

Background

The third School Nutrition Dietary Assessment Study provides the most comprehensive measurement available of: (a) the nutritional quality of reimbursable meals served in the National School Lunch and Breakfast programs, (b) the nutritional quality of the breakfasts and lunches consumed by children who participate in these programs, and (c) student participation rates.¹ The study data enable analyses of school meal policies that were not previously possible. This report describes exploratory work to develop a simulation model to predict the potential implications of changes that may be coming in policies and practices related to school meals and school food environments.

Objectives

The first study objective was to find characteristics of school meals and school food environments that (a) are associated with the nutritional quality of school meals and/or of students' diets and (b) are suitable targets for potential changes in policies and/or practices. Using this information, the second study objective was to develop predictive models to estimate the effects of potential practice changes on: characteristics of meals served, of meals consumed and the level of student participation.

¹ U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis, *School Nutrition Dietary Assessment Study-III: Summary of Findings* by Anne Gordon and Mary Kay Fox. Alexandria, VA: November 2007.

Methodology

Figure 1 displays both the study's conceptual framework and how the model works. The model assumes that students' participation decisions (i.e., to eat a reimbursable school meal or not) are determined by both the characteristics of the meals offered and the school food environment (e.g., presence of vending machines and what they offer). The participation decision in turn determines the characteristics of the meals students consume. Policies and practices are assumed to determine characteristics of both meals offered and school food environment. The solid lines in Figure 1 show variables that the Food and Nutrition Service (FNS) can potentially regulate while dashed lines are outcomes estimated by the model.

The model uses nationally representative data from the third School Nutrition Dietary Assessment study to simulate three reforms:

- Discontinue offering 2 percent and whole milk at both lunch and breakfast;
- Offer fresh fruit daily at both lunch and breakfast; and
- A comprehensive reform of lunch (only) that consists of the following practice changes: (a) discontinue offering 2 percent and whole milk, (b) offer french fries and similar potato products no more than one day per week, (c) offer fresh fruit daily, (d) no longer allow juice to be served, and (e) offer dark green or orange vegetables at least two days per week.

Findings

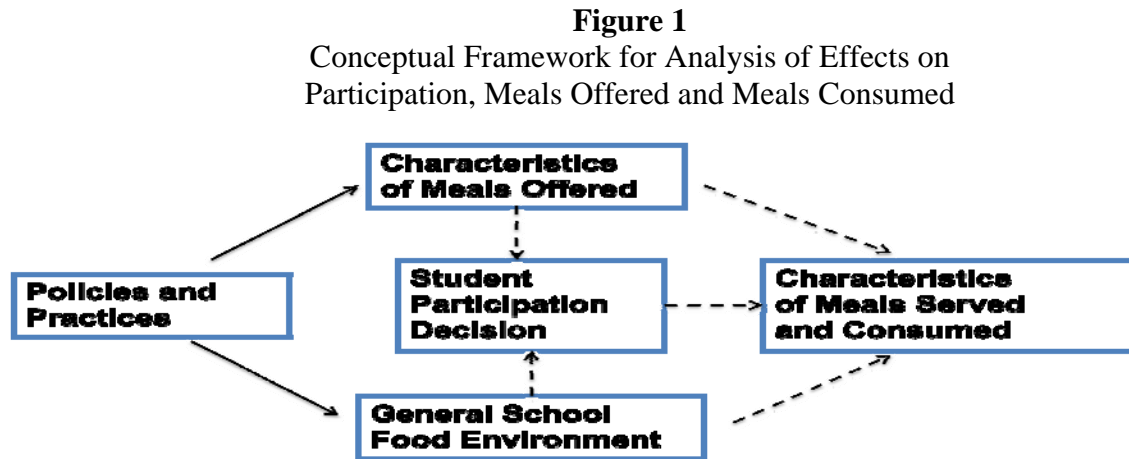
Requiring that all schools adopt a practice used in schools that offer meals of higher nutritional quality appears to yield unintended consequences. For each of the modeled reforms above, if schools that are not following a defined practice would become more similar, statistically, to schools that previously adopted the practice, there would be a mix of effects, some positive (e.g., meals closer to the dietary guidelines) and some negative (e.g., a reduction in participation).

The first finding suggests that simply implementing a modeled reform may not be enough to achieve better school nutrition – additional actions may be necessary to prevent possible negative

effects. While this simulation does not indicate what such mitigating steps are, they are likely to include adjustments such as activities to promote participation in the school lunch and breakfast programs and to market new food choices, for example, through taste tests and adjusted product location on the food line.

Summary

This exploratory predictive modeling was intended to assist FNS in assessing the potential effects of possible future changes in school meals and the school food environment. This type of comprehensive framework enables model users to estimate not only the anticipated effects of a potential reform but also the unintended consequences.



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U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis, *Selecting Policy Indicators and Developing Simulation Models For the National School Lunch and Breakfast Programs* by Lisa Dragoset, Anne Gordon. Project Officer, Joseph F. Robare. Alexandria, VA: June 2010.

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