

SECTION 2: THE SCHOOL MILK PILOT TEST

Children's diets have undergone major change over the past few decades. There is growing concern among health professionals that children's diets are not as nutritious as they can or should be and that the deficiencies are contributing to poor health or to an increased risk of poor health as adults (11). Children's diets are generally found to be too high in fat, sodium, and added sugars, and to contain too few fruits, vegetables, whole grain, and other foods rich in fiber and calcium.

Changes in beverage consumption by children in recent years have been especially dramatic. These changes largely mirror changes occurring in the overall population. In 1945, for example, the per capita consumption of milk was more than four times that of carbonated soft drinks (12). In 2000, the per capita consumption of soft drinks was more than two times that of milk. Although school meals continue to be a key source of beverage milk in children's diets, the per capita consumption of milk in the nation's schools has fallen sharply. A comparison of school purchases of fluid milk in 1984/85 and 1996/97 found that school procurement of milk had declined 29 percent over the 12-year period, despite an increase in student enrollment (4).

Coincidentally, it is evident that most school-age children are not meeting the recommended levels of calcium intake. The deficit is particularly wide among older children. In 1994/96, only 32 percent of teenage boys and 13 percent of teenage girls were found to have met their calcium requirements (11).

Given the declining rate of consumption of fluid milk and the implications of this for the future health of children, the National Dairy Council and the American School Food Service Association cooperatively designed and sponsored a demonstration of changes designed to make milk in schools more attractive to the students. The demonstration was implemented in 146 elementary and secondary schools in 18 school districts beginning in the fall of 2001. Most of the districts taking part are located on the East Coast, from Massachusetts to Florida, with some representation in the Far West. The absence of data disaggregated by point of service made it necessary to limit some of the analyses to a sub-sample of 117 schools in 15 school districts.¹

The selection of sample schools and their assignment as "test" or "control" schools was largely dictated by circumstance. School participation in the study was dependent on the cooperation of local milk suppliers. A variety of costly production line changes were required on the part of some of the processors taking part. This made recruitment for participation in the study particularly challenging and was largely responsible for the geographic make-up of the sample.

¹ **Measures of key characteristics of the sub-sample, including share of students approved for free and reduced-price meals, were not materially different from those of the full sample.**

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Schools participating in the study were also required to make several adjustments. Beyond keeping detailed records of milk sales and providing school-level measures of participation in the school meals programs, they had to make changes in how the milk was stored and merchandised. This included the installation of new coolers and, in some schools, vending machines. The participating schools were also asked to cooperate in several data-collections activities, including three surveys of a sample of over 5,000 students, a survey of the school foodservice directors in each district, and a plate-waste survey in 47 schools during three 2-day periods during the study.

A variety of changes were made in the test schools. Some of these changes were implemented in all test schools while some were implemented in only a portion of them. Changes implemented in all test schools were:

- Three flavor varieties offered (white, chocolate, and a third flavor, usually strawberry).
- Quality of chocolate milk made comparable to retail product.
- Coolers to maintain milk at prescribed temperatures installed.

Beyond these universal changes, a variety of packaging, size, and point-of-sale options were tried in selected schools. They included offering:

- 8-ounce plastic containers on the meal line
- 10-ounce plastic containers on the meal line
- 10-ounce plastic containers a la carte
- 16-ounce plastic containers a la carte
- 16-ounce plastic containers in vending machines

Test schools were assigned to “panels,” depending on the nature of the changes that had been made. The distribution of schools by the panel in which they participated is shown in Table 1.

The demonstration was conducted in school year 2001/02. Prior to initiating the test, baseline data were collected for periods of one month or more in 14 of the 18 districts. The test began at different times in different districts, beginning in early November and extending through late February. The test continued in all schools through the remainder of school year 2001/02.

The number of units and dollar value sales by container size and flavor were recorded daily for each school. Separate records were maintained for sales made as part of reimbursable meals and for a la carte sales. No distinction was made between lunch and breakfast, though sales for both were recorded. Per unit sales were converted to ounces and expressed as ounces per 1,000 average daily participation (ADP) in

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reporting results. This measure was used to standardize results across schools of different sizes and different rates of participation in the meals programs.

Table 1. Number of Schools Participating in the School Milk Pilot Test, by Nature of Change Tested and Elementary/Secondary

Panel	Change	Elementary	Secondary
		Number of schools	
Control	None	18	30
Test 1/3	8 oz. Plastic – meal line	29	-
Test 2	8 oz. Plastic – meal line	-	19
Test 4	8 oz. Plastic – meal line, 16 oz. Plastic – a la carte	-	10
Test 5	8 oz. Plastic – meal line, 16 oz. Plastic – a la carte and vending	-	11
Test 6	10 oz. Plastic – meal line & a la carte	-	13
Test 7	8 oz. Carton – meal line, 16 oz. Plastic – a la carte and vending	-	<u>16</u>
Total		47	99

Source: Roper ASW and Beverage Marketing Corporation

It is assumed that in a national implementation, the changes adopted would vary among schools much as they did in the pilot. Schools would be granted flexibility to adapt the concept to their individual circumstances. Thus, while the mix of changes made in the pilot schools probably would not be duplicated in a national implementation, it provides a reasonable approximation of what would be expected to occur.

To help determine the representativeness of the sample, key characteristics of the sample schools were compared to national averages for all NSLP schools (Table 2). This comparison indicates that the sample schools are very similar to the national averages in nearly all respects. The secondary schools in the sample are somewhat larger in average enrollment than the national average, due to the proportionately greater representation of high schools in the sample. The percentage of enrolled students approved for free and reduced price meals, a key determinant of program performance, was nearly identical.

A comparison of the ethnic composition of schools taking part in the SMPT with the ethnic composition of all public schools is shown in Table 3. Compared to national averages in 1999, white students and black students were somewhat over-represented in the sample while Hispanic students were somewhat under-represented.

Given that study findings are measured in terms of the relative difference between test and control schools, it is important that schools assigned to these two groups be as closely matched as possible so that any differences found can be attributed to the

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treatment rather than to exogenous influences. A comparison of test and control school characteristics, as shown in Tables 2 and 3, indicates that they are closely matched and that none of the differences that could be statistically compared were found to be significant.

Table 2. Comparison of Schools in the School Milk Pilot Test and all Public Schools Participating in the National School Lunch Program, by Selected Measures, SY 2001/02¹

Measures	SMPT Schools				All Schools	
	Test		Control		Elementary	Secondary
	Elementary	Secondary	Elementary	Secondary		
Average enrollment	507	930	448	1,080	468	760
Share offering breakfast	83	63	83	71	76 ²	76 ²
ADP: lunch	74	56	77	53	67	45
: breakfast	25	8	27	7	26	13
% free approval	36	27	36	24	39	25
% reduced approval	10	7	7	5	9	6

¹ The 12 California pilot schools are not included due to incomplete information.

² Not available by elementary/secondary.

Note: None of the differences between test and control schools were found to be significantly different at the 90 percent level.

Sources: Information for SMPT schools provided by the National Dairy Council. Information for all schools for SY 1999/2000 from (12) and for SY 1998/99 from (2).

Table 3. Comparison of the Ethnic Composition of Schools Participating in the School Milk Pilot Test and Total National Enrollment in Public Elementary and Secondary Schools in the U.S.

Ethnicity	SMPT Schools, SY 2000/01				All Public Elementary and Secondary Schools, Fall 1999
	Test		Control		
	Elementary	Secondary	Elementary	Secondary	
	-----percent-----				
White	70.0	61.9	70.9	56.0	62.1
Black	21.4	21.1	22.7	24.0	17.2
Hispanic	6.4	9.7	7.2	9.6	15.6

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Asian or Pacific Islander	1.7	8.5	1.5	12.0	4.0
Other	0.9	1.3	1.1	3.0	1.2
Total ¹	100.0	100.0	100.0	100.0	100.0

¹ Totals might not equal 100.0 due to rounding and to averaging of percentage shares.

Note: None of the differences between test and control schools were found to be statistically significant at the 90 percent level. For some comparisons the number of observations was too small to support a test of significance.

Sources: Roper ASW and U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 2001*, February 2002.

A comparison of per capita milk consumption in the markets where the SMPT schools were located indicates that, with one exception, they were all very close to the U.S. average (Figure 1). The exception is Salt Lake City, one of the higher per capita milk consuming markets in the U.S.

Figure 1. Per Capita Consumption in SMPT Markets, 2001

