

## 6. School Nutrition Programs: A Family Perspective

### 6.1. Background

The report thus far treats children in isolation of their families, but children generally live with a family in which a parent (or guardian) is purchasing food to be shared among all members. It is possible that an altruistic parent would devote a relatively greater share of initial family income to the child to ensure the well-being of the child.<sup>28</sup> Such behavior would imply that the income range over which an income effect of the school nutrition programs could be observed for children would be even smaller. Thus, even fewer children would be observed at a household income level sufficiently low so that we would expect to observe an impact of a school nutrition program. However, the opposite relationship might hold for the altruistic adults in the household: adults might transfer more of the initial income to feeding children but utilize more of additional income to feed themselves. For an altruistic adult, the level of income would be higher at which impacts could be observed. Such issues regarding the allocation of resources within families are the focus of much research in development economics (for example, see Behrman 1997).

In fact, there exists a large literature in development economics that explicitly considers whether school nutrition programs benefit children because of the potential of family responses. For example, Beaton and Ghassemi (1982) review approximately 200 studies of preschool feeding programs, and Jacoby (1997) reviews more recent studies. The focus of many of these studies is whether there are positive impacts of the programs on child nutritional outcomes or if families effectively neutralize the programs by transferring at-home resources away from the child. For example, Jacoby (2002) asks whether there is an “intra-household flypaper” effect? In other words, Jacoby (2002) studies whether a targeted program (such as a school nutrition program) sticks to its intended recipient (the child) or is some behavior (such as the food distribution at home) altered so that the program benefits others (such as other household members).

Our data present a unique opportunity to examine the impact of school nutrition programs from a family perspective. First, although a small number of studies have examined the impact of United States school nutrition programs on household food expenditures (West and Price 1976; Wellisch et al. 1983; Long 1990), these studies have not used a plausible identification

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<sup>28</sup> Such behavior is built into the USDA Food Security Scale. For example, consider the following two definitions for different levels of food insecurity:

Food insecure with moderate hunger: “Food intake for adults in the household has been reduced to an extent that implies that adults have repeatedly experienced the physical sensation of hunger. In most (but not all) food-insecure households with children, such reductions are not observed at this stage for children.”

Food insecure with severe hunger: “...all households with children have reduced the children’s food intake to an extent indicating that the children have experienced hunger. For some other households with children, this already has occurred at an earlier stage of severity. Adults in households with and without children have repeatedly experienced more extensive reductions in food intake.”

See Bickel et al (2000) for more details.

strategy to handle the endogeneity of participation. Second, our data contain information about other household members so we can look at the impact on adults directly.<sup>29</sup> These data are in contrast to many of the studies of developing countries (such as Jacoby) that only have information on children, and therefore, must infer transfers to other family members based on the impact on the child.

Another important aspect of looking at the family is that it can provide further insights into our identification strategy. In the conceptual framework, we identify two distinct avenues through which children could benefit from school nutrition programs: an income effect (the food represents a transfer into the household) and a meal substitution effect (meals served at school may have different nutritional value than meals that would have been served at home). The former effect is expected to be concentrated among children receiving free or reduced-price meals, but the latter effect would benefit any child eating at school, as long as the school-served meal is of higher quality than the home-served meal. On the other hand, other household members can only benefit from the income effect of the programs because they are not the direct recipient of the schools meals. This reasoning would suggest that we should be more likely to find impacts of the school nutrition programs among the adults whose children qualify for free or reduced-price meals.

## **6.2. Regression Results for SBP Availability for Adult Household Members**

In Tables 12 through 14, we examine the impact of SBP availability for adult household members aged 24 to 60 of the children in the primary sample. Specifically, we classify these adults according to whether the child in the household has school breakfast available and whether school is in session.<sup>30</sup> We then use the same identification strategy as used before.

Table 12 presents a difference-in-difference analysis, similar to that in Table 3. Looking at the household characteristics, many of the same patterns emerge that were observed before. The households with SBP available are worse off than those households without SBP available (measured by the income-to-poverty ratio and the Food Stamp receipt), implying that a simple difference analysis comparing those with SBP available and not available will provide misleading results. More problematic for our difference-in-difference approach, it is also clear that the racial composition changes between the school being in session and not in session as would be expected given the geographic nature of the NHANES data collection. Specifically, the sample is more non-Hispanic White and less Hispanic when school is not in session as compared to when school is in session, consistent with the data collection in the Northeast and Midwest being concentrated in the summer and the South and West during the winter.

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<sup>29</sup> Not everyone within a household is selected into the sample given the NHANES sampling scheme, and some individuals may refuse to participate in some or part of the survey. However, family identification numbers are provided so that individuals within the same family can be connected.

<sup>30</sup> This description ignores the ambiguity that exists when a household has more than one child. To make the assignment, we randomly choose one child from each household and use that child to classify the adult members. Because most children within a multi-child household are interviewed at the same time and attend the same (or similar) schools, which child is chosen is irrelevant to the classification. In fact, only 148 of the 4,481 households have children who would suggest different classifications.

Turning to the nutritional outcomes, we find that the availability of the school nutrition programs improves some of the nutritional outcomes for the adults (higher HEI score, less calories from fat and saturated fat, lowers the prevalence of high cholesterol). However, none of these differences are significant even at the 0.1 statistical level.

The regressions provide somewhat stronger results. Table 13 presents regression results for all adults and Table 14 presents regression results that exclude adults with the highest income (over \$40,000), from the South, and from the West. Table 13 suggests that the availability of SBP improves the dietary quality of adults and reduces the percent of calories from fat. These impacts are still somewhat concentrated among the higher income groups, but not as much as the results for children. The results are a little more concentrated among the lower income groups in Table 14, but as expected with smaller sample sizes, the results are fairly imprecise.