Families with Hungry Children and the Transition from Preschool to Kindergarten

Irma Arteaga

Colleen Heflin

Sara Gable

University of Missouri

The federal food and nutrition program consists of an array of programs that households may participate in based on the age of their children, household income, and where the child attends school or day-care. As a result, different households with similar income levels and numbers of children may receive substantially different bundles of food assistance. While variation may occur across the entire childhood period, there is a significant transition in the types of food and nutrition programs for which children qualify as they enter kindergarten. We explore how the transition in nutritional programs impacts child and household food insecurity as children turn age five and enter kindergarten. Using data from the Panel Study of Income Dynamics and the Early Childhood Longitudinal Survey-Birth Cohort, we use regression discontinuity models to identify the impact of program transition on child and household food insecurity.

Extended Abstract (2-4 pages)

BACKGROUND AND MOTIVATION

Food security is fundamental to health and well-being. The problem of food insecurity has increased in the U.S. since 2004. The number of U.S. households that experienced food insecurity increased between 2007 and 2009, going from 13.0 million to 17.4 million households. Given the existence of food insecurity, the government has implemented different programs to contribute to its alleviation. These programs are especially relevant in view of the commitment made by the President and the U.S. Department of Agriculture Secretary of eliminating childhood hunger by 2015.

The federal food and nutrition safety net is a patchwork. Program services may be delivered in the form of vouchers, (near) cash supplements, or directly as food. Services may be available to specific members of the household only or to the entire household. In addition to household income eligibility, children's eligibility for a specific program may depend upon their age and the income level of others in their day-care or school. The result of this hodge-podge of food and nutritional programs is that different households with similar income levels and numbers of children may be receiving substantially different bundles of food assistance. While variation may occur across the entire childhood period, there is a significant transition in the types of food and nutrition programs for which children qualify as they reach age five and enter kindergarten.

The prevalence and severity of food insecurity also varies over childhood. According to Nord (2009: 19), the risk of experiencing both low food security and very low food security peaks when the oldest child in the household is between 13-15 years old. That is, the prevalence of very low food security and low food security is approximately 1 percent and 5 percent (respectively) when the oldest child is 0-4 but then doubles to approximately 2 and 10 percent (respectively) when the oldest child reaches age 13-15. While part of this increased risk may due to the birth of additional of siblings into the household, it may also be explained by the differences in the bundle of food and nutrition services offered to households with different aged children. For example, Nord (2009: 22) reports that households receiving SNAP and free or reduced-price school lunch have higher levels of food insecurity than households receiving SNAP, WIC and free or reduced-price school lunch (31.6 versus 25.1 percent).

Two main federal food and nutrition assistance programs target children from birth to age five—the Women, Infants and Children program (WIC) and the Child and Adult Care Food Program (CACFP). The WIC program provides iron-sufficient diets to children in income-eligible families up to age five. In the year 2009, 9.1 million individuals per month received WIC benefits, with a little over half of the participants' children older than 1 and younger than 5 years of age.1 The Child and Adult Care Food Program (CACFP) provides cash reimbursement to family day care, child care centers, homeless shelters, and after-school programs for meals and snacks served to children. While adults and school-aged children are eligible, the large majority of funding through this program is directed towards younger children. In 2009, 3.2 million children participated (versus 112,000 adults). By the time most children enter kindergarten at age 5, WIC eligibility has ended. CACFP, if accessed, most likely does not provide a full-days' worth of meals and snacks. It is unclear the extent to which the NSLP provides a good substitute for the nutritional benefits available through participation in WIC and CACFP. In part, the potential benefit

[1] Note that household with younger siblings may continue to receive assistance when an older sibling turns age 5. However, the nutritional assistance is not supposed to be consumed by the older sibling.

of the NSLP and SBP depends on how school districts administer kindergarten, since children must be present at school to access meals provided on-site. In 2009, over 31 million students received a free or reduced-price lunch daily. The NSLP also provides snacks to children during after-school programs.

Prior literature has neglected the contributions of the Child and Adult Care Food Program (CACFP) to household food security. There are no studies, of which we are aware, that evaluate the impact of participation in CACFP on child and household food security. Furthermore, while previous research has attempted to isolate the contributions of participation in a single food and nutrition program on food security, at least 40 percent of households with food insecurity among children participate in multiple programs at the same time (Nord 2009).[2] We will estimate the predicted level of food security based on participation in different program bundles. Finally, we will examine the change in household and child food security as children age out of CACFP and WIC and transition into the free and reduced-price lunch program.

DATA AND RESEARCH METHODS

Analysis will rely upon data from the Panel Study of Income Dynamics (PSID), the Child Development Supplement (CDS) of the PSID, and the Early Childhood Longitudinal Study, birth cohort (ECLS-B). The PSID is an ongoing longitudinal survey of a representative sample of U.S. individuals and their families. Data have been collected from the same families and their descendants since 1968. Food security information was collected in the following surveys: CDS-I (1997), PSID 1999, PSID 2001 and PSID 2003 Family Survey. This dataset provides information for about 4,000 children who are in transition to school. The data include information on both child and household food security, as well as food expenditures, school nutrition program participation, other public and private food assistance programs, household and child characteristics, and other information on how the household deals with constrained resources to feed all its members.

The Early Childhood Longitudinal Study – Birth Cohort (ECLS-B) will be used for this analysis. The ECLS-B includes a nationally representative sample of children born in 2001 and utilizes a multi-reporter, multi-method design to gather extensive information about children's home and educational experiences, including child care, from birth through kindergarten entry. 10,688 parents and children participated at study initiation (i.e., child age 9-months); subsequent data collections occurred when children where approximately 24-months-old, 4-years-old, and at kindergarten entry. The ECLS-B contains a wealth of information including the core food security module, parent(s)' demographic background, family utilization of federal assistance (including SNAP and WIC), household income and composition, and detailed parent and provider reports concerning the study child's child care arrangements (including child care program reports of CACFP participation).

Analyses of dynamics in household food security find that economic shocks, such as earnings loss, as well as other household shocks, such as a change in mental health status or household composition, are related to changes in household food security status (Gundersen and Gruber 2001; Rose 1999; Heflin et al. 2007; Bhargava, Jolliffe and Howard 2008; Ribar and Hamrick 2003). However, one possible concern is that economic disadvantage has also been shown to be associated with transitions in program

[2] It should be noted that this figure is based on Nord 2009, which does not include participation in CACFP.

participation (Jacknowitz and Tiehan 2009; Gundersen 2005), suggesting that endogeneity is a serious concern that may hinder the identification of a program treatment effect.

We will estimate the causal effect of the transition in school nutrition programs on household and child food insecurity using a regression discontinuity (RD) design. The RD design uses the fact that age 5 produces sharp differences in access to school nutrition programs for children on either side of age 5. Since the observed and unobserved determinants of school nutrition programs and food insecurity are likely to trend smoothly across the age-5 threshold, we can use the estimates of discontinuous jumps in school nutritional program participation and food insecurity at age 5 to identify the causal effect of school nutrition program participation on food insecurity. The RD design also addresses concerns about endogeneity that can be raised as a criticism if we were using other research designs. By implementing an RD design using age 5, which has been set as the age to get access to school nutrition programs (age when a child transitions into school), we can be confident that our results are not biased by unobserved factors that determine this age cut-off.

To assess the impact of school nutrition programs on child and household food insecurity, we will estimate the following model:

$$Y_i = (1-W_i) \cdot Y_i(0) + W_i \cdot Y_i(1) = \begin{cases} Y_i(0) & \text{if } W_i=0 \\ Y_i(1) & \text{if } W_i=1 \end{cases}$$

Where Yi(0) is the outcome (food security) without exposure to the school nutrition program and Yi(1) is the outcome (food security) given exposure to the school nutrition program, W_i denotes the treatment received, with $W_i=0$ if unit i was not exposed to the school nutrition program, and $W_i=1$ otherwise. In the sharp design the assignment W_i is a deterministic function of one of the covariates, the forcing (or treatment-determining) variable X, in our case, age. The constant term c, denotes the age cut-off, which is 5:

$W_i=1 \{X_i \geq c\}$

In this RD design we look at the discontinuity in the conditional expectation of the outcome given the covariate to uncover an average causal effect of the treatment which is interpreted as the average causal effect of the treatment at the discontinuity point.

As a robustness check, we will estimate the causal effect of the transition in school nutritional programs on household and child food insecurity using siblings' fixed-effects. By adding fixed effects for each family to our food insecurity models, we are able to control for unobserved variables that are common to siblings. This gets around the criticism that variation across families is related to other characteristics (e.g. parental motivation, attitudes, behavior) that affect food insecurity.

EXPECTED RESULTS AND IMPACT

Results from this study will inform policy-makers in understanding the impact of the transition from preschool to kindergarten on child and household security. Our proposed analyses use the most appropriate datasets available to answer the research questions and together provide a comprehensive picture of how participation in food and nutrition programs shapes the contours of food security at the child and household level over the course of childhood.