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# Fruit and Vegetable Consumption by School Lunch Participants

## Implications for the Success of New Nutrition Standards

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### What Is the Issue?

The Healthy, Hunger-Free Kids Act of 2010 instituted many changes to the National School Lunch Program (NSLP), and in concert with those changes, USDA issued new, more stringent school meal nutrition standards for the 2012-13 school year. Data are not yet available on student acceptance of meals that meet the higher nutrition standards implemented in 2012. This report uses 2005 data to determine which schools already met the 2012 weekly and daily standards for fruits and vegetables and investigates whether students who attended those schools ate more fruits and vegetables than did other students.

### What Did the Study Find?

Students in schools that offered greater quantities of fruits and vegetables consumed more of these foods by most measures. However, many students did not eat any fruits and vegetables, implying that additional methods may need to be considered in order to achieve the goal of having students consume foods in schools that more closely meet the nutritional goals of the *Dietary Guidelines for Americans*.

Students who were offered fruit, dark green vegetables, red/orange vegetables, or “other” vegetables in amounts that would meet a daily standard for those foods ate more of those vegetables than students who were offered amounts that did not meet the daily standard. In addition, more students at schools that met the new daily standards tried vegetables than did students at schools that did not meet the new daily standards. Among students who ate at least some of a vegetable, student consumption at schools that met the daily standard was higher and exceeded the daily standard amount in many cases.

Other individual and school characteristics affected student intakes.

- Younger students, female students, Black students, Hispanic students, and those from a Spanish-speaking home were all more likely to eat fruit and specific types of vegetables, particularly dark green and orange vegetables.
- Students at schools that had no à la carte options or only healthy à la carte options had higher intakes of dark green vegetables.

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- Students identified as picky eaters by their parents were less likely to eat almost all of the food types, particularly dark green vegetables, orange vegetables, and total vegetables.
- Indicators of financial hardship or food insecurity were not significantly linked to higher levels of fruit and vegetable consumption, contrary to expectations.

Most schools in 2005 met the new weekly standards for total fruit and total vegetables. And while a majority of schools also met the weekly standards for specific vegetable subcategories, many schools will need to increase vegetable servings to meet weekly standards. More specifically:

- 96 percent of schools in 2005 met the new weekly standard for total vegetables, and 75 percent met the standard for total fruit.
- 75 percent of schools in 2005 offered lunches that met the new weekly standard for dark green vegetables, 83 percent met the weekly standard for red/orange vegetables, 21 percent met the standard for legumes, and 97 percent met the standard for “other” vegetables.

In terms of *daily* amounts, more than half of schools met the new standard for fruit (60 percent) while many more met the new daily standard for total vegetables (88 percent).

The results suggest that schools were closer to meeting most of the new standards than many observers and analysts have expected. Most schools would need to serve more fruit and legumes in order to meet the daily and weekly standards for each. And about a quarter of schools would need to serve more dark green vegetables to meet the weekly standard for those vegetables.

## How Was the Study Conducted?

This study used data collected from the School Nutrition and Dietary Assessment III (SNDA-III), a nationally representative survey of students and schools conducted in 2005. The SNDA surveys provide the Nation’s most complete data on the nutritional content of school meals. The data include information about the school food environment, student food intake, and student characteristics. Food intake data for a sample of 1,442 students who ate school lunch in 257 schools were matched by date to lunch menu records for the same day. Seven types of fruit and vegetables were examined: fruit, dark green vegetables, orange vegetables, red/orange vegetables, legumes, “other” vegetables, and total vegetables. The study compares the consumption by students from schools that had already met the 2012 standards in 2005 to the consumption by students in schools that did not meet the standards in 2005, and it examines whether offering more of a specific food increased the amount consumed. Tobit models were used to estimate consumption of fruits and vegetables in school lunches by NSLP participants, controlling for other characteristics of students and school food operations.