

## Does Proximity to Fast Food Increase the Incidence of Childhood Obesity?

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In the United States, nearly one fifth of low-income children are obese and face elevated risks of adult obesity, hypertension, and cardiovascular disease, among other serious complications that may lead to premature death.<sup>1,2,3</sup> One often-mentioned culprit is easy access to fast food restaurants, which facilitates consumption of high-calorie, low-nutrient food and spurs obesity. This brief summarizes the findings from our recent [research](#) on the impact of living near fast food restaurants on weight outcomes among students living in New York City (NYC) public housing.<sup>4</sup>

We use longitudinal student weight and residential location data from NYC public schools along with citywide restaurant location data to examine the causal relationship between distance to fast food sources and weight. We find proximity to fast food restaurants increases the probability that a child will be obese or overweight. Additionally, younger children who attend neighborhood schools are most vulnerable to living near fast food restaurants.

### Small Differences Matter in Distances to Fast Food

Public housing developments in NYC are large, typically consisting of a group of buildings that span multiple city blocks. Because of the scale of these developments, students living in different units of the same public housing development walk different distances to reach the nearest fast food restaurants. We compared weight outcomes for students living in the same development but with differences in proximity to fast food due to the location of the student's residence within the development. In our results, every additional 0.1 mile (or two city blocks), decreased the probability of being obese by approximately 0.62 percentage points and being overweight by 1.11 percentage points.

### Living Near Fast Food Has a Greater Impact on Younger Children Who Attend Neighborhood Schools

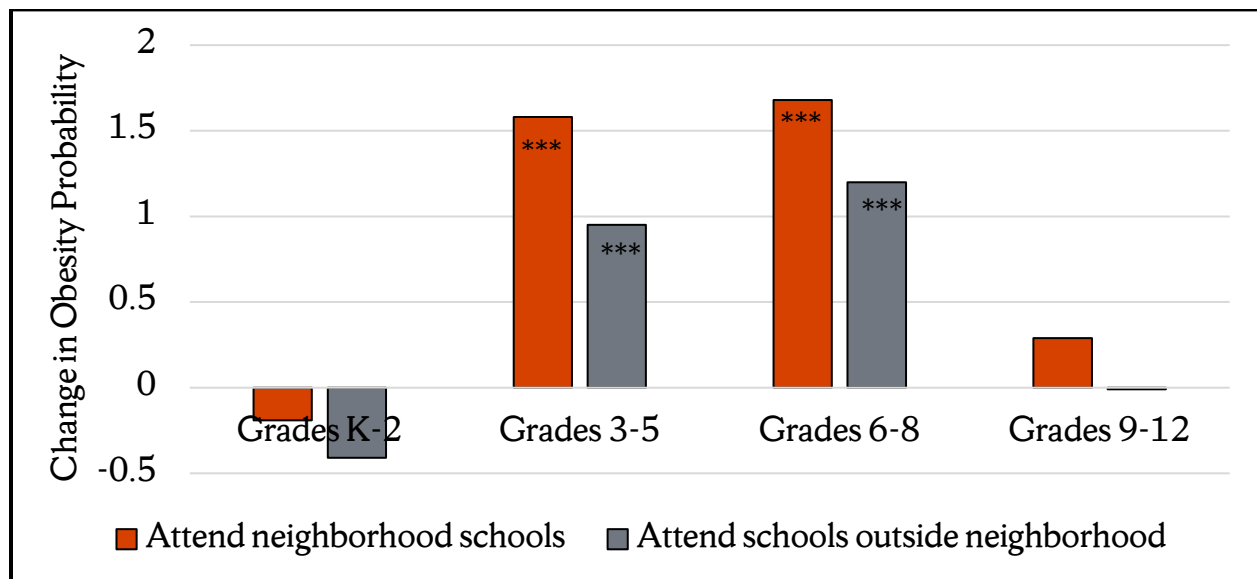
Economic theory predicts that individuals with relatively higher travel costs are more sensitive to fast food availability in close proximity.<sup>5</sup> For example, younger children may have difficulties driving, using public transportation, or walking far distances for food and are thus more likely to consume food sources in close proximity (compared to older teenagers or adults). Additionally, students with shorter distances between their residence and school, such as those who attend a neighborhood school (or a school within half a mile from home), typically have less access to fast food alternatives on their route. These students

#### KEY FINDINGS

- Living close to a fast food restaurant significantly increases the likelihood of childhood obesity.
- Students in grades 3-8 are the most vulnerable to childhood obesity when living near fast food.
- The food environment near a student's home has a greater impact on the health of students who attend neighborhood schools.

would incur higher travel costs when seeking to purchase food outside their neighborhood. Alternatively, students with longer distances to and from school have more access to fast food alternatives along their routes to school, without significantly increasing travel costs. Thus, students living and attending schools in close proximity to fast food are the most vulnerable to childhood obesity.

Living near fast food has the greatest impact on younger students who are old enough to make independent food purchasing decisions, specifically those in grades 3-8. The estimated effects on K-2 students and high school students are smaller in magnitude but, more importantly, statistically insignificant. Figure 1 illustrates the difference in sensitivity to fast food locations between students who attend neighborhood schools and those who do not. The impact of living 0.1 mile closer to fast food increases probability of obesity by approximately 1.6 percentage points for students attending neighborhood schools. Based on the average obesity rates, these estimates imply that every 0.1 mile closer a student lives to fast food translates into approximately a 6 percent increase in obesity rate for older elementary students (grades 3-5) and a 7 percent increase for middle school students (grades 6-8) who attend neighborhood schools.



**Figure 1. Percentage point change in the probability of childhood obesity for every tenth of a mile closer the child lives to the nearest fast food restaurant**

*Data Source:* Sample consists of 486,178 observations of NYC public school students living in NYC public housing in 2009-2016. *Notes:* We show statistically significant estimates in \*\*\* ( $p < 0.01$ ). Students who attend schools within a half mile from home are considered attending neighborhood schools. The model includes controls for distance to other food outlets (wait-service restaurants, supermarket, and corner stores), gender, race/ethnicity, grade, primary language spoken at home, special education, limited English proficiency status, and development and year fixed effects.

### Place-based Interventions Can Reduce Childhood Obesity

Our study results are particularly relevant to place-based interventions, attempting to limit unhealthy food outlets in urban areas to reduce the prevalence of obesity in low-income, minority neighborhoods. We suggest such interventions include zoning regulations restricting the operation of fast food restaurants in designated areas of a city. In summary, our findings warrant the attention of policymakers hoping to improve the health of low-income, urban children by reducing access to fast food.

## Data and Methods

This study draws on rich longitudinal student-level data for all NYC public school students living in public housing from 2009 to 2016, and city-wide restaurant locations. We use micro-level variation in student distance to the nearest fast food restaurants within a public housing development to estimate the impact of distance to fast food on student weight outcome. The key to our identification strategy is the plausibly random within-development variation in food environment driven by the tenant selection and assignment process of NYC public housing. For specific details about the data and the modeling approach, please see the full publication [here](#).

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