Examining Community Food Environments for Elementary School-Aged Children in the City of London and Middlesex County, Ontario

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INTRODUCTION

Childhood obesity is a growing public health issue of global importance. In Canada, one in four children and youth are overweight or obese. Research suggests diet plays a crucial role in childhood obesity, and that prevalence rates of overweight or obesity among children in a neighborhood may relate to area socioeconomic characteristics and other environmental factors. The community nutrition environment (e.g., the type, location, and accessibility of food outlets) and the consumer nutrition environment (e.g., the price, promotion, placement, and availability of healthy options and nutrition information) can influence dietary habits, including the specific meal a child orders from a restaurant. This study sought to understand the composition of community food environments within elementary school zones in the City of London and Middlesex County, Ontario. Using ArcGIS, food outlets were mapped and both junk food outlet density and the modified retail food environment index were calculated within every school zone (800m service area around the school). Public, private, and catholic elementary schools (up to grade 8) within Middlesex County and London, Ontario were included in this study.

SPECIAL THANKS

HEALTHY KIDS COMMUNITY CHALLENGE

BUREAU DE SANTÉ DE MIDDLESEX-LONDON HEALTH UNIT
www.healthunit.com

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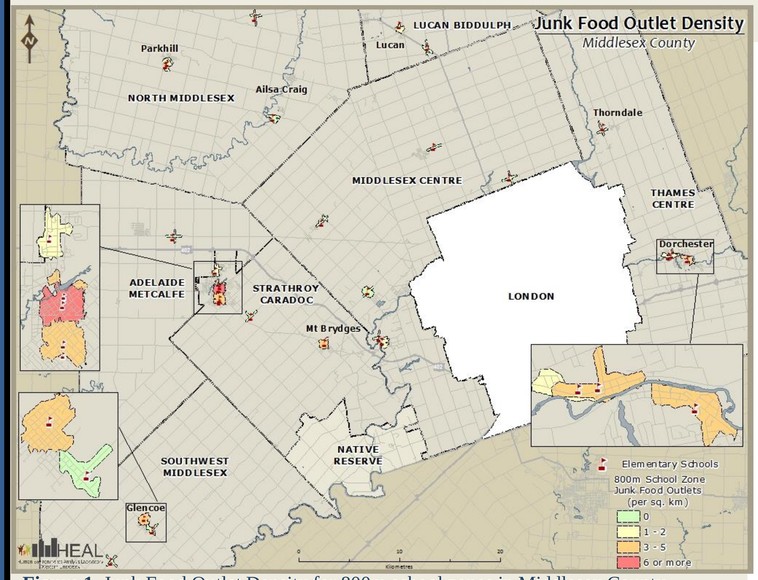

Figure 1. Junk Food Outlet Density for 800m school zones in Middlesex County.

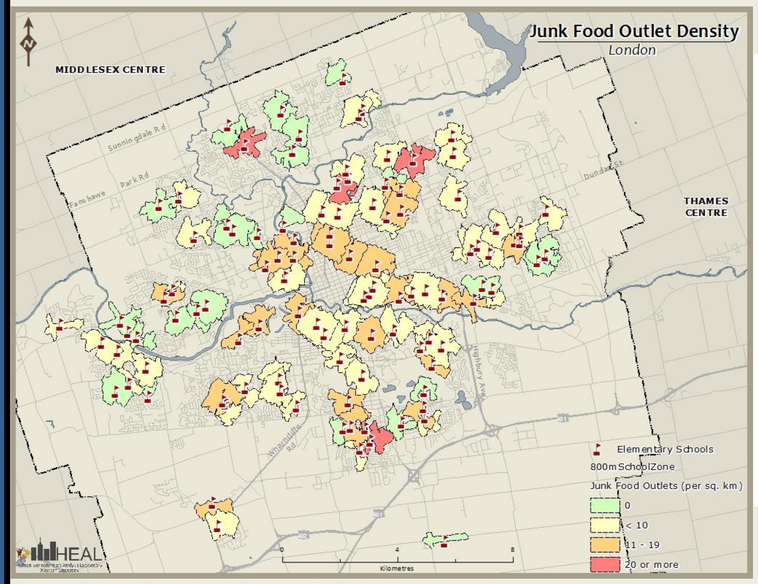

Figure 2. Junk Food Outlet Density for 800m school zones in the city of London.

DATA AND METHODS

Food outlet data was provided by the Middlesex-London Health Unit and combined with GIS data from the Human Environments Analysis Laboratory at Western. ArcGIS was used to map the community food environment through several map series. The first three map series illustrated the locations of the following: all retail food outlets, healthy outlets (grocery stores and seasonal fruit and vegetable vendors), and unhealthy outlets (fast food and convenience stores) within 800m elementary school zones in Middlesex County and London. Junk food outlet density within each school zone was then calculated by dividing the number of total junk food outlets within the school zone by the area of the school zone in square kilometers and mapped (Figures 1-2). The Modified Retail Food Environment Index was the final map series, calculated using the equation:

$$\frac{\text{(total \# healthy outlets)}}{\text{(total \# healthy outlets) – (total \# unhealthy outlets)}} \times 100$$

With this equation, lower scores indicate that school zones contain a higher number of unhealthy food outlets than healthy food outlets (Figures 3-4).

RESULTS

Results of the junk food outlet density calculation indicate just over half of school zones in Middlesex County have 0 junk food outlets (53.6%). The remaining half of the schools however have at least 1 junk food outlet within each 800m school zone, with 2 school zones having 6 or more junk food outlets. Results for London show about 25% of the school zones have 0 junk food outlets per square kilometer, 44% have up to 10, and 31% have 20 or more, with one school having 30 junk food outlets per square kilometer.

The Modified Retail Food Environment Index shows that of all the schools involved in the study, not one of them had a positive mRFEI score, indicating that in every elementary school zone – the number of unhealthy food outlets vastly outweighs the number of healthy food outlets. Many schools had a score of zero, however, indicating no retail food outlets or no healthy food outlets, with one school having a score of zero because results of the equation were 0.

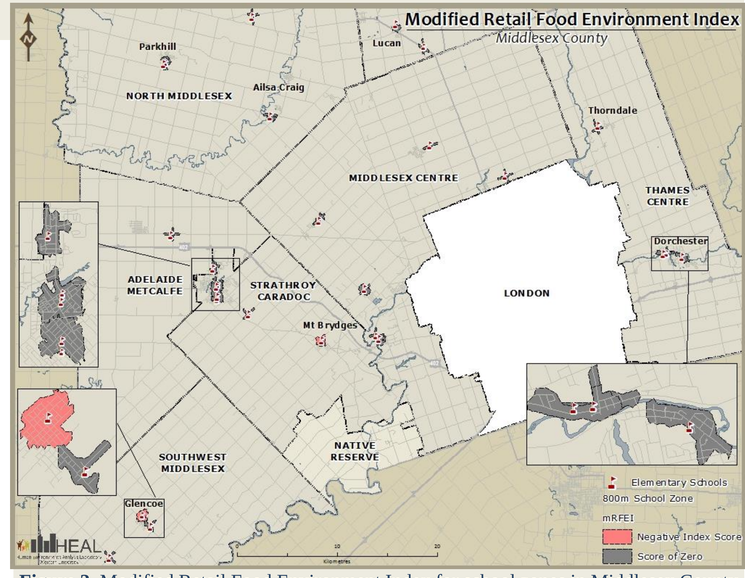

Figure 3. Modified Retail Food Environment Index for school zones in Middlesex County.

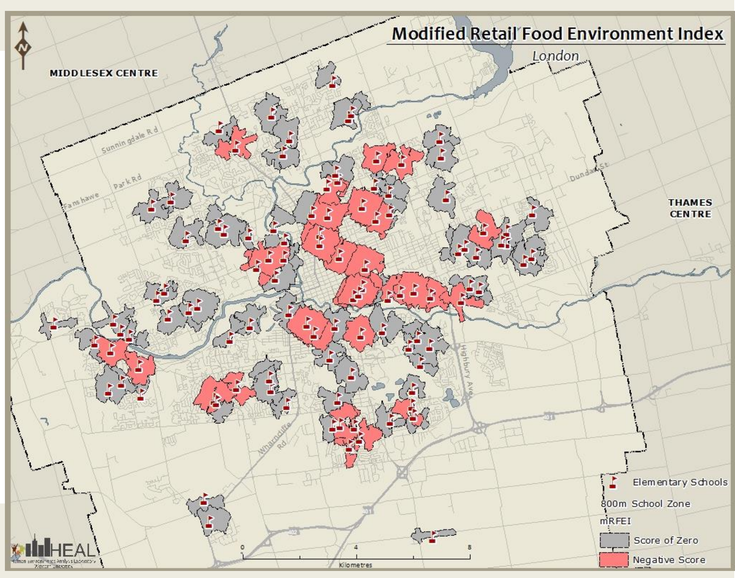

Figure 4. Modified Retail Food Environment Index for school zones in the city of London.

DISCUSSION AND CONCLUSIONS

Having low or no junk food outlets within a school zone does not equate to it being a healthy area, as none of the school zones had a positive mRFEI score. London school zones have up to 67.5 junk food outlets per square kilometer , suggesting that the city's elementary school zones are food swamps - geographic areas with an overabundance of outlets offering high-energy food which outweighs the presence of healthy stores. On the other hand, Middlesex County school zones are more like food deserts – geographic areas with a shortage of healthy food outlets within walking distance, as most of the mRFEI scores were zero indicating no healthy food outlets within the school zones. The heavy concentration of outlets generally viewed as unhealthy may not necessarily mean that the food being served is unhealthy. Additional research is needed and is currently being conducted to assess the consumer food environment within these school zones via children's menus. Of all the "unhealthy" outlets with children's menus, what is actually being served will be the key to accurately assess and subsequently offer recommendations for policy change.