

## Executive Summaries

### Food Insecurity and Hunger

#### **Does Household Food Insecurity Affect Cognitive and Social Development of Kindergartners?**

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This study explored the relationships between household food insecurity and the cognitive performance and social behavior in U.S. children entering kindergarten. Earlier studies have found that hunger is associated with poor school performance, such as more school absences, tardiness, and increased probability of repeating grades. There is also some evidence of compromised social and emotional functioning among adolescents in food-insecure households. The authors focused on children entering kindergarten in order to examine cumulative childhood development prior to schooling. In addition, readiness for school is a powerful predictor of later success and development for children.

The authors used data from the 1998 Early Childhood Longitudinal Study of Kindergartners (ECLS-K). The ECLS-K is a nationally representative cluster sample of approximately 20,000 children in both public and

private schools. The survey includes the 18 questions used to construct the Federal measure of household food security. The authors examined the links between household food insecurity, teacher- and parent-reported social skills, teacher-reported cognitive ability, and an independent direct assessment of children's cognitive abilities in math, reading, and general knowledge. These measures constitute an unusually extensive evaluation of children's cognitive and social skills. Additionally, the authors investigated the associations between household food insecurity and children's height and weight when they entered kindergarten.

The authors used factor analysis to reduce the cognitive and social data to five summary measures, and multiple linear regression analysis to examine the prediction of these measures by a large number of potential independent variables, including sociodemographic characteristics, school and home environment characteristics, parental and teacher characteristics, day care and preschool experience, and household and child participation in Federal assistance programs.

The study results show that household-level food insecurity is not a significant independent predictor of cognitive performance, whether assessed by teachers or by an independent observer. However, food insecurity is significantly and negatively related to parents' rating of their children's emotional state and social interaction skills and to teachers' rating of children's social skills. Food insecurity is not a significant independent predictor of short stature, overweight, or underweight among kindergarten children. Physical activity is a significant predictor of overweight status among children. The amount of time spent watching TV on weekends is positively associated with being overweight, while the teacher-rated activity level during free play is negatively associated with being overweight.

## Hunger, Food Insecurity, and Child Obesity

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While the prevalence of obesity is increasing among children of all socioeconomic groups, obesity is most common among children of low socioeconomic status. At the same time, many low-income households with children report that they have difficulty in meeting their food needs. The development of a Federal measure of food security has made it possible to consistently monitor the difficulties that households experience in meeting their food needs. In 2001, about 13 million children lived in food-insecure households, in which, according to the Federal definition, availability of food was limited or uncertain because of financial constraints. Recent studies have found a positive association between food-related material hardship and overweight among U.S. women. This study considered whether a positive association between overweight and food-related material hardship also exists among children.

The authors examined the relationship between a measure of food-related material hardship and child overweight for Mexican-American, non-Hispanic Black and non-Hispanic White boys and girls ages 2-19. They combined several years of data from the Continuing Survey of Food Intakes for Individuals (CSFII) to examine a nationally representative sample of 6,473 children. The data provide information on the reported height and weight for each child. The authors adjusted the values of height and weight to account for the error typically found in self-reported measures, and used the adjusted values to calculate an indicator of whether the child was overweight or at risk of becoming overweight.

Surveyed households reported whether they had (1) enough of the kinds of food they wanted to eat, (2) enough but not always the kinds of food they wanted to eat, (3) sometimes not enough to eat, or (4) often not enough to eat. The authors categorized households that indicated that they had enough of the kinds of food they wanted to eat as food secure and all other households as food insecure.<sup>2</sup> Note that this measure of food security differs from the Federal measure just described, which is assessed by a series of 18 questions about a household's difficulties in meeting its food needs due to financial constraints.

The authors found that 12 percent of children are overweight, and another 16 percent are at risk of becoming overweight. A child's risk of becoming or being overweight increases as their dietary energy intake, saturated fat intake, or time spent watching television increases, and decreases as their household income relative to the poverty line increases.

About three-fourths of children live in households categorized as food secure, according to the study's definition. The authors separated children into four age groups and found that food insecurity is positively associated with overweight and risk of overweight among children ages 12-15 and children ages 16-19. They also separated children according to their race and ethnicity and found no significant relationship between overweight and food insecurity among non-Hispanic White children of any age. However, they found a positive association between overweight and food insecurity for several age groups of Mexican-American and non-Hispanic Black children. Food insecurity is positively associated with overweight and risk of overweight for non-Hispanic black children ages 12-15 and Mexican-American children ages 6-11.

The study results show that older minority children who are food insecure are more likely to be overweight than those who are food secure. The authors noted that corroboration of this finding may guide the development of education interventions that accompany food assistance programs, such as the Food Stamp Program, available to food-insecure families.

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<sup>2</sup>A number of other research studies have used the responses to this survey question to categorize people as food insufficient if they report that they sometimes or often do not have enough to eat, or food sufficient otherwise.

## **A Study of Older Adults on the Waiting List for Home-Delivered Meals in North Carolina**

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The Nutrition Services Incentive Program (NSIP) is a Federal program that provides incentives for State agencies to provide meals to older adults. The program is administered by the U.S. Department of Health and Human Services (HHS), and States may obtain commodity foods from USDA.<sup>3</sup> The NSIP provides funding and commodities for the provision of home-delivered meals to adults over age 60 in a number of States. The NSIP does not allow State agencies to set income limits for the receipt of home-delivered meals. However, the NSIP is not an entitlement program, and a number of applicants may be placed on a waiting list if the State does not have sufficient resources to provide meals for all applicants. This study examined a population of older adults who have been placed on a waiting list for home-delivered meals in five counties in North Carolina to assess their functional ability, nutritional status, and strategies to obtain food.

The authors conducted telephone interviews with 110 people who had been assessed as eligible and placed on the waiting list for home-delivered meals in one Area Agency on Aging (AAA) Region in North Carolina.

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<sup>3</sup>Until 2003, the program was known as the Nutrition Program for the Elderly and administered at the Federal level by USDA.

They found that those on the waiting list were about the same age as those who began receiving home-delivered meals in 2001, about as likely to be female, and somewhat more likely to be African-American and to live alone. Almost half of those on the waiting list lived in households with incomes below the poverty line. Survey respondents were asked whether they needed assistance with nine standard activities of daily living, such as getting dressed and transferring from bed to chair. About 20 percent reported that they did not require the help of another person for any of the nine activities. Those on the waiting list were less likely to report needing help getting dressed and transferring from bed to chair than those who began receiving home-delivered meals in 2001.

Almost all of those on the waiting list were at high nutritional risk, based on an index used by the HHS Administration on Aging. More than a third reported that they had neither eaten fruit nor drunk fruit juice the day before the interview, over 40 percent had eaten no nonstarchy vegetables, less than 15 percent had eaten neither fruits nor vegetables, and over 40 percent had neither drunk milk nor eaten calcium-rich products. While many on the waiting list were at high nutritional risk, very few were underweight. In fact, more than half were overweight.

Those on the waiting list to receive home-delivered meals relied on a variety of sources for their meals. Seven in 10 reported that they had someone bring them prepared meals, which accounted for an average of 3.2 of their meals each week. Almost two-thirds had someone bring them groceries, which provided a weekly average of almost 16 meals. The respondent's adult children were the most likely to bring prepared meals or groceries. Almost 10 percent of respondents did not receive prepared meals or groceries or the help of someone coming to their home to cook for them. Almost half of the survey respondents reported that they did not always have enough money (or food stamps) for food. However, only 15 percent reported that they were receiving food stamps.

The study results indicate that almost all of those on the waiting list to receive home-delivered meals are at high nutritional risk. However, there is some variation in their access to an informal support network to help provide them with meals, which suggests a need to focus resources on applicants who do not have informal supports.

## Impact of Home-Delivered Meals on the Nutritional Status and Food Security of the Elderly in New York State

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The Home-Delivered Meals (HDM) component of the Nutrition Services Incentive Program provides meals to noninstitutionalized frail elderly persons who are no longer able to obtain an adequate diet without assistance.<sup>4</sup> This study examined whether participation in the HDM program improves nutritional outcomes, characterized elders who are most likely to benefit from the program, and identified a number of nutritional indicators that can be used in program evaluation.

Several studies have found benefits associated with HDM. For example, a recent national evaluation found that participants in both HDM and Congregate Meals had a higher average daily intake of nutrients than a matched comparison group of nonparticipants. However, due to methodological limitations, these studies could not determine whether participation in the HDM program was responsible for the improved outcomes. The authors addressed the methodological limitations of previous studies by comparing those who received HDM with a nonrandomized control group and by using longitudinal data on the nutritional outcomes of both the control and treatment group members. The authors also examined outcomes other than nutrient intakes, such as food security and dietary patterns, and information on measured, rather than self-reported, height and weight.

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<sup>4</sup>Until 2003, the program was known as the Nutrition Program for the Elderly and administered at the Federal level by USDA.

This collaborative study analyzed data collected by the New York State Office for the Aging in 1999 in three counties representative of Upstate New York. All elders referred for aging services over a 5-month period received a standard assessment and were asked to participate in the study. Of the 212 people who agreed to participate, 171 began receiving HDM and 41 began receiving other services but not HDM. Both the HDM recipients and nonrecipients completed a baseline survey and two followup surveys, at 6 months and 12 months after the baseline survey. The surveys contained a 24-hour dietary recall and questions used to construct the Federal measure of food security. A number of elders in the initial sample did not complete the followup surveys, primarily because they stopped participating in HDM because they no longer needed it, moved, or died. A total of 99 elders completed the 6-month followup survey, and 67 elders completed the 12-month followup survey. The authors used estimation techniques that suggest that the bias resulting from the loss of sample members is minimal.

The study found that respondents' dietary intakes before receipt of HDM were lower than recommended for many nutrients and food groups. After receipt of meals through the HDM program, however, participants reported eating more vegetables, a greater variety of fruits and vegetables, and more beta carotene, vitamin E, and magnesium. In addition, the prevalence of food insecurity among elders in the sample decreased from 23 percent to 13 percent. The analysis shows that the positive effects of the HDM are greater among males and elders who live alone. Participants with poorer initial nutritional status also show greater improvement, regardless of demographic characteristics.

The analysis compared HDM participants whose diets were assessed in the followup surveys on days that they had eaten an HDM meal with participants whose diets were assessed on days that they had not eaten an HDM meal. Participants who had eaten an HDM meal on assessment day showed greater improvement over time in 25 of 27 indicators of nutrient intake and dietary patterns compared with participants who had not eaten an HDM meal on assessment. The authors found similar results when they examined nutrient density rather than total nutrient intake.

These results provide evidence that the HDM program improves the nutritional well-being of the elderly. The fact that some applicants are placed on a waiting list

shows there is unmet interest in participating in the HDM program. The positive effects of the program are an important consideration in the decision to allocate limited resources to social programs. Information on those who are likely to benefit most from the program

can be used to target program resources more effectively. In addition, the new nutritional indicators identified in the study can be used to measure the effect of the HDM and other food assistance and nutrition programs.