

1. Introduction

School nutrition programs represent a sizeable share of the United States' food and nutrition programs.¹ As a proportion of federal expenditures (see Table 1), school nutrition programs were the second largest nutrition programs in 1999, just less than half the size of the Food Stamps program and twice as large as the Supplemental Program for Women, Infants, and Children (WIC). The school nutrition programs are subject to periodic re-authorization.²

Despite their size, relatively few studies have attempted to uncover the causal impact of school nutrition programs, and the studies that exist often suffer from methodological shortcomings. For example, some studies rely on selection models without exclusion restrictions (e.g., Devaney and Fraker 1989; Long 1990), and other studies use instrumental variables with low predictive power (e.g., Gordon, Devaney, and Burghardt 1995). More recently, Bhattacharya and Currie (2001) use a difference-in-difference methodology that addresses the endogeneity of program participation. Their methodology relies on the insight that children will receive these programs only when school is in session.

We contribute to the school nutrition program evaluation literature along two dimensions. First, we explicitly lay out our strategy to obtain causal estimates of the school nutrition programs that extends methods used in Bhattacharya and Currie (2001). Second, we undertake a broad and systematic evaluation of the programs examining numerous nutritional outcomes, including several that do not rely on potentially error-ridden self reports.

We use the National Health and Nutritional Examination Survey (NHANES) III for our evaluation. These data are nationally representative and contain detailed information on food consumption, a complete clinical exam, and a laboratory report for respondents, as well as information about income, family structure, and participation in school nutrition programs.

Our results suggest that the availability of a school breakfast program (SBP) has beneficial effects for children. For example, we find evidence that children who have a SBP available consume a better overall diet, consume a lower percentage of calories from fat, are less likely to have a low intake of magnesium, and are less likely to have low serum levels of vitamin C and folate. Importantly, these findings are for the mean impact of the availability of SBP, which averages over those students who do and do not participate. For every outcome we examine, a SBP either promotes better outcomes or at the least does not promote worse outcomes. Contrary to our expectations, these effects are not concentrated among the poorest households. One interpretation of these results is that when a SBP is available, students substitute a relatively high quality school meal for a relatively low quality home meal. However, the differences across income groups are often not statistically significant, and thus, we offer this interpretation cautiously.

¹ See Currie (2003) for an overview of food and nutrition programs in the United States.

² For example, the Agriculture, Nutrition and Forestry Committee of the United States Senate held hearings in March and April of 2003 for the drafting of the re-authorization of the Child Nutrition Act.

In principle, there is no reason to think that the effects of a SBP would confine itself to participating children—for some families meal programs could serve as an in-kind transfer. Such transfers could affect family budgeting and may affect nutritional choices of all family members, not just children. Previous studies, which have focused only on children, may have overlooked an important impact of the school nutrition programs. Thus, we also present some results on the impact of SBP availability on other household members. Our findings provide some evidence that school breakfast programs have important effects on adult diets in families that have school-bound children.

Finally, we briefly examine the impact of the national school lunch program (NSLP) on the dietary outcomes of children. Our results indicate that the NSLP has little impact on children's diet, but we present evidence that these results are not as reliable as our school breakfast results.

Overall, the results should be interpreted with some caution because of how the data collection methodology interacts with our research design. Specifically, the data were collected in such a way as to make geography highly collinear with season, implying that geography is also a confounding factor. It is unclear whether our identification strategy can accommodate the large differences caused by geography.