IRP-RIDGE 2011–2012 Research Project Summary

Food Assistance and Children’s Eating Patterns, Food Insecurity, and Overweight: The Influence of Local Food Prices

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BACKGROUND AND METHODOLOGY:

Both obesity and food insecurity are important public health problems facing young children in the United States. A lack of affordable, healthy foods is one of the neighborhood factors presumed to underlie both food insecurity and obesity among children. Despite the importance of adequate nutrition during early childhood, to date, little research has examined how food prices relate to weight and food insecurity outcomes during early childhood, and, with few exceptions, most studies have estimated cross-sectional associations between food prices and child outcomes. This study fills these gaps in the literature by addressing the following two research objectives:

1) Estimate how local food prices (overall fruits and vegetables, fresh fruits and vegetables, frozen and canned fruits and vegetables, fast food, and soda) influence the weight outcomes, food insecurity, and food consumption of children from infancy to 5 years of age. It was hypothesized that:
   a) High-priced fruits and vegetables and low-priced fast food and soft drinks are associated with a greater likelihood of being overweight, higher body mass index (BMI; a measure of weight-for-height), and less healthy food consumption;
   b) High prices for fruits and vegetables, fast food, and soda are associated with a greater likelihood of being food insecure; and
   c) The prices of fresh fruits and vegetables are more strongly related to children’s outcomes compared to frozen and canned fruits and vegetables.

2) Examine how participation in public food assistance programs changes the relationship between food prices and the weight outcomes, food insecurity, and food consumption of children from infancy to 5 years of age. It was hypothesized that food assistance receipt serves as a buffer between local fruit and vegetable and soft drink prices and food insecurity; however, food assistance receipt may exacerbate the anticipated relationship between food prices and child weight outcomes.

The analysis linked data from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), a nationally representative study of approximately 10,700 children from birth to kindergarten entry, to city-level food price data from the ACCRA Cost-of-Living Index (COLI). The ECLS-B collected data when children were 9 months of age (2001–02), 2 years of age (2003–04), approximately 4 years of age (preschool: 2005–06), and at two waves of kindergarten entry (2006–08). This study used the first 4 waves of data, excluding the second kindergarten entry wave (approximately 11,700 observations). The ACCRA COLI dataset, collected by the Council for Economic Research (C2ER; http://www.coli.org), is...
the main source of cost-of-living data in the United States including local food prices. The ACCRA food price data were collected quarterly from more than 300 Core Based Statistical Areas (CBSA).

Children’s BMI z-scores, overweight status, food consumption, and adult-level food insecurity served as the dependent variables. Using the Centers for Disease Control and Prevention (CDC) standards, standardized BMI z-scores and measures of overweight (BMI at or above the 85th percentile) were generated from measures of children’s weight and height to allow for comparisons across age and gender. Parents’ reports of children’s consumption of several different types of foods (e.g., vegetables, sugar-sweetened beverages) over the previous 7 days were gathered at the preschool and kindergarten waves. Responses on the Core Food Security Module (CFSM) at each wave were used to create a binary measure of adult-level food insecurity, which may be more accurate than their reports of their children’s experiences of food insecurity.

The independent variables included the average annual prices of the following items measured in the ACCRA data (inflation-adjusted to 2008 dollars and adjusted for the overall cost-of-living composite index): (1) 6 fruits and vegetables (potatoes, bananas, lettuce, canned sweet peas, canned peaches, and frozen corn); (2) 3 fast foods (the average price of a McDonald’s quarter-pounder with cheese; the average price of a regular cheese pizza at Pizza Hut and/or Pizza In; and the average price of a fried chicken drumstick and thigh at Kentucky Fried Chicken and/or Church’s Fried Chicken); and (3) a soft drink (2-liter bottle of Coca-Cola). For some analyses, fruits and vegetables were separated into: (1) fresh fruits and vegetables and (2) frozen and canned fruits and vegetables.

Using Ordinary Least Squares (OLS), linear probability, and fixed effects (FE) models, the variability in food prices over time and among children who move residences was exploited, controlling for a range of child, maternal, and household characteristics. The moderating effects of food stamp (now known as the Supplemental Nutrition Assistance Program [SNAP]) and other food assistance receipt were also tested.

FINDINGS:

Results indicate that higher-priced fruits and vegetables are associated with higher standardized measures of children’s BMI. This relationship is driven by fresh (vs. frozen or canned) fruits and vegetables. A $0.38 increase in the average annual price of fresh fruits and vegetables is linked with about a one-eighth to one-seventh of a standard deviation increase in children’s BMI z-scores in the OLS and FE models. Further, in the FE models, higher-priced soft drinks are associated with a lower likelihood of being overweight. Surprisingly, higher fast food prices are associated with a greater likelihood of being overweight in the FE models only. This may be a result of endogeneity, as fast food outlets increase prices in response to demand. Food prices are largely unassociated with children’s food consumption, which may be due to the measure’s reliance on parental information and memory regarding their children’s eating. There is limited evidence that receipt of food stamps or other types of food assistance mitigates the effect of food prices on adult-level food insecurity. Policies that reduce the costs of fresh fruits and vegetables may be effective in promoting healthy weight among young children.

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