

# How the Built Environment Influences Young People's Food Choices

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### WHY LOOK AT THE BUILT ENVIRONMENT WHEN IT COMES TO YOUNG PEOPLE'S EATING HABITS?

Quebec statistics reveal that, in 2004, 22.6% of children and youth aged 2 to 17 were overweight or obese (this proportion rose to 24.4% among those aged 12 to 17)<sup>1</sup>. The staggering increase in obesity in recent decades has led experts not only to look at causal behaviours, but also to examine environmental factors likely to influence these behaviours. Certain environments are now described as obesogenic, inasmuch as they discourage young people from engaging in physical activity or encourage them to consume excessively energy-dense foods<sup>2-4</sup>.



This synthesis of current research on the role of the built environment in young people's food choices shows that exposure to junk food in the living environment (at home or at school) is a key contributing factor to excessive energy intake, resulting in overweight or obesity. While the research has not yielded a general consensus on the issue, the situation is nonetheless sufficiently troubling to merit our close attention.

# Results

## FAST-FOOD RESTAURANTS AND CONVENIENCE STORES: ADVERSE EFFECTS ON YOUTH

As a result of changing lifestyles, children are increasingly likely to eat away from home, and the foods they consume are more energy-dense and less nutritious than home-prepared meals. According to the results of the 2004 *Canadian Community Health Survey – Nutrition Focus*, between 39% and 57% of Quebec youth aged 4 to 18 consumed foods prepared outside their home on a given reference day, depending on their age group<sup>5</sup>. Many of them ate at a fast-food restaurant: depending on their age, between 11% and 28% of Quebec youth ate foods from a fast-food restaurant over the course of a reference day in 2004.

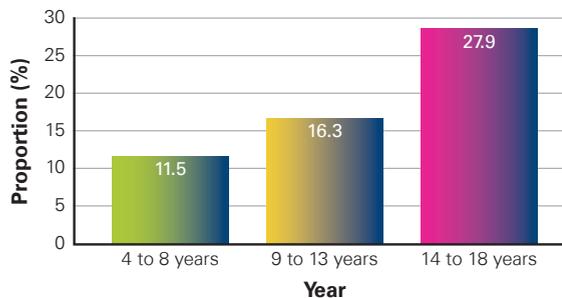


FIGURE 1. Proportion of Quebec youth who consumed foods from a fast-food restaurant during a reference day in 2004<sup>5</sup>.

This type of consumption was associated with higher intakes of energy, total fats and saturated fats among boys aged 14 to 18; with higher intakes of total sugars among those aged 9 to 13; and with lower intakes of calcium among those aged 4 to 8. Amongst girls, the highest intakes were from restaurants other than fast-food outlets: there were higher energy intakes among those aged 14 to 18; higher total fat intakes among those aged 9 and over; and higher intakes of saturated fats in the 9-to-13 group<sup>5</sup>. The study also showed that young people who consume fast food are more likely to choose soft drinks rather than milk to accompany their meal.

A study conducted in Sherbrooke in 2008 found that approximately 65% of young people aged 12 to 17 years had purchased foods at a convenience store during the previous week. Of those, 40% had made their purchases at lunchtime on a school day<sup>6</sup>.

## TYPE AND PROXIMITY OF FOOD RETAILERS AFFECT YOUNG PEOPLE'S FOOD CHOICES AND WEIGHT

The geographic accessibility of food retailers such as fast-food restaurants and convenience stores encourages young people to consume foods that are high in energy and saturated fats, but low in micronutrients. Fast-food outlets have also experienced phenomenal growth over the past decades. In Quebec, they made up 40% of all restaurants in 2007 and enjoyed the highest growth rate in terms of number of establishments<sup>7</sup>. In the city of Saskatoon in 2008, 75% of the population lived within walking distance (one kilometer) of a fast-food outlet, while only 45% of residents lived within walking distance of a supermarket<sup>8</sup>.

Conversely, better access to supermarkets has been associated with the consumption of healthier foods like fruits and vegetables<sup>9-11</sup>. A American study on an adult population found that participants who did not have a supermarket close to their home were 25% to 46% less likely to have a healthy diet, compared to those who had this type of retailer nearby<sup>12</sup>.

A number of experts believe that the food environment has an impact on obesity, at least in North America<sup>10, 13-14</sup>. An Australian study on children found that the shorter the distance between the home and certain food retailers (fast-food outlets and convenience stores), the lower the daily consumption of fruit servings. In comparison, daily consumption of vegetables was higher among children living near supermarkets<sup>15</sup>.

Most of the studies reviewed used cross-sectional data: body weight was recorded at the same time as the presence of retailers, which could lead to some bias in the observed results. However, a longitudinal study conducted in the United States showed that the availability of convenience stores within a 0.25-mile network buffer of the residence of girls aged 6 to 7 was associated with a greater risk of overweight or obesity three years later, even after adjustment for their baseline weight and the parents' sociodemographic characteristics<sup>16</sup>.

## FAST-FOOD RESTAURANTS AND CONVENIENCE STORES BOTH FOUND NEAR SCHOOLS!

The food environment around schools has been identified as one of the factors that could contribute to poor eating habits. A study carried out in Los Angeles County, California found that 23.3% of public elementary and high schools had at least one fast-food restaurant within a 400-metre radius (this percentage rose to 64.8% of schools when the radius was extended to 800 metres)<sup>17</sup>. In New York City in 2006, 44% of public high schools had a fast-food restaurant within a walking distance of less than 400 metres<sup>18</sup>. In the United States as a whole, one-third of public secondary schools were found to have at least one fast-food restaurant or convenience store within walking distance (0.5 miles)<sup>19</sup>. In New Zealand, the food environment within walking distance of schools (800 metres or less) is characterized by a high density of fast-food outlets and convenience stores<sup>20</sup>.

Quebec has not escaped the clustering of such establishments around schools. In the Greater Montreal Area, 42% of the 1,168 elementary and secondary schools examined in 2005 had at least one fast-food restaurant less than 500 metres away. Close to 200 schools had three such establishments nearby and 36 schools had more than five<sup>21</sup>. Within a one-kilometre radius (an easy walking distance), 75% of schools had at least one fast-food restaurant and 10% had at least ten!

In a survey conducted by the *Association pour la santé publique du Québec* among Secondary Cycle Two students in the municipalities of Baie-Saint-Paul, Gatineau and Lavaltrie, the vast majority of respondents felt that fast-food restaurants were sufficiently close to the school to go there at lunchtime<sup>22</sup>. The young respondents also noted that one-third of these outlets offered student discounts for lunch meals. Also reported was the widespread presence of convenience stores near the school.

A Quebec-wide study conducted by researchers at the *Institut national de santé publique* in 2009 found that 37% of public elementary and secondary schools had at least one fast-food restaurant within a 15-minute walk or less (the equivalent of a 640-metre radius) and 62% had at least one convenience store within this area<sup>23</sup>. Within a 10-minute walk (the equivalent of a 400-metre radius), 22% of elementary and secondary schools had at least one fast-food restaurant and 48% at least one convenience store. Secondary schools (rural and urban) were more likely to have a fast-food restaurant nearby. Urban areas like Montreal and Laval had significantly higher numbers of schools with convenience stores in the vicinity. The proportion of schools with fast-food outlets close by was significantly higher in Montreal than elsewhere in Quebec.

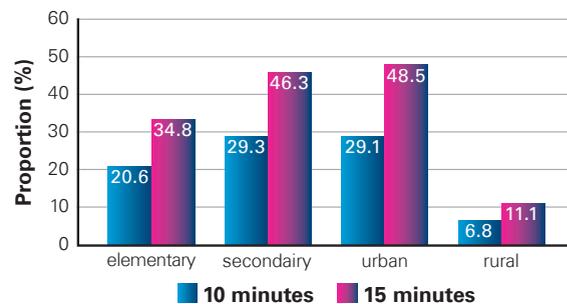


FIGURE 2. Proportion of Quebec public schools in 2009 with at least one fast-food outlet in the vicinity, by school level, walking distance and location<sup>23</sup>.

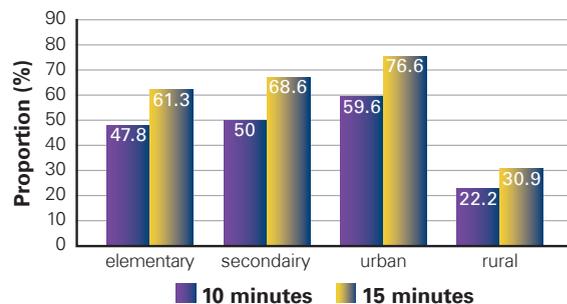


FIGURE 3. Proportion of Quebec public schools in 2009 with at least one convenience store in the vicinity, by school level, walking distance and location<sup>23</sup>.



### **PRESENCE OF FOOD RETAILERS NEAR SCHOOLS IS ASSOCIATED WITH OVERWEIGHT AMONG YOUTH**

Several studies have demonstrated a link between the presence of fast-food outlets and convenience stores near schools and the risk of overweight or obesity among youth. According to a California study, high school students whose school was located within one half-mile of a fast-food restaurant were found, after control for student- and school-level characteristics, to be at a slightly higher risk for overweight and obesity than those who did not have access to this type of establishment. In addition, they ate fewer fruit and vegetable servings, and drank more soft drinks<sup>24</sup>.

In another study on 9<sup>th</sup> grade students, the presence of a fast-food restaurant within a tenth of a mile of a school was associated with a 5.2% increase in obesity rates<sup>25</sup>. The presence of non-fast-food restaurants was uncorrelated with weight outcomes.

As far as convenience stores are concerned, a California study showed that the presence of this type of retailer within a 10-minute walk of schools was associated with overweight among students, after controlling for school-level variables<sup>26</sup>. A national US study showed that the number of convenience stores with the same zip code as a school was associated with a higher body mass index (BMI) and overweight among 8<sup>th</sup> and 10<sup>th</sup> grade students, even after adjustment for individual sociodemographic characteristics<sup>27</sup>.

Finally, a study conducted in Philadelphia on purchases made by students in grades 4 through 6 in corner stores near the school revealed that these purchases increased their energy intake to a significant degree<sup>28</sup>.

### **LOW-INCOME NEIGHBOURHOODS HAVE MORE CONVENIENCE STORES AND FAST-FOOD RESTAURANTS**

Researchers have found that, in a number of countries, fast-food restaurants are more prevalent in low-income neighbourhoods, for example in New Zealand<sup>29</sup>, the United States<sup>30</sup>, Great Britain and Scotland<sup>31-32</sup>, as well as in the Canadian provinces of Nova Scotia<sup>33</sup> and Alberta<sup>34</sup>. In Scotland, the number of McDonald's restaurants per 1,000 residents is significantly higher in disadvantaged neighbourhoods<sup>31</sup>. A study conducted in the US state of Washington found that the density of fast-food restaurants was higher in low-income neighbourhoods and along arterial streets<sup>30</sup>.

A recent literature review on the topic<sup>9</sup> identified 33 studies, 14 of which showed a greater availability of fast-food restaurants in low-income neighbourhoods. Among the remaining studies, 13 took into account the relationship between this type of food retailer and overweight or obesity, but showed conflicting results. It is worth noting, however, that most of these studies only considered the biggest national and international fast-food chains.



## SCHOOLS IN LOW-INCOME NEIGHBOURHOODS ARE MORE EXPOSED TO FAST-FOOD RESTAURANTS AND CONVENIENCE STORES THAN SCHOOLS IN AFFLUENT NEIGHBOURHOODS

A national US ecological study examined the relationship between the presence of fast-food restaurants and convenience stores around schools and the deprivation index of the surrounding neighbourhood. The results show that there are more food retailers of this type near schools in low-income neighbourhoods<sup>19</sup>.

In Los Angeles County, California, researchers have found a higher concentration of fast-food restaurants near schools in low-income neighbourhoods in the most commercial areas<sup>17</sup>. In New Zealand, schools located in the most socially deprived quintile had three times more fast-food restaurants and convenience stores in the near vicinity than those in the most affluent quintile<sup>20</sup>.

The situation in Quebec is similar, at least in the Greater Montreal Area. A vast study conducted in 2005 on the food environment of 1,168 elementary and secondary schools revealed that schools in neighbourhoods in the lowest income quartile had a 30% greater chance of having a fast-food restaurant within 750 metres than schools in the highest-income neighbourhoods<sup>35</sup>. This study shows that the lower the neighbourhood income in the area around schools, the greater the number of fast-food restaurants and the closer they are to schools.

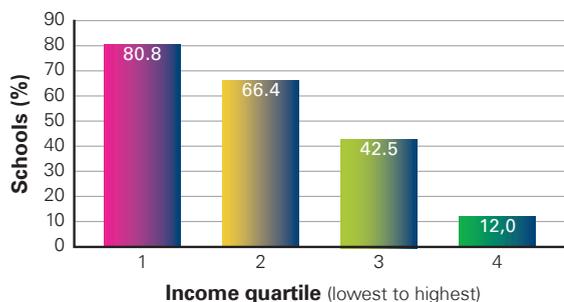


FIGURE 4. Percentage of schools located within 750 metres of a fast-food restaurant, by neighbourhood income quartile<sup>35</sup>.

In neighbourhoods where average household incomes were \$27,800 (the lowest quartile), 80.8% of schools had at least one fast-food restaurant within 750 metres, but in neighbourhoods where the average household income was \$73,142 (the highest quartile), only 12% of schools had a fast-food restaurant nearby. The distance between the closest fast-food restaurant and the school was shorter in the lowest income quartile (535 metres) and increased proportionately to average household incomes, reaching 1,514 metres in the highest income quartile.

Finally, schools in the lowest income quartile had on average 2.9 fast-food restaurants nearby, compared to 0.2 restaurants for schools in the highest income quartile. Students attending schools in the most disadvantaged neighbourhoods are therefore more exposed to junk food on school days. Even though elementary-age children do not leave the school at lunchtime, their parents might be tempted to take them to fast-food restaurants for supper on their way home.

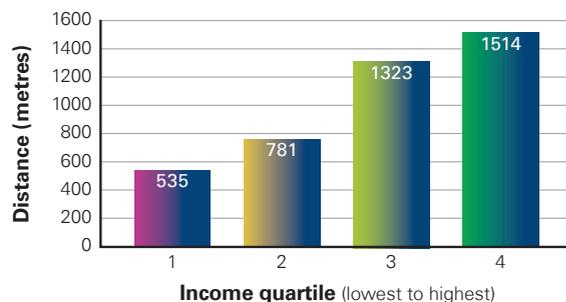


FIGURE 5. Distance of the closest fast-food restaurant to the school, by neighbourhood income quartile<sup>35</sup>.

# Conclusions

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- In Quebec, in 2004, close to one adolescent in four was overweight or obese, and 18.4% of children aged 6 to 11 were overweight. While lower than the Canadian average, these figures are no less alarming and call for close attention to young people's food environment.
- A high percentage of Quebec youth eat foods prepared away from home, often in a fast-food restaurant. The foods eaten at this type of establishment are associated with a higher energy intake.
- Eating patterns are influenced by the type of retailers in the built environment: the presence of supermarkets promotes the consumption of fruits and vegetables.
- In many countries, as in Quebec, the food environment in the vicinity of elementary and high schools is characterized by an abundance of fast-food restaurants and convenience stores.
- In the Greater Montreal Area, a high percentage of elementary and secondary schools have a fast-food restaurant within a 500-metre radius. This situation occurs throughout Quebec. There are also many convenience stores near schools in the province.
- The presence of fast-food restaurants and convenience stores near a given school has been linked to a higher body mass index and greater risk for overweight and obesity among students attending that school.
- Studies carried out in several countries have shown that fast-food restaurants are more prevalent in low-income neighbourhoods. This prevalence is not, however, always connected with overweight or obesity.
- Schools in disadvantaged neighbourhoods also have a greater number of proximal fast-food restaurants and convenience stores, which is likely to encourage poor eating habits among young people who visit them, possibly putting them at a greater risk for overweight and obesity.

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