



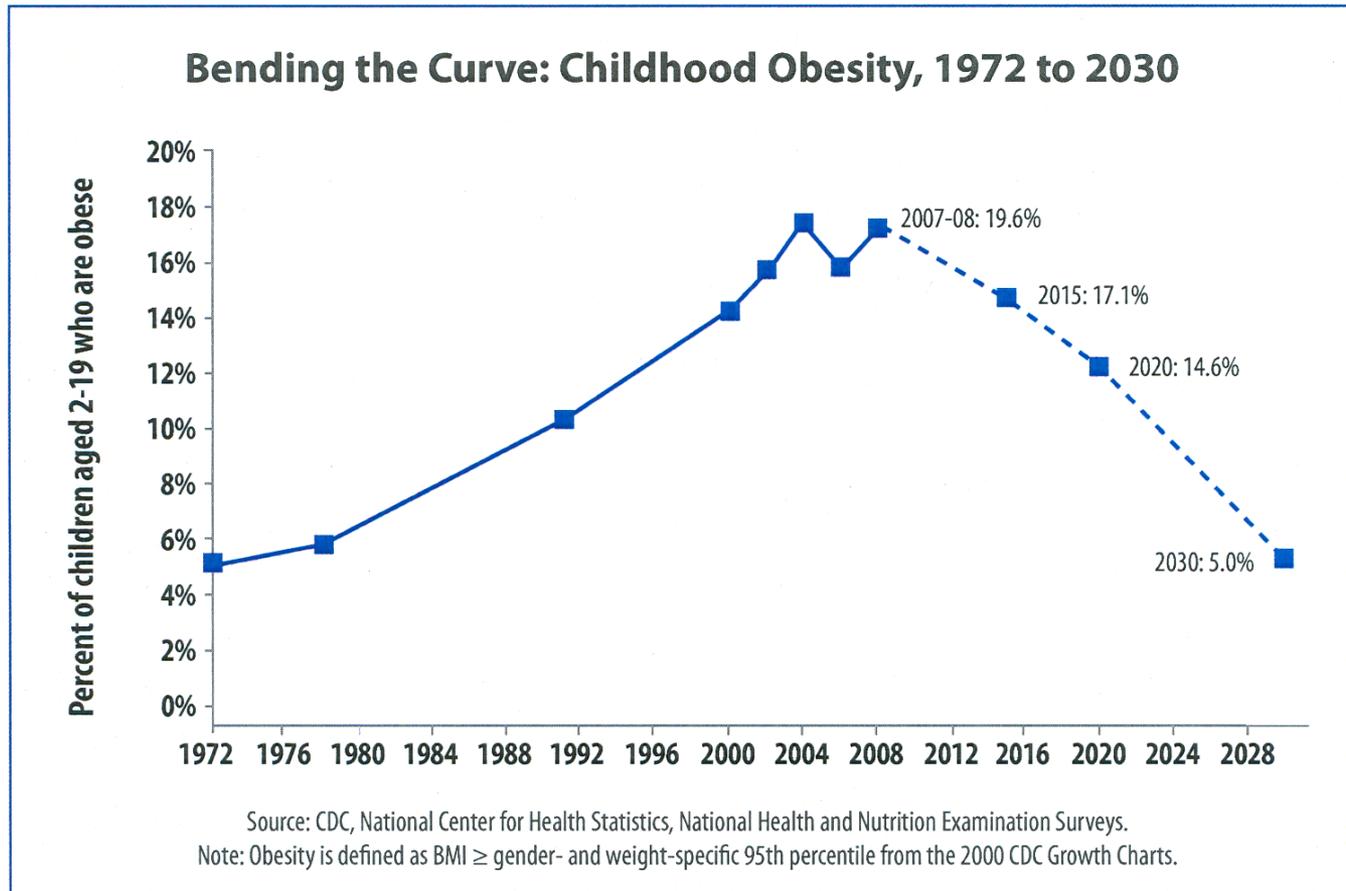
School Meals



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Farm and Food Policy and Obesity, UC Davis, CA May 21, 2010

White House Task Force's Challenge



USDA School Meals Program

- ▶ Almost all children in the US may access school meals through the National School Lunch Program (NSLP) and the School Breakfast Program (SBP)
 - ▶ NSLP in 99% of public school, 83% of private schools
 - ▶ SBP available in 85% of public schools
- ▶ During the school year, the school meals may provide over half of the week's meals for children



USDA School Meals Program

▶ NSLP

- ▶ Served an average of 31.3 million children in FY2009
- ▶ 5.2 billion lunches
- ▶ Cost of \$8.9 billion
- ▶ 62.5% of the lunches served are “free/reduced price” lunches (up from 21% in 1970)

▶ SBP

- ▶ Served an average of 11.1 million children in FY2009
 - ▶ 1.9 billion breakfasts
 - ▶ Cost of \$2.6 billion
 - ▶ 82.1% of the breakfasts served are “free/reduced price”
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USDA Foods (Commodities) for School Meals

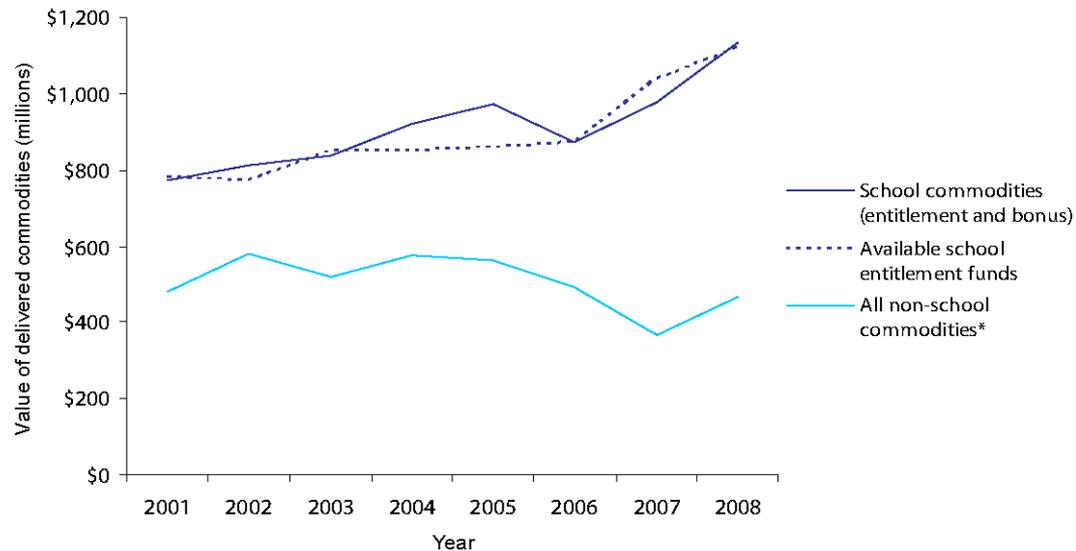
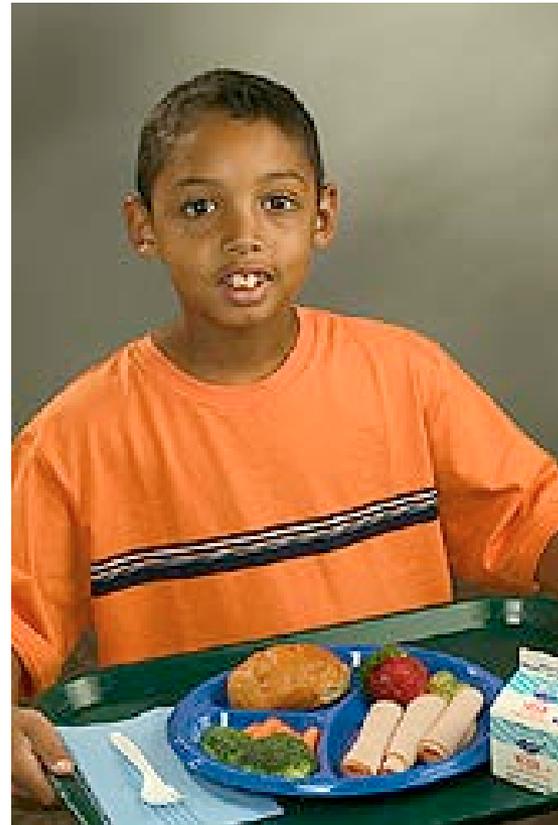


Figure 1. Value of government-purchased commodities for school and non-school recipients

Source: USDA Commodity Food Network data, 2009. *Domestic food assistance programs eligible to receive commodity foods: Area Agencies on Aging, Bureaus of Prisons, Child and Adult Care Feeding Program, Charitable Institutions, Commodity Supplemental Food Program, Disaster Feeding Emergency Food Assistance Program, Elderly Nutrition Pilot Program, Food Bank Demonstration Projects, Food Distribution Program on Indian Reservations, Nutrition Program for the Elderly, Summer Camps, school food programs, Summer Food Service Program, Soup Kitchens and Food Banks.

School Meals: Building Blocks for Healthy Children, IOM 2009



Schoolchildren's Intake of Foods

- ▶ Intake of vegetables is 40% of recommended levels
 - ▶ About 30% comes from white potatoes
- ▶ Intake of fruit was at 80% of recommended levels
 - ▶ Much lower for older children than younger ones
 - ▶ Over half comes from juice
- ▶ Low intake of whole grains
- ▶ Milk intake low for older children, and includes higher fat milks
- ▶ Priority nutrients of concern associated with
 - ▶ lack of variety in vegetables
 - ▶ lack of fiber
 - ▶ high saturated fat and high sodium in the foods consumed



IOM's Recommendations on School Meals

Offer meals to:

- ▶ Target minimum and maximum calorie levels for lunch and breakfast
- ▶ Increase fruits, vegetables and whole grains
- ▶ Increase the variety in fruits and vegetables
- ▶ Reduce saturated fat (max 10%)
- ▶ Reduce sodium



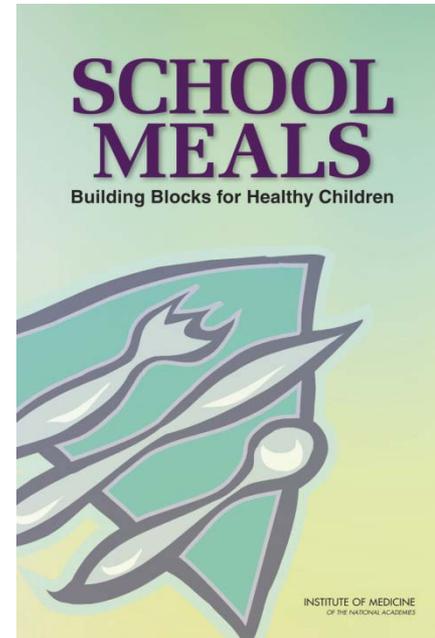
For More Information

- ▶ Fact sheets

www.iom.edu/schoolmeals

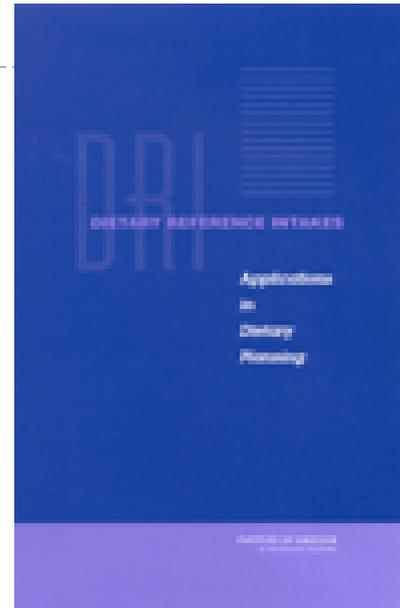
- ▶ Report available to purchase or free download

www.nap.edu



Institute of Medicine's Recommendations for Group Planning

- ▶ **Goal to address priority nutrients**
 - ▶ Usual nutrient intakes will meet the nutrient requirements of as many members of the group as possible, without leading to excessive intakes
- ▶ **Challenge for planning school meals**
 - ▶ Meal programs can affect what is offered and served to children, but not what is consumed



Objectives of Our Research

- ▶ Identify priority nutrients of concern
- ▶ Implement IOM's planning approach
 - ▶ Develop a model to use to estimate how changes in what is offered in school meals may affect food and nutrient intakes of participants
- ▶ Initial focus on two related nutrients:
 - ▶ Calcium
 - ▶ Saturated Fat



Model

- ▶ Estimate model that relates foods offered and nutrient intakes

$$N_{is} = \alpha_s + x_{is}\beta + \varepsilon_{is} \quad \varepsilon_{is} \stackrel{iid}{\sim} N(0, \sigma_\varepsilon^2)$$
$$\alpha_s = w_s\theta + u_s \quad u_s \stackrel{iid}{\sim} N(0, \sigma_u^2)$$

where

N_{is} = intake of nutrient of student i in school s

x_{is} = a vector of student and household-level controls

w_s = SFA and school-level controls



Data

- ▣ School Nutrition Dietary Assessment Study-III (SNDA-III)
- ▣ Nationally representative sample of public SFAs, schools, students in spring of SY 2004-2005
- ▣ 129 SFAs, 398 schools, 2,314 students (and parents) in grades 1 to 12
- ▣ In-person interviews with students, including 24-hour dietary recall and parent interviews
- ▣ Detailed menu survey completed by food service manager for 5 days-all foods and beverages offered in reimbursable meals



Data

- ▶ School Nutrition Dietary Assessment Study – III (SNDA-III)
 - ▶ School menu data
 - ▶ Dietary intake data
 - ▶ SFA and school-level data
 - ▶ Student-level data



Sample Data

- ▶ Excluded nonparticipants
- ▶ Selection of the NSLP participants, self-reporting
 - ▶ “Usual participation”
 - ▶ “Target day” participation
- ▶ Matched dietary recall data with school menu data by date
- ▶ Final sample consisted of 1046 observations



Student-level

- ▣ Student's age
- ▣ Gender
- ▣ Ethnicity
- ▣ Household income

- ▣ Nutrients consumed at school lunch
 - ▣ Calcium (mg)
 - ▣ Saturated fat (g)

School-level

- ▶ School size
- ▶ Location
- ▶ Wellness policies
- ▶ Competitive food practices
 - ▶ No competitive foods
 - ▶ No vending machines
- ▶ School lunch offered
 - ▶ High fat milk not offered
 - ▶ Fresh fruits/veggies offered daily
 - ▶ No French fries offered
 - ▶ No dessert offered
 - ▶ Offers low average fat meals



Food Sources of Calcium in NSLP Lunches Offered

Percentage Contribution to Average Amount Offered

Rank	Food Group/Food(s)	Elementary	Secondary	All Schools
CALCIUM				
1	1% milk, flavored	16.4	13.8	15.4
2	1% milk, unflavored	10.6	9.7	10.3
3	2% milk, unflavored	9.5	9.2	9.4
4	Pizza and pizza products	8.7	8.3	8.5
5	Skim or nonfat milk, flavored	6.8	7.2	7
6	Skim or nonfat milk, unflavored	4.3	5.4	4.7
7	Whole milk, unflavored	4.2	4.1	4.2
8	Sandwiches with plain meat or poultry	3.4	3.4	3.4
9	Entrée salads, entrée salad bars	2.9	4	3.3
10	Mexican-style entrées	3	2.2	2.7

Source: SNDA III, Report



Food Sources of Saturated Fat in NSLP Lunches Offered

Percentage Contribution to Average Amount Offered

Rank	Food Group/Food(s)	Percentage Contribution to Average Amount Offered		
		Elementary	Secondary	All Schools
SATURATED FAT				
1	Pizza and pizza products	8	7.9	7.9
2	Condiments and spreads	6	6.5	6.2
3	2% milk, unflavored	6	5.4	5.8
4	Entrée salads, entrée salad bars	5.2	6.6	5.8
5	Hamburgers, cheeseburgers	4.7	5.8	5.1
6	1% milk, flavored	5.6	4.3	5.1
7	Salad dressings	5	4.5	4.8
8	Mexican-style entrées	5.3	4.1	4.8
9	Sandwiches with plain meat or poultry	4.9	4.5	4.7
10	Whole milk, unflavored	4	3.7	3.9

Source: SNDA III, Report



Calcium and Saturated Fat at Lunch

Variable	Calcium			Saturated Fat		
	Elem	Middle	High	Elem	Middle	High
wellness_policies	neg		neg	neg		
Competitive foods policies		neg		neg		
No high fat milk			pos	neg	neg	
Fresh F/V offered daily	pos	neg		pos		
No fries		pos			pos	
Low average fat				pos		pos

Data: SNDA-III, target day sample



Implications

- ▶ School meals are an important to diets of children and offer a key tool to address problems of nutrition and obesity
- ▶ Planning to effect change is a significant challenge
 - ▶ Foods offered
 - ▶ Food and school environment and policies
- ▶ Changing the School Meals program will require
 - ▶ Resources
 - ▶ New knowledge on the roles of school environment, policies and behaviors



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