benefits. First, the efficiency of the Club's operations in Quebec provides an increase in disposable income for families (\$315 million) that is greater than the program costs (\$209 million). Second, ex-students become active and earn more due to greater academic achievement (discounted value: \$39 million). Third, school breakfasts are projected to lower obesity rates, which translates into significant savings for the health care system (\$114 million). In the ROC, similar net benefits are observed, albeit slightly lower ones (benefit-cost ratio: 1.65).

A sensitivity analysis was conducted to assess the robustness of the results. Using 13 different variations of the CBA's key values, in nearly all cases, the benefit-cost ratio is greater than 1.7 after 12 years and exceeding 2 after 22 years. The consistency of results across many variations reinforces the previous conclusions, namely that school breakfasts are a wise social investment for children, their families, and the rest of society.

While several surveys and research were performed on school breakfasts in Canada, this study is the first one that condenses their economic contribution into a global assessment. To produce it, this CBA combined official statistical data with findings of published literature and data on the specific activities of the Club to derive a quantitative estimate of its net social benefits. Governments should be comforted in these results, which validate the relevance and impact of their investment in school nutrition programs throughout Canada. Moreover, they underline the notable efficiency of the Club in Quebec, which delivers breakfasts through centralized operations at a very low cost, hence maximizing the budget impact on families. This last observation seems particularly important considering the difficulties in precisely assessing the complete costs of breakfasts in the ROC.

Even though this analysis was performed with the best available data and methods, it is subject to a few limitations that may impact the accuracy of its conclusions. First, some secondary benefits and costs – such as impact on mental health, family dynamics, socioeconomic context, community engagement and early socialization, as well as the cost of externalities associated with transport activities (i.e., greenhouse gas emissions, other forms of pollution, impact on roads, etc.) – were excluded due to a lack of quantifiable data. Additionally, correlating

breakfast consumption with long-term outcomes requires assumptions and introduces potential confounding variables, limiting causal certainty. Lastly, and as with any CBA and even with parameters that are accurate today, the accuracy of long-term projections diminishes over time, as models become increasingly speculative. For instance, any significant future changes in policy, public funding, or organizational operations may influence costs, benefits, or both.

Nevertheless, even considering these limitations, all study parameters, data points, assumptions, and calculation methods originate from current and credible sources. This implies that, to the best of our knowledge, the results are unaffected by significant biases, either positive or negative, and thus may be considered a reasonable and valid estimation of the economic contribution to school breakfasts delivered by the Club in Quebec and in the ROC.

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