

SCHOOL MILK:

# Fat Content Has Declined Dramatically Since the Early 1990s

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## Highlights

Since 1992, when the first School Nutrition Dietary Assessment (SNDA) was conducted, a large number of schools have stopped offering higher fat (whole or 2%) milks as lunch options, and an increasing proportion of students are selecting lower fat milks (1% or nonfat).

*In 1992, 71.5% of student milk consumers who were National School Lunch Program (NSLP) participants chose whole or 2% milk. In 2005, only 20.8% of milk consumers drank these higher fat milks at lunch.*

*In 2005, whole milk was offered on 31% of school days, but less than 4% of NSLP participants who drank milk chose whole milk.*

*In 2005, 79.2% of NSLP milk consumers drank lower fat milks at lunch; 54.3% drank 1% fat milk, and 24.8% drank nonfat milk.*

*Flavored milk is popular among student milk consumers; 59.8% drank flavored milk in 1992, and 66% drank flavored milk in 2005.*

*The type of flavored milk most commonly consumed by NSLP participants changed between 1992 and 2005; in 1992, 2% fat flavored milk was most popular, but in 2005, the majority of flavored milk consumers drank 1% or nonfat milk.*

## Objectives

To determine the proportions of schools offering higher fat and lower fat milk options as part of the National School Lunch Program (NSLP), the proportions of students drinking higher fat and lower fat milks, and whether these proportions changed between 1992, when the first School Nutrition Dietary Assessment (SNDA-I) was conducted, and 2005, when the most recent SNDA (SNDA-III) was conducted.

## Background

In 1946, the National School Lunch Act (NSLA) established the National School Lunch Program (NSLP) to “safeguard the health and well-being of the Nation’s children and to encourage the domestic consumption of nutritious agricultural commodities and other foods.” Lunches served by schools participating in the NSLP must meet USDA Food and Nutrition Service (FNS) standards regarding component foods. Lunches that adhere to NSLP standards must be made available to needy children for free or at reduced cost, and free milk must be made available for eligible children. Almost half of all lunches served by participating schools are provided free to students, and an additional 10 percent are provided at reduced prices (Ralston et al. 2008).

When the NSLP was instituted, the objective of the program was to reduce malnutrition due to poverty. However, in recent years, there has been concern that while ensuring adequate

food consumption for individuals at risk for malnutrition, the NSLP may also encourage excess energy intake among children at risk for obesity (Ralston et al. 2008). Results of SNDA-I, conducted by FNS in 1992, indicated that school meals contained excessive amounts of fat and saturated fat as a percentage of calories.

In the years following SNDA-I, a variety of provisions were instituted to improve the nutritional quality of lunches served in the NSLP. The first of these provisions, The School Meals Initiative for Healthy Children (SMI), required schools to offer meals providing no more than 30% of total calories from fat and less than 10% from saturated fat, while also providing adequate levels of target nutrients (defined as one-quarter of daily needs at breakfast and one-third at lunch, on average) (Gordon et al. 2007a).

At the time of SNDA-I, schools participating in the NSLP were required to offer whole milk with every lunch, although schools were also permitted to offer other milk varieties. By the early 1990's, children and adolescents were consuming greater amounts of reduced fat- and lowfat milk than of whole milk on a daily basis (Nicklas and Johnson 2004; Cavadini et al. 2000). In the 1994 Healthy Meals for Healthy Americans Act (P.L. 103-448, §107), which reauthorized the NSLP, Congress allowed schools to drop any milk variety that had accounted for 1% or less of total milk consumed in the preceding school year. Many schools took advantage of this provision to phase out whole milk. The residual requirement to offer whole milk as part of NSLP lunch was removed completely in the Child Nutrition and WIC Reauthorization Act of 2004 (7 U.S.C. 1758, as amended by P.L. 108-265 §102), which states that participating schools “shall offer students fluid milk in a variety of fat contents” and “may offer students flavored and unflavored fluid milk and lactose-free fluid milk.” The goal in instituting these provisions was to

reduce the overall fat content of milk offered by schools and consumed by student NSLP participants. The Child Nutrition and WIC Reauthorization Act of 2004 also required each local educational agency participating in the NSLP to establish a local wellness policy by the beginning of the 2006-2007 school year.

The Food and Nutrition Board of the Institute of Medicine recently advised limiting milk offered in schools to 1% and nonfat milk as a way to increase consistency with the 2005 Dietary Guidelines for Americans (Food and Nutrition Board 2007). The purpose of the present study is to determine whether schools have already voluntarily discontinued offering higher fat milks and whether there has been a trend toward selection of lower fat milks by students.

## Methods

Data collected by FNS and by the School Nutrition Association (SNA) were reviewed to identify the relative proportions of different milk types offered by schools and to identify the relative proportions of different milk types reported by students consuming at school. Although milk is also served as part of the School Breakfast Program in many schools, and is available any time in vending machines at some schools, the focus in the current study is on milk offered and consumed by students as part of NSLP lunches.

## FNS Survey Data

The first FNS SNDA (SNDA-I) survey collected data on school food service operations from a nationally representative sample of elementary, middle, and high schools (n = 545) between February and May 1992. In addition, data on foods consumed during the previous 24 hours (including a school day) were collected from a nationally representative sample of students (n ~ 3350) attending those schools (with assistance from parents of children in grades 1

and 2). Data on types of milk offered by schools and consumed by students were obtained from survey reports (Burghardt et al. 1995; Gordon and McKinney 1995). Unpublished Mathematica Policy Research estimates on relative proportions of milk types consumed by SNDA-I student NSLP participants were obtained from FNS's Office of Research, Nutrition and Analysis (personal communication, John Endahl, FNS).

FNS conducted SNDA-III during the second half of the 2004-2005 school year. SNDA-III collected data on school food service operations from a nationally representative sample of 398 schools, and collected 24-hour dietary recall data from 2314 students (with parental assistance) in 287 of those schools.

Data on types of milk offered by schools and consumed by students in SNDA-III were obtained from reports generated by Mathematica Policy Research (Gordon

et al. 2007a,b). Estimates of the relative proportions of different milk types purchased by SNDA-III NSLP participants were generated based on 24-hour recall data included on a CD provided by FNS (personal communication, John Endahl, FNS). These analyses were conducted using SNDA sampling weights that adjust for the complex design and for survey nonresponse.

## SNA Survey Data

SNA conducts periodic surveys of school foodservice directors to assess various issues related to school nutrition. The most recent survey assessing milk types offered throughout the school day was conducted in February - April 2007 (School Nutrition Association 2007). A total of 1174 school foodservice directors provided survey responses.

TABLE 1

Milk Types Offered as Part of National School Lunch Program Lunches: SNDA-I, 1992 <sup>a</sup> and SNDA-III, 2005 <sup>b</sup>								
Milk Type	Elementary Schools		Middle Schools		High Schools		All Schools	
	% of school days <sup>c</sup>							
	SNDA-I	SNDA-III	SNDA-I	SNDA-III	SNDA-I	SNDA-III	SNDA-I	SNDA-III
Whole unflavored	94	30	96	32	99	29	95	31
Flavored, all fat levels	NR	99	NR	98	NR	99	NR	99
2% fat unflavored	86	57	82	58	89	59	86	58
1% fat unflavored	NR <sup>d</sup>	85	NR	81	NR	76	NR	83
Nonfat unflavored	25	49	29	51	46	60	29	52
2% fat chocolate	43	NR	46	NR	48	NR	44	NR
1% fat chocolate	40	NR	46	NR	47	NR	42	NR

<sup>a</sup> Source: Burghardt et al. (1995), Table 6; this table lists only the most commonly offered milk types.

<sup>b</sup> Source: Gordon et al. (2007a), Table V.4; this table lists only the most commonly offered milk types.

<sup>c</sup> In all sampled schools during the survey period.

<sup>d</sup> Not reported.

## Results

### *Milk Types Offered By Schools*

Between 1992, when SNDA-I was conducted, and 2005, when SNDA-III was conducted, the proportion of school days on which unflavored whole milk was offered dropped from 95 to 31%, and the proportion of school days on which unflavored 2% milk was offered dropped from 86 to 58% (Table 1). Unflavored 1% milk, which few schools offered in 1992, was offered on 83% of school days in 2005. The proportion of school days on which unflavored nonfat milk was offered rose from 29% in 1992 to 52% in 2005.

SNDA-I NSLP lunch flavored milk offerings were reported by milk type, with chocolate 2% milk available on 44% of days and chocolate 1% milk available on 42% of days. SNDA-III results indicate that flavored milk was offered with NSLP lunches on 99% of days, but the relative proportions of flavored milk offered at different fat levels were not reported.

Data collected by SNA in 2007 (not shown in a table) indicate that whole milk was offered at 14.4% of elementary schools, 13.3% of middle schools, and 14.2% of high schools. Nonfat and/or 1% milk was offered by 94.3% of elementary schools, 90.4% of middle schools, and 91.1% of high schools. As indicated above, these percentages reflect milk offered throughout the school day rather than just milk offered with NSLP lunches.

## Milk Types Consumed by Students

### *Proportions of students consuming milk and specific milk types*

Data on proportions of students consuming milk and specific milk types are presented in Tables 2 (SNDA-I) and 3 (SNDA-III). The denominators for the percentages listed in these tables include all NSLP participants or nonparticipants, regardless of whether the individuals were milk consumers.

In SNDA-I, unflavored milk was consumed by 35% of all NSLP participants and by 11% of nonparticipants (Gordon and McKinney 1995) (Table 2). Flavored milk was consumed by 50% of participants and 12% of nonparticipants.

Data provided in Table 3 show the proportions of SNDA-III NSLP participants and non-participants consuming milk and specific milk types. Overall, milk was consumed by 75% of NSLP participants and by 19% of NSLP nonparticipants (Gordon et al. 2007b). The proportions of NSLP participants consuming milk ranged from 60% in high schools to 83% in elementary schools.

TABLE 2

Milk Types Consumed by NSLP Participants and Nonparticipants: SNDA-I, 1992 <sup>a</sup>		
Milk type	Participants	Nonparticipants
	%	
Unflavored milk	35	11 <sup>b</sup>
Flavored milk	50	12 <sup>b</sup>

<sup>a</sup> Source: Gordon and McKinney (1995)

<sup>b</sup> Significantly different from participants,  $P < 0.01$

TABLE 3

**Percentages of National School Lunch Participants and Non-Participants Consuming Milk Types at Least Once at Lunch<sup>a,b</sup>: SNDA-III, 2005**

	Elementary School Students		Middle School Students		High School Students		All Students	
	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants
	%							
All milk	83	30	65	18	60	9	75	19
<b>By fat type</b>								
2% fat	13	10	14	3	13	3	13	6
1% fat	48	14	32	11	29	4	41	9
Nonfat	21	4	16	2	14	1	19	3
<b>Plain or flavored</b>								
Flavored	57	14	41	9	38	4	50	9

<sup>a</sup> Source: Gordon et al. (2007b), Table VI.7; the table is limited to milk types consumed by at least five percent of participants for one or more school type.

<sup>b</sup> Based on 24-hour recall data provided by students (with assistance from parents of students in grades 1 and 2).

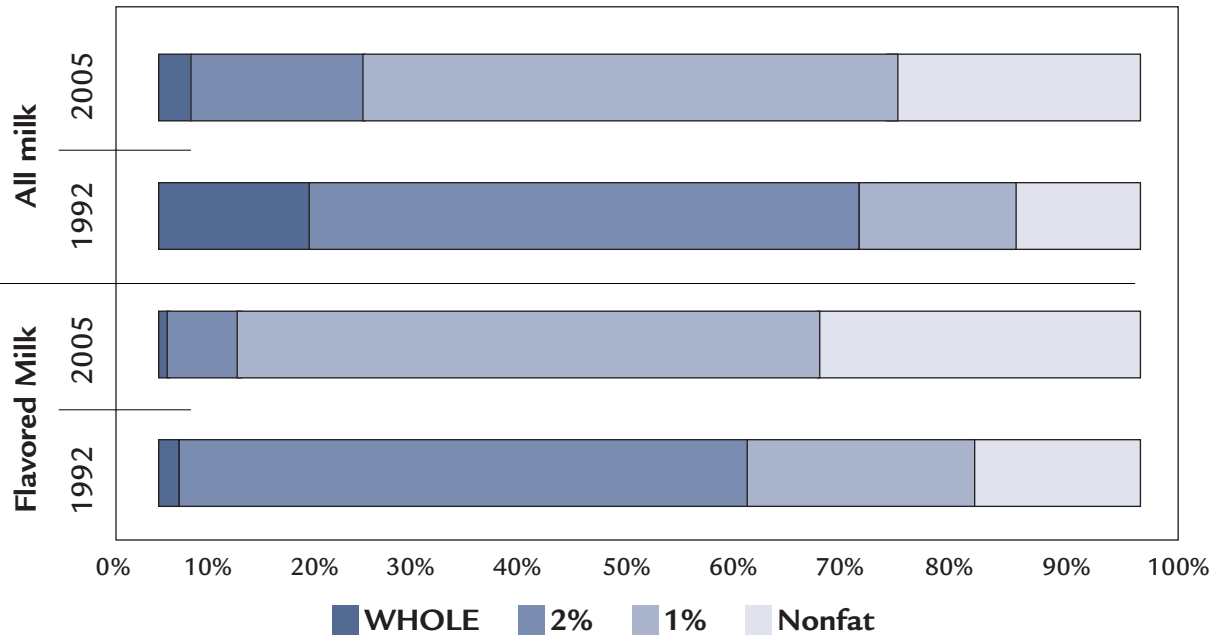
Two %, 1%, and nonfat milks were consumed by 13, 41, and 19% of NSLP participants, respectively; whole milk was consumed by less than 5% of NSLP participants. Flavored milk was consumed by 50% of all SNDA-III NSLP participants. However, it must be recognized that the denominator for these percentages includes all NSLP participants, including milk non-consumers.

### Relative proportions of milk types consumed by NSLP participants.

The relative proportions of different milk types reported by NSLP participants who consumed milk are shown in Table 4 and in Figure 1. The denominators for percentages in the figures and table include milk consumers only.

In SNDA-I, 71.5% of NSLP participant milk consumers drank whole or 2% milk. In contrast, only 20.8% of NSLP milk consumers in SNDA-III reported drinking these higher fat milk types; 79.2% of NSLP participant milk consumers reported drinking 1% or nonfat milk. Flavored milk was consumed by a large proportion of NSLP milk consumers in both surveys; in 1992, 59.8% of milk consumers drank flavored milk, and in 2005, 66% of milk consumers drank flavored milk. However, as demonstrated in Figure 1, although 2% fat milk was the most common type of flavored milk consumed in 1992, 1% fat milk was the type most commonly reported by flavored milk consumers in 2005.

**Figure 1. Relative Proportions of National School Lunch Program Participants Drinking Milk Varying in Fat Content: SNDA-I, 1992<sup>a,b</sup> and SNDA-III, 2005<sup>c</sup>**



<sup>a</sup>Source: Personal communication, John Endahl, FNS, 10/08. <sup>b</sup>Data were compiled by Mathematica Policy Research.

<sup>c</sup>Data were compiled by ENVIRON International Corporation.

TABLE 4

Percentages of National School Lunch Program Participant Milk Consumers Drinking Different Milk Types: SNDA-I, 1992 and SNDA-III, 2005		
Milk Type	SNDA-I, 1992 <sup>a,b</sup>	SNDA-III, 2005 <sup>c</sup>
	%	
Unflavored milk	40.2	34.0
Flavored milk	59.8	66.0
<b>Whole</b>	<b>15.2</b>	<b>3.2</b>
Unflavored	14.0	3.1
Flavored	1.2	0.1
<b>2%</b>	<b>56.3</b>	<b>17.6</b>
Unflavored	21.6	12.1
Flavored	34.7	5.5
<b>1%</b>	<b>15.3</b>	<b>54.3</b>
Unflavored	1.5	15.4
Flavored	13.8	38.9
<b>Nonfat</b>	<b>13.3</b>	<b>24.8</b>
Unflavored	3.2	3.3
Flavored	10.1	21.5

<sup>a</sup>Source: Personal communication, John Endahl, FNS, 10/08.

<sup>b</sup>Data were compiled by Mathematica Policy Research.

<sup>c</sup>Data were compiled by ENVIRON International Corporation.

## Discussion

Data from FNS and SNA vividly illustrate that since 1992, large proportions of schools have stopped offering whole milk and/or 2% milk at lunch. Data collected by SNA in 2007 indicate that less than 15% of schools currently offer whole milk, and that over 90% offer 1% and/or nonfat milk. Although the survey methodologies for the SNA and SNDA-III surveys differ, the results of both surveys indicate that the proportion of schools offering whole milk is relatively low, and that a high proportion of schools currently offer lower fat milks at lunchtime.

It is likely that some of the reduction in the number of schools offering higher fat milks has been due to the 2004 law eliminating the requirement to offer whole milk in schools. The 2004 law required that school districts develop a local wellness policy by the 2006-2007 school year, and it is possible that wellness policies developed by some school districts may have mandated the elimination of whole milk as a NSLP option.

Although consumption of specific milk types at lunch is determined to some extent by the types of milk offered at lunch, it is apparent that since 1992, students have independently followed the trend toward selection of lower fat milk types. In the 2005 SNDA-III survey, it was found that although whole milk was offered on 31% of school days, less than 4% of students drank whole milk at lunchtime. Among students surveyed in SNDA-III, 54.3% of milk consumers drank 1% milk, and 24.8% drank nonfat milk at lunch.

The proportion of NSLP milk consumers choosing flavored milk was almost 60% in 1992, and was 66% in 2005, suggesting that students prefer flavored milk over unflavored milk. Current evidence indicates that flavored milk can be included as part of a healthy diet. Although the majority of flavored milk consumed in SNDA-I was 2% fat, most of the flavored milk consumed by SNDA-III participants was 1% fat or nonfat. In a recent analysis of data from the 1999 – 2002 National Health and Nutrition Examination Survey (Murphy et al. 2008), children and adolescents consuming flavored milk or exclusively plain milk had comparable energy, age and sex-adjusted nutrient intakes, and that their nutrient intakes tend to be superior to those of milk non-drinkers. Although flavored milk is a source of both added and naturally occurring sugars and unflavored milk contains only naturally occurring sugars, Murphy et al. found that adjusted intakes of added sugars did not differ between flavored milk drinkers and exclusively plain milk drinkers, and that diets containing flavored milk were not associated with adverse effects on body measures as indicated by mean BMI or BMI z-score. Therefore, limiting children and adolescents' access to flavored milk due to its higher added sugars may only have the undesirable effect of reducing intakes of many essential nutrients provided by milk.

## Conclusion

Since 1992, a large number of schools have stopped offering higher fat milks as lunch options. Most students are now selecting lower fat milks, including 1% and nonfat flavored milks, to drink at lunchtime.

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