Evaluation of the California Fresh Start Program

Report of Findings

Prepared for the California Healthy Kids Resource Center and the Nutrition Services Division, California Department of Education

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Executive Summary

In 2005, California enacted Senate Bill 281, which established the California Fresh Start Program (CFSP), in order to encourage and support schools to provide additional portions of fruit and vegetables in the School Breakfast Program (SBP). Emphasis was placed on increasing the provision of fresh, California grown fruit and vegetables. CFSP, the nation's first program earmarking funds to increase consumption of fresh fruit and vegetables in a school nutrition program, reimburses participating schools 10 cents for every breakfast when an additional serving of fruit and vegetables is offered. In 2006-07, an extensive evaluation of the implementation of the CFSP in 69 diverse schools was conducted, the findings of which are detailed in this report. Evaluation data collected from schools included demographics, school breakfast participation rates, breakfast menu production records and invoices, site observation data, and survey and interview data from students and school Child Nutrition Directors.

The CFSP exceeded expectations in many areas for the schools. During the CFSP (at participating schools):

- the amount of *fresh* fruits and vegetables offered to students doubled;
- the amount of *fresh* fruit taken by students at breakfast increased to an even greater degree (up 136%);
- the variety of fruits and vegetables offered to students at breakfast increased substantially;
- the amount of fruit juice schools offered and students took at breakfast decreased[1];
- participation in school breakfast increased by about 2%, enough to bring nearly $1 million in additional federal meal reimbursement to the state.

While the greatest absolute increase in fruits and vegetables provided included the more common fruits—apples, oranges, and bananas—even more significant were the relative increases in more "exotic" fruits, like stone fruits (peaches, apricots, plums etc.), kiwi, pears, pineapple, and tangerines among others. Schools that were more successful at increasing the number of fruits and vegetables taken by students reported increases in the amount and variety offered, as well as in the number of *fresh* fruits and vegetables offered. Schools that most increased *fresh* fruit offerings rated their facilities as inadequate to cope with the extra preparation.

Reports from stakeholders and site observations indicated that the CFSP's impact could be more effective when more schools provide:

- Increased offerings of popular, but less common (and more expensive) fruits and vegetables;
- Appealing presentation of fruit and vegetable items;
- Improved dining facilities;

[1] This finding is critically important in the current food environment, in which children's over-consumption of sweet beverages has been linked to obesity and diabetes.

- Creative breakfast options, such as serving breakfast in the classroom or at nutrition breaks;
- Nutrition education and CFSP promotion efforts;
- Program support from school administration, staff, teachers, and students;
- Improved customer service.

In addition, the findings indicated that increasing the CFSP reimbursement rate to greater than 10 cents would be necessary to adequately cover the costs of:

- Fruits and vegetables including losses due to perishability,
- Nutrition education and promotion, and
- Labor associated with preparation of produce.

During just the first year of implementation, the CFSP generated significant increases in the amount of fruits and vegetables offered and taken by students. With suggested enhancements and expansion to more schools, the CFSP shows potential for still greater success in the future.

Introduction

In response to the current critical state of children's nutritional health, California enacted Senate Bill 281, commonly known as the California Fresh Start Program (CFSP), which was signed into law in 2005. This pilot program was designed to offer a 10-cent per meal reimbursement to schools for the purpose of increasing the servings of fruits and vegetables offered to school children at breakfast. Priority was given to serving fresh fruits and vegetables and, where possible, California grown produce.

The need for improving children's diets has been clearly demonstrated in recent years. As dietary quality has declined, the health issues confronting children—obesity, diabetes, and early development of cardiovascular risk—have dramatically increased. Intake of fruits and vegetables is one of the primary markers of dietary quality. Children's low consumption of fruits and vegetables has been documented in numerous studies and is clearly addressed in the 2005 USDA Dietary Guidelines. Further, children's consumption of sweetened beverages, including fruit juice, has been linked to obesity and other poor nutritional outcomes.

With over 30% of California's children overweight, and over 95% of the state's children receiving up to one-half of their dietary intake in school, schools have an opportunity, if not an obligation, to offer a healthy array of food choices to their pupils. While intakes of fried potatoes and fruit beverages have seen much recent growth, intakes of fresh fruits and vegetables have not. Study data have shown that most of the fruits and vegetables children eat are consumed in the home environment, and few are eaten at school.

The CFSP is a first step in ear-marked state funding to supplement the federal school meal program and create a health-promoting menu, specifically by promoting an increase in the provision of fruits and vegetables. The CFSP is intended to provide supplemental fresh fruits and vegetables in order to promote their consumption, increase school breakfast participation, improve children's lifelong eating habits, and decrease the incidence of obesity. Supplementation of fruits and vegetables in the School Breakfast program serving over six million California students each day is an important first step in reaching California's children who are at high nutritional risk. The CFSP is the first statewide effort in schools to increase fruits and vegetables at an institutional level, and this legislation is the first of its kind to specifically address fresh and local produce policy at the state level.

The Center for Weight and Health at the University of California, Berkeley, was employed as the independent evaluator by the Alameda County Office of Education, recipient of the grant authorized by SB 281 to conduct a comprehensive external evaluation of the new program to specifically assess:

- how the additional 10 cents per breakfast was spent, including the extent of increases in the amount of fresh fruit and vegetables purchased;
- the effect of the funding on school breakfast participation and on students;

- the effect on the food service operation including food service needs for equipment and facilities, labor, nutrition education materials, and staff training on safe handling, serving and marketing of fruits and vegetables.

The evaluation team further examined broad issues of program implementation:

- the extent of participation in the CFSP by California school districts as well as factors influencing participation;
- the main impacts of CFSP participation with regard to fruits and vegetables during the breakfast meal;
- the factors which appeared to influence schools' ability to successfully implement the CFSP;
- costs to schools of implementing the CFSP; and
- other impacts of the program, including participation in the School Breakfast Program.

The CFSP provided funding for only one window of time. This report addresses each objective and will document the process of change from enrollment into the CFSP through program implementation. Using perceptions of the process by those involved, including barriers to implementation and factors associated with success, implications for program refinement and recommendations for optimizing program impact will be presented.

School District Participation in the California Fresh Start Program

- **The California Fresh Start program (CFSP) reached nearly half of all the school districts in California, and these schools serve the majority of school breakfasts in the State.**

Forty-five percent of all California school districts which were eligible for the CFSP elected to participate (Table 1, Figure A.1, Appendix). Because the CFSP districts were larger than those that did not participate, the vast majority of students in California that eat breakfast at school (78%) were reached by the CFSP. The CFSP districts served 706,970 breakfasts compared with the non-participating districts which served 203,092 breakfasts during the 2006-07 school year. This means that the program reached a substantial number of students for whom it was intended with supplemental fruits and vegetables.

Table 1. Profile of eligible school districts participating and not participating in CFSP 2006-07 (n = 1014) [a]

	CFSP participating School Districts n=442	CFSP non-participating School Districts n=569
Student Enrollment (median)	**4069**	**1047**
	%	**%**
Ethnic Racial Group (%)		
White	40.8	50.2
African American	4.9	3.0
Hispanic	41	34.5
Asian	5.6	4.4
Filipino	1.8	1.2
American Indian	1.8	2.9
Pacific Islander	0.6	0.4
Multiple or no responses	3.5	3.4
Total	100	100
Average School Breakfast participation rate [b]	20%	22%

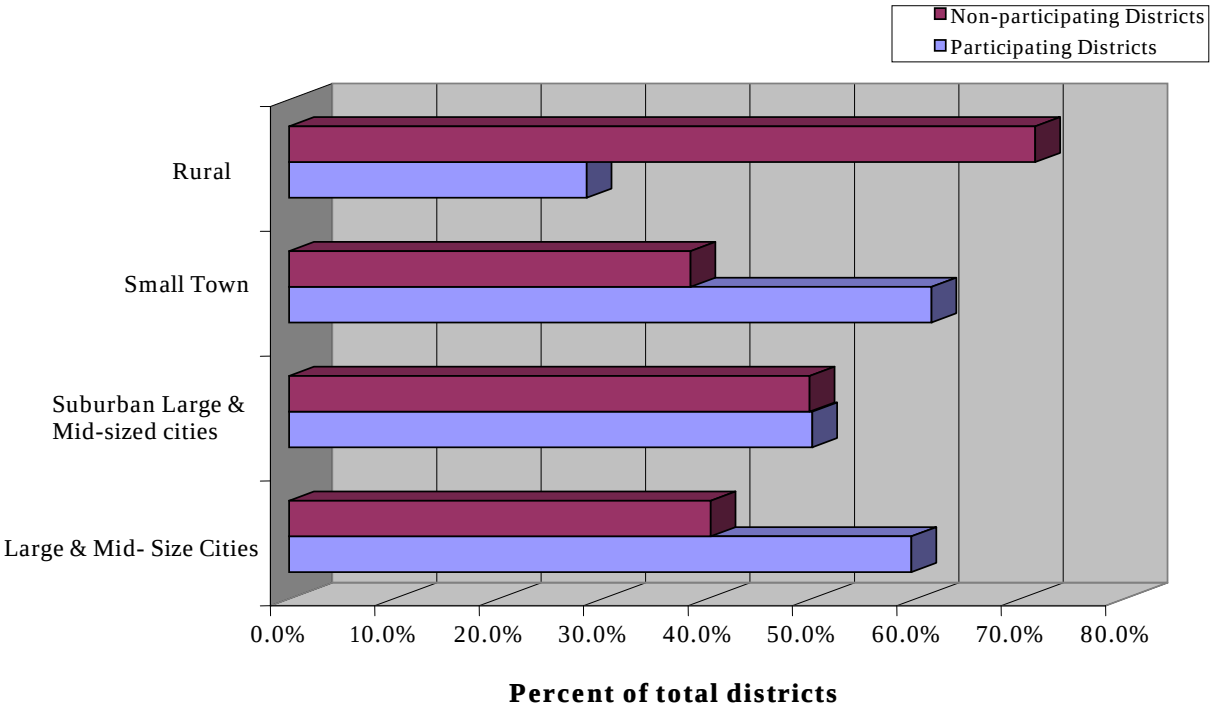
[a] Number of districts with complete data for each the characteristics listed in table 1 varied and was somewhat lower than the total number of eligible districts. Breakfast participation rate data was available for 359 participating districts and 432 non-participating districts. Enrollment and ethnic data was available for 442 participating districts and 569 non-participating districts.

[b] Number of students served/school enrollment

- **School districts that participated in the California Fresh Start Program had larger student enrollment and were more likely to be in large urban areas or small towns than in rural areas.**

  Participating school districts had larger student enrollments than non-participating districts (median enrollment 4069 and 1047, respectively, Table 1). A higher proportion of participating school districts were in urban areas, particularly cities and towns than non-participating districts (Figure 1). The ethnic and racial profile of students (mostly White and Hispanic in both cases) and the average School Breakfast participation rates (about 20% in both cases) were similar between participating and non-participating school districts (Table 1).

Figure 1. Geographic areas of school districts participating and not participating in the CFSP



- **School districts that did not participate indicated that they did not know enough about the program but would have participated if they had been clearer about the benefits and requirements.**

  Twenty-two Child Nutrition Directors from the non-participating districts were randomly selected and interviewed to identify reasons for non-participation. About one-third indicated that they did not know about the CFSP or were unsure of their eligibility for the program. Of these, most said that if they had known more about the program, they would have seriously considered enrolling. About one-fifth cited concerns about paperwork, and unclear rules and regulations as reasons they did not

participate. Others indicated that the auditing requirements were unclear and they did not want to leave themselves vulnerable if audited.

The small reimbursement was mentioned by a few, noting that the additional 10 cents per child provided by the CFSP was not enough funding to cover the cost of the program. When probed, they explained that high and increasing prices for fruits and vegetables, and/or a belief that the current amount of fruit and vegetables offered was adequate.

- **Only three schools discontinued their participation in the CFSP.**

All three schools that discontinued participation in the CFSP were interviewed. None had voluntarily withdrawn from the program, but rather had been withdrawn by the CDE due to ineligibility. The fact that no school chose to drop out of the program suggests it was well received by the participating districts. This is substantiated by the survey of Child Nutrition Directors at participating districts, who indicated that the program was clear, simple and easy to implement. These survey findings are discussed in more detail in section 5 of this report.

Implications

It appears that the CFSP outreach was successful given that the program was implemented by districts that serve the majority of the School Breakfasts in California. The CDE reported that they used numerous verbal and electronic methods for getting the word out about the program, including: mailed Information Alerts and Management Bulletins; e-mail messages; mailed and e-mailed copies of the program regulations, Frequently Asked Questions, announcements, presentations and handouts at meetings attended by school nutrition personnel; and Web postings. Larger districts that serve more breakfasts may have been more receptive to the program because the total reimbursement would be greater. Larger districts may also have more staff and easy access to information, and may therefore be able to keep abreast of new opportunities more easily. Smaller and more rural districts may require more individualized follow-up to encourage them to participate in new programs such as the CFSP.

Summary of evaluation methods

Ninety-three California school districts were randomly selected for participation in the evaluation of the CFSP. Of these, 69 schools were eligible and agreed to participate in the evaluation. Sixty-one schools were able to supply sufficiently complete data for the evaluation of impacts of the CFSP. Thus, this sample of schools provides a sound generalizable basis for the evaluation of the CFSP.

The following methods were used to gather data for the evaluation:

- Breakfast menu production records and invoices from Child Nutrition Services Directors (n=61 schools)

- Documentation of monthly school breakfast participation rates (n=51 schools) and non-food expenditures associated with CFSP (n=61 schools)

- A written survey of Child Nutrition Services Directors (n=55 schools)

- Field visits to 16 schools at which the following data were collected:
    * Survey of students grades 4-12 regarding: student perceptions about School Breakfast (n=1205 students)

    * Classroom discussions with students (n=28 classes, grades 4-12)

    * Interviews with Child Nutrition Services Directors (n=16 schools)

    * Observations of the breakfast foods offered and physical environment in which they were prepared, offered and served (n=16 schools)

Details of these methods are described in the Appendix.

Key findings of the evaluation

1. The CFSP impact on the variety of total and *fresh* fruits and vegetables offered

The CFSP resulted in substantial increases in the variety of all, and especially *fresh*, fruits and vegetables offered to students.

- **More than twice as many different *fresh* fruits and vegetables were offered per day in the CFSP period compared with pre-CFSP**.

  The number of different types of fresh fruits and vegetables offered each day at breakfast increased strikingly from an average of 0.7 to 1.4. This difference was statistically significant.

- **After the CFSP was implemented, the schools offered an average of over two fruit and vegetable items for each breakfast, including at least one fresh item.**

  When considering all forms (fresh, juice, canned, frozen and dried), there was a **46% increase** in the average number of different types of fruits and vegetables offered per day. The variety increased from an average of 1.75 to 2.55 different types of fruits and vegetables offered per day after the implementation of the CFSP (Table 2). This statistically significant difference was due almost entirely to the increase in the variety of the fresh fruits and vegetables offered.

Table 2. Average number of different fruits and vegetables offered per day at breakfast by form pre and post CFSP and percent change

(n=61 schools)

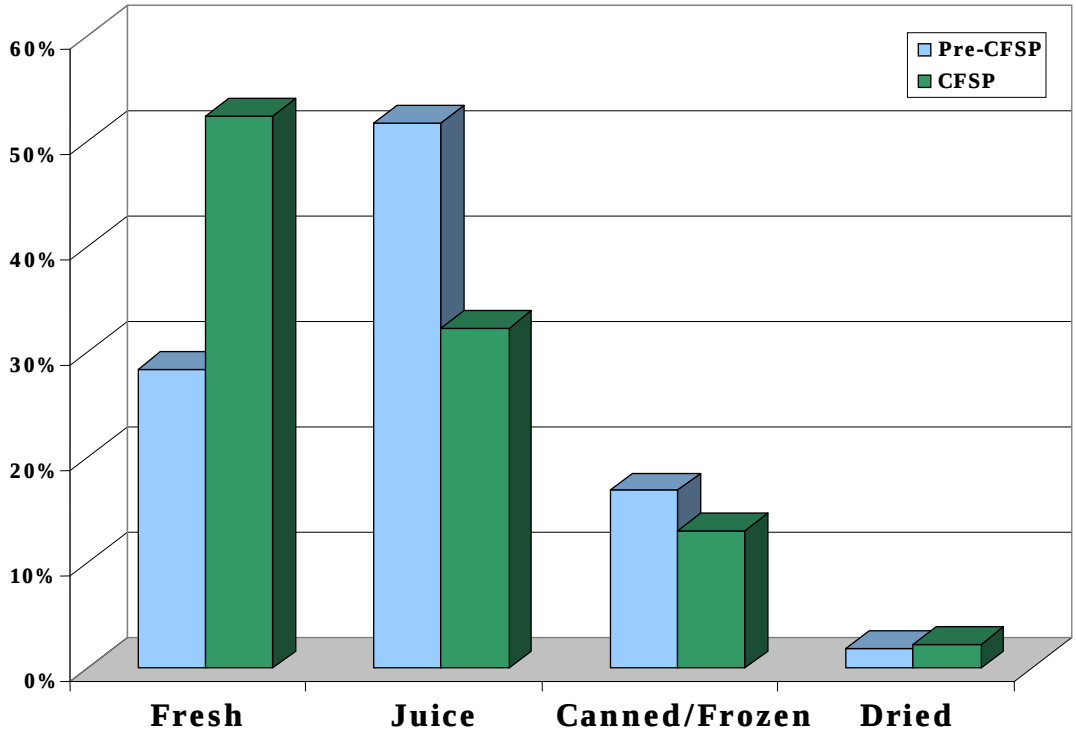
	Pre-CFSP Mean	CFSP Mean	Percent Increase (Decrease)
Fresh	0.66	1.38	110%*
Juice	0.75	0.73	(2%)
Canned/Frozen	0.30	0.37	25%
Dried	0.05	0.07	42%
Total (all forms)	1.75	2.55	46%*

* significant $p<0.01$ for difference in pre and post CFSP mean frequency

- ***Fresh* fruits and vegetables increased substantially while juice, canned and frozen decreased**.

  Fresh fruits and vegetables nearly doubled as a proportion of the total different types of fruits and vegetables offered per day at School Breakfast after implementation of the CFSP**,** increasing from just over one-quarter, to over half of the total offered (Figure 2). Post CFSP, *fresh* fruits made up the majority of the different types of fruits and vegetables offered at breakfast. At the same time, the relative importance of juice, which had previously been the primary source of fruit in the breakfast meal, decreased substantially.

Figure 2. Percentage of the different types of fruits and vegetables offered that were fresh or in other forms at School Breakfast pre and post CFSP (n=61 schools)



- **All types of *fresh* fruits and vegetables were offered with greater frequency as a result of the CFSP, however apples, oranges and bananas remained the most commonly offered.**

  Increases in fruits offered were greatest in absolute numbers for the commonly offered fruits including apples, oranges, and bananas. However, stone fruits, which were offered infrequently, had a substantial percentage increase after the CFSP (Table 3).

Table 3. The frequency (percent of observation days) with which different types of fresh fruits were offered at School Breakfast pre and post CFSP (n=61 schools)

	Pre-CFSP Mean (% of days)	CFSP Mean (% of days)	Percent Increase (Decrease)[a]
Apples	**16**	**37**	130%*
Oranges	**9**	**25**	170%*
Assorted Fresh Fruit	**17**	**24**	39%
Bananas	**10**	**19**	84%**
Stone Fruits	**2**	**5**	221%**
Grapes	**2**	**5**	98%
Strawberries/Blueberries	**2**	**3**	43%
All Melons	**2**	**3**	38%
Kiwi	**< 1**	**2**	N/A
Pineapple	**0**	**< 1**	N/A
Tangerines/Tangelos	**< 1**	**2**	N/A
Pears	**< 1**	**2**	N/A

* Significant at $p<0.01$ for difference between Pre and Post CFSP values.
** Significant at $p<0.05$ for difference between Pre and Post CFSP values.
N/A-Not applicable, indicating that percentages were too small for meaningful estimates.

2. The CFSP impact on fruits and vegetables taken by students

Students took more fruits and vegetables at School Breakfast during the CFSP, suggesting that student consumption of fruits and vegetables, especially *fresh*, increased as a result of the CFSP (Table 4, Figure 3).

- **Students took more than twice as many *fresh* fruits at breakfast during the CFSP than before the CFSP was implemented.**

  Before the CFSP, students took, on average, only 0.14 servings of fresh fruits and vegetables. However, during the CFSP this increased to 0.32 servings (Table 4).

Table 4. Average number of servings of fruits and vegetables taken per student per day at breakfast pre and post CFSP (n=44 schools)

	Pre-CFSP Mean	CFSP Mean	Percent Increase (Decrease)
Total fruits/vegetables	**0.87**	**1.02**	**18%**
Juice	**0.60**	**0.53**	**(12%)***
Fresh	**0.14**	**0.32**	**136%**
Canned/Frozen	**0.12**	**0.12**	**1%**
Dried	**0.01**	**0.02**	**87%**

* brackets indicate a decrease

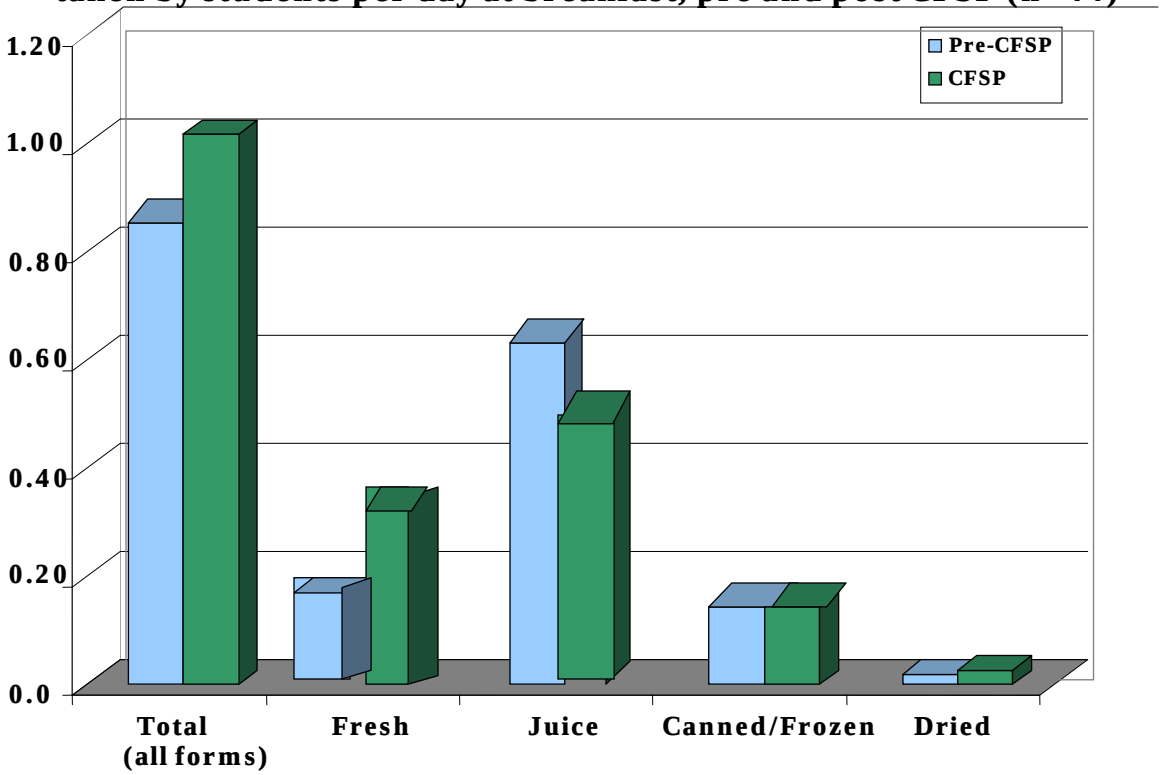
- **After the CFSP was implemented, students on average, took one serving of fruits and vegetables at breakfast.**

  Overall, the servings of fruits and vegetables taken by students increased by 18% from 0.86 to 1.02 servings per student (Table 4). Nearly all of this increase was due to the increase in *fresh* fruit and vegetable servings taken.

- **Students increased the amount of *fresh* fruits and vegetables while decreasing the amount of juice, canned and frozen offerings that they took.**

  These findings suggest that when offered more variety of *fresh* fruits and vegetables and less juice, students will increase their intake of *fresh* fruits and vegetables at breakfast for an overall increase in total fruit and vegetable consumption (Figure 3).

Figure 3. Average number of servings of fruits and vegetables taken by students per day at breakfast, pre and post CFSP (n=44)



While there were no direct measures of student consumption in this evaluation, the amounts taken, as recorded by food service personnel, provide a reasonable indirect basis for assessing student consumption. Observations by research staff and food service personnel confirm that most students that choose to take a fruit or vegetable at breakfast do actually eat it. Therefore, these findings suggest that student consumption of fresh fruits and vegetables at breakfast are likely to have doubled as a result of CFSP.

The more modest changes in "servings taken" versus "servings offered" is a result of the "offer vs. serve" system that is employed by most schools in California and all of the schools participating in this study. The "offer vs. serve" system requires that students choose a minimum number of breakfast items but does not require that they choose a fruit or vegetable option. Only one school participating in this study reported that they required the student take a serving of fruit and vegetable.

- **During the CFSP students took more of almost all types of fruits and vegetables. The percentage increases were greatest for some of the more unusual fruits such as cantaloupe, tangerines/tangelos and blueberries.**

  Increases in servings taken were reported for nearly all fresh fruits offered during the course of the CFSP. Increases of about 20-30% were observed for common fruits such as apples, bananas and oranges. Increases were substantially higher (100% or more) for less commonly served fruits such as tangerines, berries, and cantaloupe, reflecting their appeal among students, and the low frequency with which they were offered before the CFSP.

  Although the greatest increase in offerings occurred for apples, bananas, and oranges, this did not result in larger increases in servings taken by students. Thus the demand for more common fruits may have been approaching saturation, but unmet demand remains for the more unusual fruits. Increases in student selection of fruits and vegetables taken at breakfast will likely require additional offerings of fruits and vegetables other than apples, oranges, and bananas.

- **Schools that were most successful at implementing the CFSP[2] showed a 46% increase in *total* fruits and vegetables and a 383% increase in *fresh* fruits and vegetables taken by students.**

  While the overall impact of the CFSP on the amount of fruits and vegetables taken by students – particularly the amount of *fresh* fruits and vegetables taken by students — is impressive, this impact is even more dramatic when looking specifically at the schools that experienced the greatest success in implementing the CFSP. At these schools, the CFSP led to a 46% increase in the total amount of fruits and vegetables taken by students, and a 383% increase in the *fresh* fruits and vegetables taken by students (Table 5).

Table 5. Average number of total and fresh fruits and vegetables taken per student, and variety offered, pre and post CFSP, for more and less successful schools

	More Successful[2] (n=22 schools)			Less Successful[2] (n=22 schools)		
Outcome Variable	Pre-CFSP Mean	CFSP Mean	Percent Increase (Decrease)	Pre-CFSP Mean	CFSP Mean	Percent Increase (Decrease)
Total fruits and vegetables taken	0.82	1.20	46.1%	0.91	0.84	(7.7%)
Fresh fruits and vegetables taken	0.08	0.40	383.0%	0.30	0.27	(11.4%)
Number of different fruits and vegetables offered	1.42	3.13	120.0%	2.22	2.34	5.6%

- **The CFSP had the most impact on schools with lower baseline levels of fruit and vegetables taken by students.**

  Using change in servings as a measure of success, the CFSP was particularly effective where student intake of fresh fruits and vegetables was initially low. Thus the CFSP had the greatest impact on improving levels of fruit and vegetables taken in schools with the greatest need for an increase in fruit and vegetable intake.

[2] More or less successful schools were defined by the following outcomes:
- Change in the mean number of ***total*** servings ***taken*** per student per day (cut off > .10)
- Change in the mean number of ***fresh*** servings ***taken*** by students per day (cut off > .10)
- Change in the variety of units of fruits and vegetables ***offered*** per day (cut off > .90)

3. Factors that contributed to the success of the CFSP[3]

- **Schools that were more successful in increasing student selection of *fresh* fruits and vegetables offered increased quantities, variety, and more unusual fruits, and less juice.**

  These associations were statistically significant and suggest that the CFSP strategy of increasing the *fresh* fruit and vegetables offerings to students is effective at increasing consumption of fresh fruits and vegetables especially when juice is offered less and unusual fruits are offered more frequently (Table 6).

  Factors significantly related to greater increases in *both* total and fresh servings of fruits and vegetables taken by students:
  - Larger increases in the **amounts** of *total* fruits and vegetables offered
  - Larger increases in the **variety** of *total and fresh* fruits and vegetables provided

  Factors significantly related to amount of *fresh* fruits and vegetables taken:
  - Larger increases in the **amount** of *fresh* fruits and vegetables offered
  - **Larger increases in offerings of unusual fruits**
  - **Larger decreases in juice** offerings

  These findings suggest that limiting juice and providing fruits other than apples, oranges and bananas are particularly important for increasing student consumption of fresh fruits and vegetables.

[3] More or less successful schools were defined by the following outcomes:
- Change in the mean number of ***total*** servings ***taken*** per student per day (cut off > .10)
- Change in the mean number of ***fresh*** servings ***taken*** by students per day (cut off > .10)
- Change in the variety of units of fruits and vegetables ***offered*** per day (cut off > .90)

Table 6. Factors associated with increases in the amount of fruits and vegetables taken by students and the variety offered
(n=44 schools, unless otherwise indicated)[a]

Factor	Increase in TOTAL fruits & vegetables taken	Increase in FRESH fruits & vegetables taken	Increase in VARIETY offered
Changes in fruits and vegetables offered[b]			
Increase in **variety of *total*** fruits offered	**p<.05[a]**	**p<.05**	N/A[c]
Increase in **variety of *fresh*** fruits offered	**p<.05**	**p<.05**	N/A
Increase in **number of *total*** fruit servings offered	**P<.0001**	**p<.05**	**p<.05**
Increase in **number of *fresh*** fruit servings offered	NS[d]	**p<.0001**	NS
Reduction in how frequently **juice** was offered	NS	**p=.05**	NS
Increase in number of **unusual[e] fruits** offered per day	NS	**p<.05**	**p<.05**
Changes as perceived by Child Nutrition Directors			
Improvement in **quality/appeal** of fruits & vegetables	NS	NS	**p<.05**
Increase in **nutrition education** effort	NS	NS	**p<.05**
Improved **student attitude** towards School Breakfast	NS	NS	**p=.05**
Improved **customer service** by Nutrition Services staff	NS	NS	**p<.05**
Barriers as perceived by Child Nutrition Directors			
Inadequate kitchen **facilities**	**p<.05**	**p<.05**	NS
Lack of storage **space/facilities**	**p<.01**	NS	NS
Observations by research staff[f]			
Adequacy of dining space (n=15 schools)	**p=.05**	NS	N/A
Quality of dining ambience (n= 13 schools)	NS	**p=.05**	N/A

a Significance levels using Fishers exact test
b 36 other factors were tested and found not to be statistically significant. These are found in the Appendix.
c NA-indicates not applicable for statistical testing
d NS – indicates not significant
e Unusual fruits defined as all those with the exception of apples, bananas, and oranges
f Data gathered at site visits to a subset of schools; 7 other factors were tested and found not to be statistically significant

- **School kitchen, dining and storage facilities were related to implementation of the CFSP.**

  The perception of inadequate kitchen facilities by Child Nutrition Directors was significantly related to students taking more *fresh and total* fruits and vegetables, and perceived lack of adequate storage space/facilities was related to students taking more *total* fruits and vegetables. This may be due to an increased awareness of the need for expanded/upgraded facilities experienced by those Child Nutrition Directors that expanded their offerings to a greater degree.

  Analysis of data collected at the 16 site visits conducted by evaluation staff indicates that the existence of more adequate dining space for students was related to students taking more *total* fruits and vegetables; and a more appealing dining ambience was related to students taking more of *fresh* fruits and vegetables.

  These combined findings suggest that successfully increasing student consumption of fruits and vegetables at school would be facilitated by improvements to, and expansion of, kitchen and dining facilities.

- **Schools that offered more variety of fruits and vegetables at breakfast were more likely to have made improvements in customer service, nutrition education, student attitudes, and the quality and appeal of the fruits and vegetables offered.**

  These findings suggest that improving customer service and nutrition education go hand in hand with improving the variety, quality, and appeal of the fruits and vegetables offered at breakfast. In a more positive customer service environment with more nutrition education for students, student attitudes toward School Breakfast also improve.

- **Successful implementation of the CFSP was not significantly related to school characteristics or student socio-demographics.**

  The type of school (elementary, middle, high), ethnicity/race of the students, rural-urban geographic location, percent free- and reduced-price meal participation, or size of student enrollment did not have any statistically significant association with success of the CFSP in terms of servings of fresh and total fruits and vegetables taken by students or variety offered.

4. Approaches and strategies used to implement the CFSP

Increasing student consumption of fresh fruits and vegetables at breakfast is a challenge that requires more than merely offering fruits and vegetables. Given the "offer vs. serve" method whereby students can choose whether or not to take any fruit or vegetable serving at all, it is important that fruits and vegetables are served in ways that appeal to students. Effective marketing and education to encourage consumption of fruits and vegetables may also be needed. This section will discuss the implementation approaches and strategies that the CFSP schools employed, how these might have affected the success of the program, and implications for future implementation efforts.

- **Child Nutrition Directors identified key CFSP efforts to improve the quality and appeal of both the breakfast menu overall and the fruits and vegetables in particular.**

  Most Child Nutrition Directors (81%) felt that they had made improvements in the quality and appeal of the fruits and vegetables offered at breakfast as a result of participation in the CFSP. Most (85%) also felt that they had improved the quality and appeal of the breakfast menu in general — these were the most noted changes resulting from program participation. Reported changes are listed in Table 7.

Table 7. Changes during the CFSP as perceived by Child Nutrition Directors (n=53-55 schools)

	Unfavorable Change	No change	Improvement
Breakfast Menu in general	0%	15%	85%
Quality/Appeal of fruits and vegetables offered	0%	19%	81%
Nutrition Education efforts by Nutr. Services	0%	30%	70%
Promotion of Breakfast program	0%	31%	69%
Promotion of FRP Meal program	0%	49%	51%
Nutrition Education efforts by school staff	0%	61%	39%
District or local financial support	2%	87%	11%
Efficiency of breakfast service	2%	87%	10%
Serving area	0%	91%	10%
Points of service	0%	91%	9%
Kitchen facilities	2%	89%	9%
Eating area	0%	91%	9%
Breakfast schedule	0%	95%	6%
Length of breakfast period	0%	96%	4%
Morning bus schedule	0%	98%	2%

- **Many schools increased nutrition education and promotion efforts as part of the CFSP but lacked the staff time and resources to mount a sufficiently intensive effort.**

  Educational and promotional activities are important in efforts to improve students' dietary intake. Participatory activities can help keep students invested and involved, thus becoming change agents themselves. Lack of nutrition education for students was the third most commonly cited barrier to successfully providing the additional serving of fresh fruits and vegetables (Figure 4, p. 31). Although it was intended that the CFSP include a nutrition education component, schools were provided with only 1 cent per meal served (i.e. 10% of the 10 cents provided) for all non-food expenses related to the CFSP including nutrition education and promotion.

Despite the limited funding provided, over half (57%) of the schools surveyed did report using some nutrition education or promotional materials as a part of the CFSP; 39% conducted CFSP-specific classes or other educational activities. The majority of Child Nutrition Directors surveyed reported "minor" improvements in nutrition education and promotion efforts as a result of CFSP.

The most common nutrition education/promotion materials used were posters, flyers, newsletters, or messages added to menu sheets or boards (Table 8). The most common source of materials was the *Network for a Healthy California*, including 5-A-Day and Harvest of the Month materials. The most common educational activities were nutrition fairs or taste testing, classroom sessions, and cooking classes or demonstrations (Table 9). At one-third of the sites that were visited, staff was observed to be actively promoting fresh fruit choices.

Table 8. Nutrition education and promotion materials used in the CFSP reported by Child Nutrition Directors (n=32 schools)

	(% of schools)
Posters	31%
Promotions on menus	22%
CNN Materials	19%
Flyers/Newsletter	16%
5-A-Day Materials	9%
Harvest of the Month	6%
Fruit Displays	6%
Fruit/Vegetable Photo Card	3%
Dairy Council materials	3%
Point Of Service Signs	3%

Table 9. Nutrition education and promotion activities used in the CFSP reported by Child Nutrition Directors (n=22 schools)

	(% of schools)
Nutrition Fair/Taste testing	27%
Class time discussions/Workshops	27%
Cooking Class or demonstration	23%
Harvest of the Month	9%
Coordinated Approach to Child Health (CATCH)	9%
Sierra Cascade Nutrition and Activity Consortium (SCNAC)	9%
Network for a Healthy California	5%
Free fruit for all at morning break	5%
Head Start social	5%
Central Kitchen tours	5%

Barriers

Ninety-six percent of the Child Nutrition Directors surveyed reported that lack of opportunity, time or a forum was a barrier to being able to provide the nutrition education component of the CFSP, 81% reported a lack of staff time, and 84% thought lack of funding was a barrier (Table 10).

Table 10. Percent of Child Nutrition Directors reporting barriers to providing CFSP-related nutrition education and promotion (n=53)	
Lack of opportunity, time or forum	96%
Not enough staff time	87%
Inadequate funding	81%
Lack of materials	66%
Lack of school support	55%
Lack of student interest	46%
Lack of staff training	44%

Many Child Nutrition Directors commented that it was difficult to set aside time for nutrition education. They acknowledged the important role of teachers and school administration in engaging students and providing support for nutrition education, and they perceived that support from administration and teachers was lacking in most cases. Therefore, most nutrition education was limited to what could be displayed or distributed in the cafeteria.

Child Nutrition Directors were enthusiastic about increasing nutrition education efforts. Suggestions included:

- tours of the cafeteria
- bringing in local farmers to speak
- incentives for making healthy choices
- mobile kitchens for demonstrations

Some also suggested that prepackaged, ready-to-use kits provided free of charge would make promotion efforts more feasible in terms of cost and staff time. Most Child Nutrition Directors expressed interest in doing more nutrition education but felt that the CFSP reimbursement was not adequate to support an effective effort by food service staff.

Implications

In conclusion, there is considerable room for improvement in increasing nutrition education and promotion associated with the CFSP and enthusiasm for this effort is high. Increased support, resources and opportunities to collaborate with classroom teachers could enhance nutrition education efforts and food service staff involvement. Promotion and education efforts could positively influence participation in school meal programs, as well as fruit and vegetable consumption of students.

- **The CFSP schools increased the number of servings of fruits and vegetables students were allowed to take.**

  After implementing the CFSP, students were allowed to take more fruit and vegetable servings than prior to program participation. Before the CFSP, 65% of the schools allowed a maximum of one serving of fruits and vegetables at breakfast, whereas during the CFSP 88% of the schools allowed two or more servings. At some schools during the CFSP, students were still restricted to taking only one serving of fruit or vegetable (including juice when offered) at breakfast. This suggests some confusion regarding program implementation requirements that schools participating in the CFSP offer at least two servings of fruits and vegetables to each student served breakfast. Given that some menu planning methods make it more difficult to increase the number of servings allowed of a given meal component, some training may be needed to reconcile the increase in fruit and vegetable servings with the various menu planning methods.

- **Use of creative presentation styles that might encourage students to take more fruits and vegetables was limited.**

  The condition of fruits and vegetables was observed to be good in nearly all schools; however the presentations could be more creative and attractive at most of the schools. For example, fruit was frequently displayed in a plain metal or plastic tray, bin or tub. Some creative presentation styles were observed and included: placing whole fruit in woven baskets and/or with attractive linens; having fruit appear cold and fresh; slicing, chopping, and/or packaging the fruits and vegetables; and serving fruits and vegetables with peanut butter, caramel, or ranch dressing.

- **Fruits and vegetables were rarely the first item presented in the service line.**

  In addition to presentation, the sequence with which fruits and vegetables are offered could potentially affect student selections. Fresh fruit was the first item offered in the serving sequence at only three of the 13 sites where this data was recorded. At one site, the fruit was not even visible, but had to be requested.

Implications

Although the fruits and vegetables offered to students were observed to be in good condition, presentation could be improved in terms of sequence, accessibility and overall appearance. Simple low-cost measures to make the fruits and vegetables more attractive and accessible would likely improve student acceptance and intake of the fruits offered.

- **Despite their popularity with students, very few schools employed service styles such as salad-type fruit bars, breakfast in the classroom, grab-n-go or second chance breakfast either pre or post CFSP.**

  In general, few schools offered grab-n-go breakfast, second chance breakfast, or breakfast in the classroom before the implementation of the CFSP, and those numbers did not change during the implementation year. The biggest change was that while only two schools had a salad-type fruit bar prior to the CFSP, six additional schools installed one during the CFSP.

  Some other creative breakfast strategies were observed. For example, one elementary school offered fruit as a free (no-charge) ala carte item during the nutrition break, one high school offered breakfast at the nutrition break, and one elementary school offered breakfast in shifts during nutrition breaks throughout the morning.

  During classroom discussions, students were enthusiastic about suggesting changes such as breakfast served in classrooms and during nutrition breaks because these venues are more convenient for them. Students were also enthusiastic about salad-type fruit bars. Breakfasts offered during nutrition break were well received by students who may prefer not to arrive early to eat breakfast before school starts. Fruit served during the break was also very well received by students and increased fruit intake, according to food service staff.

  Barriers
  A number of barriers to changing Breakfast Service styles were cited by Child Nutrition Directors. Lack of support from administration, cost and logistical factors, and teacher resistance to breakfast being served in the classroom were all noted.

  Implications
  Given student enthusiasm for expanded options for Breakfast Service, it will be important to work with schools to overcome barriers and implement these kinds of suggestions where feasible.

- **Customer service by food service staff improved during the CFSP and shows promise for contributing to program success.**

  Sixty-nine percent of Child Nutrition Directors reported positive improvements in customer service by food service staff during the CFSP and 42% felt that the CFSP had a positive impact on the efficiency of the breakfast service. Perceived improvements in customer service were significantly associated with increased variety of fruits and vegetables offered. At the site visits, staff attire at all schools was rated as acceptable but not particularly notable. Staff attitudes toward the students ranged from neutral to engaging; 40% of the time staff were rated as "engaging with students."

Implications

Customer service indicators, including staff attitudes and attire, at the school sites visited were generally rated as good. However, findings suggest that additional improvements in various aspects of customer service could further improve the effectiveness of CFSP. Supporting food service staff to engage more with students is a particularly promising approach.

- **Minimal staff training was perceived to be needed for the CFSP and therefore limited training was provided. However findings suggest that more complete staff training is needed to more effectively market fruits and vegetables.**

Slightly more than half (54%) of the Child Nutrition Directors reported training staff for implementation of the CFSP. Nearly 40% reported needing additional staff training primarily in the areas of fruit and vegetable handling/management and nutrition education for the staff. Staff training was the least commonly cited barrier to implementing the CFSP. During interviews, Child Nutrition Directors indicated that the program was so simple that training needs were minimal. At most of the districts, training consisted of an orientation provided to school food service managers about the program rules and regulations. Hands-on training was done informally as part of routine supervision and monitoring.

Despite a lack of focus on staff training, 78% of Child Nutrition Directors reported that the CFSP had positively impacted nutrition service staff interest in procuring and serving fruits and vegetables and 62% thought the program had increased staff fruit and vegetable preparation skills.

Implications

It appears that minimal staff training was required in order to implement the CFSP as required by the rules and regulations. However more training may assist schools to implement the program more successfully. Findings suggest that schools could improve the way that fruits and vegetables are served, presented and prepared. There was also room for improvement in terms of customer service and dining ambience. Although there were other barriers to making these improvements, such as funding and staff time, training focused on these topics could also be helpful and did appear to make a difference in some schools.

5. Institutional influences on effective CFSP implementation

In addition to the state CFSP regulations and guidelines, school-based factors such as the nature of the cafeteria and dining facilities, meal period scheduling, fruit and vegetable procurement systems and support from school personnel all have the potential to influence the ability of school food service to implement the CFSP successfully. The situation with regard to these factors and their perceived influence on the CFSP is discussed in this section.

- **Most Child Nutrition Directors found the CFSP rules and regulations to be clear, simple, and easy to understand.**

  Most (78%) of the food service respondents surveyed felt that the CFSP rules and regulations were "simple," though some (21%) felt that the rules and regulations were somewhat or moderately difficult. None rated the rules as "difficult." Fewer than one-third (29%) felt that program requirements or regulations were a barrier to successful implementation (Figure 4). Overall CFSP rules and regulations were reported to be clear and easy to understand.

- **Child Nutrition Directors were very satisfied with their produce vendors.**

  Child Nutrition Directors were generally pleased with their produce vendors. Only three out of the 55 survey respondents felt that finding a supplier or vendor was even a minor barrier. Most were very satisfied with their vendors because of dependable service, high quality and reasonable prices. They felt the vendors offered good service and were responsive to their needs and requests, and viewed the vendors as the best bridge to obtaining locally grown produce.

- **Child Nutrition Directors supported the goal of using locally grown produce but logistics are a barrier. They would prefer that their current vendors negotiate directly with local growers.**

  While respondents were enthusiastic about the idea of using more locally grown produce, they felt that they needed a "go-between" and some method of distribution to successfully use locally grown produce. Some felt that there were few, if any, local growers, or even if there were, that it would be difficult to work directly with multiple local growers. Additionally, there was concern about supply, distribution, dependability, food safety, and cost issues when dealing with local growers. One Child Nutrition Director remarked, "[We] need 40 cases, not a little pick-up truck." One Child Nutrition Director mentioned the need for safety certification and another suggested that the USDA add local growers to their approved list of vendors. Having to locate and negotiate with multiple growers was perceived as a substantial barrier and it was suggested that the initiative and responsibility for these arrangements should shift to vendors. They suggested that those who are promoting locally grown

produce should work directly with the vendors: "it is up to the distributor what kinds of produce they get."

- **Most CFSP schools observed had inadequate school kitchen, serving and dining facilities. Improvements in facilities may enhance program effectiveness.**

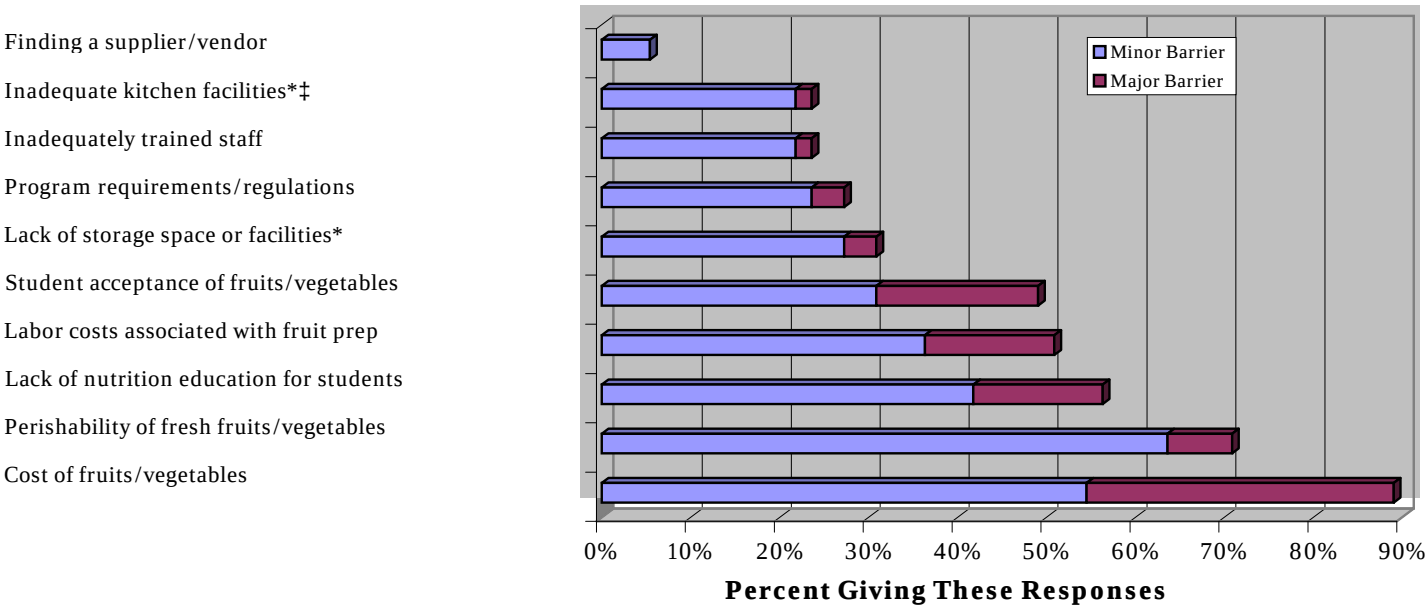
  The availability and quality of cafeteria facilities can influence food service ability to store, prepare and serve fruits and vegetables, as well as other breakfast food options. Inadequate facilities can limit the amount, quality and appeal of the options that are provided to students. Furthermore, the attractiveness and condition of the serving and dining areas may influence student participation in the meal program as well as the students' desire to select and consume the various meal components.

  Among the schools surveyed, 33% felt that lack of storage space was a barrier and 25% thought that inadequate kitchen facilities were a barrier to providing an additional serving of fruits and vegetables (Figure 4). Most commonly mentioned were the need for more refrigerator and storage space. Also mentioned was the need for more and improved dining areas, serving areas, points of service, and attractive décor.

  Observations found dining facilities to be sub-optimal in many schools:
  - Almost one-third (31%) did not have sufficient facilities to seat all students comfortably.
  - Only a minority of schools (about 1/3) offered students the choice to eat either indoors or outdoors; three offered *only* an outdoor area for eating breakfast. One-quarter of the outdoor areas did not provide cover from rain and/or sun.
  - The temperature was uncomfortably cold in many of the serving and dining areas which may have played a role in students' preference for hot breakfast items on cold days rather than cold fruit items.
  - Only one of the indoor dining facilities was rated as "exceptional." Fifty percent were rated as "pleasant," and another 43% were rated as "acceptable." The outdoor dining facilities were rated less favorably, with only one rated as "pleasant" and the rest rated as "acceptable."
  - Both measures of dining ambience and adequate space were correlated with increased servings of fresh and/or total fruits and vegetables taken by students.

  Because the CFSP neither mandated nor provided funding specifically for facility improvements, it is not surprising that only about 9% of the schools made major or minor improvements to any of the following: kitchen, dining area, serving areas, or points of service (POS). Because so few schools made changes in facilities, these variables were not tested for their relationship to the outcome variables. However the results described above suggest that many facilities are in need of improvement and inadequate facilities are probably impeding program success.

Figure 4. Barriers identified by Child Nutrition Directors in providing additional fruits and vegetables, CFSP n=55 schools



* indicates a p-value < 0.05 when analyzed for association with the total number of servings of F/V taken
‡ indicates a p-value <0.05 when analyzed for association with the servings of fresh F/V taken

Implications

School kitchen, dining and serving facilities are in need of upgrades. Dining facilities are basic and adequate, but are not particularly pleasant or inviting. Some schools do not have enough space to meet student demand and many lack adequate storage space and kitchen equipment. An investment in facilities has the potential to attract higher participation in the breakfast program, and to increase student intake of fresh fruits and vegetables. Investment in facilities also can create a more positive dining experience for students.

- **At School Breakfast neither the length of the breakfast period nor line length appeared to be a problem; however, bus schedules and the scheduling of the meal period made it difficult for students to be served and have adequate time to eat.**

  The length of the lines in the cafeteria and the time available to eat can potentially affect student interest and ability to eat breakfast at school. These variables could also affect student selections such that they may choose fewer items and/or items that can be more quickly consumed.

Of the schools visited, only four had lines that were more than 10 students long during the breakfast period. This suggests that line length at breakfast was not a problem at most schools.

All schools visited had either one or two points of service (POS) (stations where payment is made). However, the number of students being served varied widely from school to school, ranging from 11 to 232 per POS. This suggests that larger schools are serving very large numbers of students with very few points of service.

The breakfast periods ranged from 10 to 55 minutes with a mean of 27 minutes. The 10-15 minute breakfast periods usually occurred when breakfast was served mid-morning during the nutrition break. The time during which the cafeteria was opened before school appeared to be adequate in most cases to serve the students comfortably. However, in reality, students often arrived shortly before the breakfast period was over and therefore had very little time to be served and eat. Bus schedules were a common reason for the last minute arrivals. In some cases, students walked in, or were dropped off by parents, at the last minute.

Implications

Line length and length of the breakfast period did not appear to be a significant problem, a common perception was that children still did not have enough time to eat because they often do not arrive early enough. Changes in bus schedules or offering breakfast during mid-morning breaks or in the classroom are possible solutions to this problem. According to the students and Child Nutrition Directors, these solutions are popular with students, but may meet with resistance from teachers and school administrators.

- **To make additional gains in student consumption of fruits and vegetables at breakfast, more support is needed from school administrators, teachers and parents.**

Several food service respondents interviewed mentioned the need for education of stakeholders and support from school administration and teachers in order to successfully implement the CFSP. Most respondents felt that the CFSP had had a positive impact on school staff support for the breakfast program and some (42%) thought there had been a positive impact on parental support for the meal program.

In general, Child Nutrition Directors felt there was a need for education of students, parents, teachers and other school staff about good nutrition in general and specifically about the importance of breakfast. Administrative support is needed to provide the facilities and equipment to prepare more appealing foods and serve them in a more attractive environment. They also mentioned the need for administration to support nutrition education efforts.

6. Student attitudes toward, and consumption of fruits and vegetables associated with the CFSP

Student responses indicate modest improvements in attitudes toward, and consumption of, fruits and vegetables associated with the CFSP. Students also had many suggestions for how to improve the program in ways that respond to their needs and preferences.

In order to increase student consumption of fruits and vegetables, it is important to understand the student perspective in terms of what fruits and vegetables they like, how they would like them served and what might attract them to the School Breakfast program. The students also provided their perspective about how the CFSP was implemented, whether they liked these changes and how their dietary behavior and attitudes were affected.

- **Most students like to eat breakfast and understand it is important to do so.**

  Students report liking breakfast in general: 69% indicated that they always or often like to eat breakfast, and only 4% reported that they never like to eat breakfast (data not shown). Overall, the results indicate that students understand the importance of eating breakfast.

  Students' reasons for liking breakfast include:
  - It "energizes you, fills you up and helps you concentrate."
  - The types of food served for breakfast are appealing.
  - For elementary school children, breakfast was appealing because it is warm and provides the opportunity to socialize.

- **Among secondary school students, lack of time and the types and quality of food served are the main reasons they do not like *school* breakfast.**

  While elementary school students did not provide any reasons for disliking breakfast, middle and high school students' reasons for disliking breakfast included a lack of time, or not liking the kinds of food, the quality, or the presentation.

- **Taste and quality of the food are students' main concerns; cost, timing of the breakfast period and social factors were considerations only for a minority of students.**

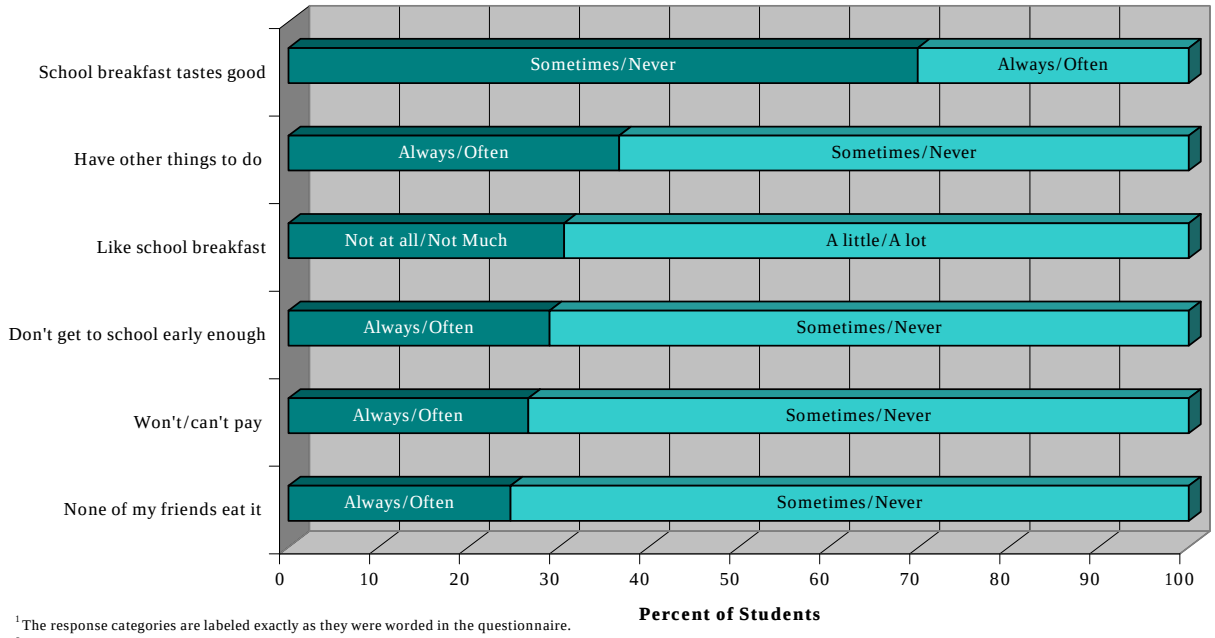
  Many students reported that they prefer to eat breakfast at home due to what they perceive to be better quality, variety and convenience. Clearly taste is a primary concern for students; nearly seventy percent of students reported that the School Breakfast tastes good sometimes or never (Figure 5). Having other things to do was also a barrier; 37% reported that having other things to do was a barrier always or often. Of those students who were eating in the cafeteria the day of the survey, 30% reported that they like the School Breakfast not at all or not much. Timing, although

perceived by food service as a major barrier, was only perceived as a barrier by a minority of students: only 29% reported that they always or often don't eat the School Breakfast because they don't get to school early enough. Cost is a barrier for a minority of students. Only 27% reported that they were unable or unwilling to pay always or often. Peer pressure does not seem to exert a big influence over most of the students with regard to eating the School Breakfast. Twenty-four percent of students felt that they always or often didn't eat breakfast at school because their friends didn't (Figure 5).

Figure 5. Barriers to School Breakfast Participation as reported by students[1]

Listed in order from most to least frequently cited barrier[2]

(n =503-669)



[1] The response categories are labeled exactly as they were worded in the questionnaire.

[2] For questions worded in the positive, the negative response categories indicate a barrier whereas for those questions that were stated in the negative the more positive responses indicate a barrier.

- **Students like to have fruit at breakfast but their favorites are not served often enough.**

Most students (77%) feel that is important to have fruit at breakfast. Students said that fruits and vegetables are "good for you because it's healthy, makes you strong, there is natural sugar, and it contains vitamins like A and C." However only 13% responded that they always eat fruits and vegetables at breakfast and only another 19% said they often do. This may be due in part to a mismatch between what is served at breakfast and what students prefer. Students reported preferences for berries and melon at breakfast and these choices are seldom available. This suggests that increasing provision of student favorites may be critical to increasing intake of fruits at breakfast.

- **Students want more variety of presentation styles including chopped fruit, fruit salads and salad-type fruit bars.**

  - Overall, students prefer their fruit served chopped or sliced, with fruit salad being a fairly popular item. They also prefer yogurt-fruit parfaits and smoothies. However, in the younger grades, fruits served whole are also appealing.
  - The idea of serving fruit in a fruit bar style (like a salad bar) is very appealing to students.

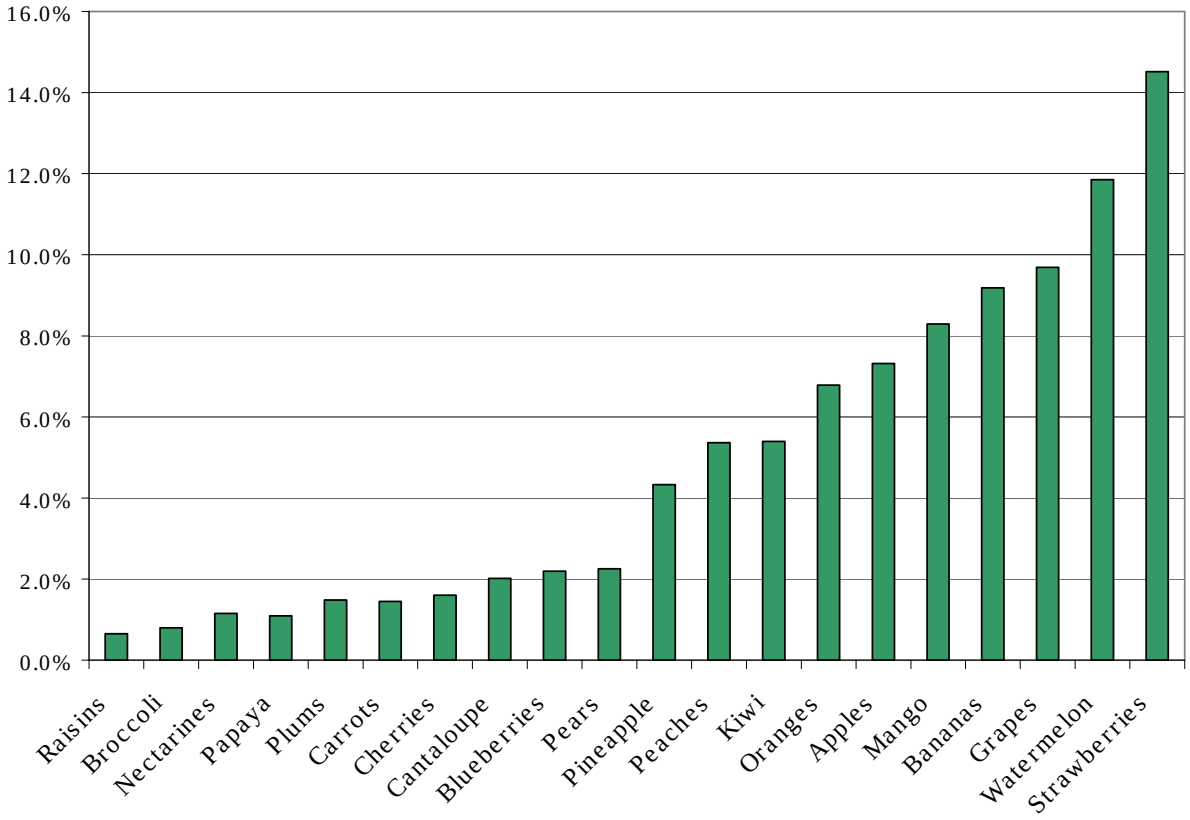
- **Variety, convenience, quality and freshness are key concerns for students.**

  - Many students prefer eating breakfast at home rather than at school, especially those in high school. Students cited more variety, the option to have second helpings, and convenience as the major factors in preferring breakfast at home.
  - High school students are particularly concerned about food variety, freshness, taste and convenience when deciding about where and what to eat for breakfast.

- **Students want more choices, including more "exotic" or less common fruits and vegetables, fruit with condiments, and ethnic favorites.**

  - Students prefer more "exotic" fruits than they are currently served for breakfast. Fruits mentioned were mangos, kiwi, strawberries, peaches, pineapple, watermelon and grapes. The most popular fruits were melons and berries (Figure 6).
  - Students, particularly high school students, expressed a desire for more typically Mexican fruits, vegetables and condiments, reflecting the growing number of Latino children in California's school system. Foods mentioned were mango served on a stick, jicama, elote (corn on the cob), and aguas de fruta (fruit juice and water mixtures); and Tapatio sauce, lemon, chili and salt as condiments.
  - A variety of vegetables, particularly carrots, asparagus, spinach and cucumbers, were also mentioned by some students as something they would like to see.
  - Students like a variety of both common (apples, oranges and bananas) and less common (strawberries, watermelon, grapes, mango, kiwi) fruits suggesting that providing variety would be the most effective means of reaching all children with their favorites.

Figure 6. Student Survey Responses Regarding Favorite Fruits and Vegetables (n = 1205 Students Surveyed)



- **Students want changes to the other breakfast meal foods.**

  Students were very enthusiastic about being asked what they wanted to be served for school meals and had many ideas.
  - Students wanted fewer sugar-containing food options and did not want to be served leftovers.
  - A better selection of cereals was among the most desired among the students. Interestingly, of the particular cereals requested, relatively healthy choices such as cheerios and granola were most commonly mentioned.
  - Younger children in particular wanted more eggs and variety in the way they are prepared. This again suggests that warm breakfasts are important to children in elementary grades.

- **Students want more options regarding when and where they can eat breakfast, i.e. in the classroom, during breaks, indoors and out.**

  The question of when and where students would prefer to eat elicited many impassioned responses, indicating that this is an important factor for promoting breakfast participation.
  - Overwhelmingly, student of all ages wanted the option of eating breakfast in the classroom.
  - The high school students wanted the ability to eat at almost all possible times, including earlier, later, at mid-morning break, and between periods. This response is consistent with prior comments regarding their desire to have more convenient breakfasts.
  - Students would like the option of eating anywhere and especially both indoors and outdoors.

- **Most students did not notice changes to the breakfast program, students that reported eating School Breakfast more often were more likely to report positive changes.**

  Students generally had trouble identifying changes in the food service or distinguishing between changes in breakfast and lunch meals. Students who eat the School Breakfast more often were more likely to think it had improved.

  Changes noted by students:
  - Many students noticed that there were more fruits and vegetables being served at meals.
  - Some students noted a reduction in the variety of the fruits and vegetables offered and preparation styles, such as cut up fruit and fruit cups.
  - Many students said that they could tell that the food being offered was more nutritious than it used to be.
  - Quality concerns were prominent in discussions about the changes in food offered. Students noticed both positive and negative changes in food and beverage temperatures, freshness, taste, portion size, and preparation.
  - Smaller portions, offered at the same cost, were also cited as a change.
  - Generally, cafeterias and facilities were not perceived by students to have changed much. Of the changes noted, the placement of nutrition-related posters, remodeling and painting were the most common.

- **Many students report eating more fruits and vegetables during the CFSP.**

  Many of the students (34%) reported that they ate more fruits and vegetables than they did last year. About half (47%) report eating about the same amount during the CFSP than previously. While older students report eating more fruits and vegetables this year compared to pre-CFSP, they eat significantly less than the younger children. Elementary and especially middle school students were the most likely to

report eating fewer fruits and vegetables this year. Reasons for eating fewer fruits and vegetables include "bad fruit" offered and the desire to lose weight.

Implications

Findings suggest that the CFSP had a positive impact on student consumption of fruits and vegetables. Students were appreciative of the improvements that were made and those that ate the School Breakfast more frequently were the most likely to have positive attitudes and higher consumption of fruits and vegetables. Students also had many ideas about how to make the School Breakfast program and the CFSP even more successful:

- Focus on variety (different types of foods as well as styles — e.g. Mexican foods) and quality (freshness and taste). This is particularly important to emphasize in high schools.
- Consider providing breakfast at mid-morning break, and/or in the classroom to address the convenience issue.
- Provide dining facilities indoors and out.
- Offer students more vegetable options at breakfast.
- Increase the number of ways fruits and vegetables are presented — chopped, sliced, whole, fruit salads, fruit bars, etc.
- Serve lower sugar and more warm entrees.
- Market and promote the CFSP improvements in order to garner student participation and enthusiasm.
- Include students in decisions regarding what is served, how it presented and marketed. Students are eager to provide feedback.

7. Costs of providing an additional serving of fruits and vegetables and adequacy of the CFSP reimbursement

- **The 10 cents provided through the CFSP is considerably lower than the real food costs of a serving of fruits and vegetables.**

  Of considerable interest is the real food cost per serving in relation to the reimbursement amount; without considering the labor, and other costs, the real food cost was 3 cents higher than the 10 cent CFSP reimbursement and 4 cents above the 9 cent minimum that was to be spent on food. Thus, if all students took an additional serving of fruits and vegetables, the additional cent intended for all other costs including labor, education and administrative costs would be spent on food. Given that the labor costs for school food service departments usually account for 30-50% of expenses, and costs associated with storage and produce loss from perishability add to the expense of handling fresh produce, *the 10 cent reimbursement rate is substantially below the amount required to cover a supplementary serving of fruits and vegetables.*

- **If more of the students' favorite fruits were served, the discrepancy between the reimbursement rate and the real cost of a serving would be even greater.**

  The more unusual and appealing fruits (as identified by students) cost more per serving than the more common fruits (Table 11). The cost per serving for apples, oranges and bananas is 13-14 cents per serving whereas the other fruits offered range in cost from 13 to 25 cents per serving with several costing 20 cents per serving or more.

  If the CFSP were to offer greater variety and higher quality as students prefer, student consumption of fruits and vegetables would likely increase. This would inevitably be accompanied by substantial cost increases in the food costs alone, without consideration of the added labor and promotional costs.

Table 11. Cost per serving of various types of fresh fruit offered at School Breakfast, pre and post CFSP (n=61 schools)

	Pre-CFSP # observation days	Mean	CFSP # observation days	Mean
"Assorted Fresh Fruit"	149	**$0.13**	331	**$0.15**
All Melons*	30	**$0.17**	33	**$0.17**
All Stone fruits**	11	**$0.22**	41	**$0.16**
Apples	195	**$0.15**	426	**$0.14**
Bananas	124	**$0.12**	238	**$0.13**
Cantaloupe	10	**$0.18**	24	**$0.18**
Carrots	6	**$0.08**	2	**$0.10**
Grapes	27	**$0.14**	58	**$0.19**
Honeydew	3	**$0.44**	1	**$0.25**
Kiwi	2	**$0.18**	23	**$0.23**
Nectarines	2	**$0.30**	12	**$0.15**
Oranges	116	**$0.13**	282	**$0.14**
Peaches	0	--	5	**$0.24**
Pears	20	**$0.20**	94	**$0.17**
Pineapple	1	**$0.05**	1	**$0.15**
Plums	9	**$0.20**	24	**$0.15**
Strawberries/Blueberries	31	**$0.22**	37	**$0.20**
Tangerines/Tangelos	3	**$0.15**	20	**$0.20**
Watermelon	17	**$0.11**	8	**$0.14**

* Melons include Watermelon, Cantaloupe and Honeydew.

** Stone fruits include Peaches, Plums and Nectarines (no cost data for pluots).

Note: all schools with cost data were included in this analysis.

- **Most schools either absorbed or could not quantify their non-food expenses. Those that did report non-food expenses spent an average of $2,784 primarily on small equipment and educational materials.**

  Many other costs are involved in offering an additional serving of fruits and vegetables. These include additional labor, training, transportation, equipment, materials and facility expenses. For example labor alone may account for 30-50% of a school food service operating budget. Furthermore, the CFSP stipulated that schools should conduct educational and promotional activities to encourage increased consumption of fruits and vegetables. The CFSP allowed 1 cent of the ten cent per meal reimbursement to be used for all of these other non-food expenses.

  Of the 50 schools that responded, only 16 schools reported having incurred any non-food expenses associated with the CFSP. The most common expenses were small equipment, such as fruit display baskets, and nutrition education materials, such as posters or flyers. The average expenditure per school that reported any non-food

expenses was $2,784 and included purchases of large equipment for a refrigerated salad bar ($20,000) and a roll-in refrigerator ($3,200).

Given the low percentage of respondents that reported any increase in these types of expenses, and the relatively low dollar figure reported by those who did incur expenses, most schools are likely to have absorbed additional expenses associated with the CFSP. It is likely that schools may require some additional funding in the future to cover costs of implementing improved service styles and innovative presentation of fruits and vegetables, such as salad bars with chopped or sliced fruits and vegetables.

- **Most Child Nutrition Directors reported that the CFSP reimbursement was inadequate to cover the costs they incurred.**

  Most Child Nutrition Directors felt that the reimbursement rate increase of 10 cents per meal was not adequate to cover the cost of implementing the CFSP. Cost was by far the most commonly cited barrier to providing the additional CFSP serving of fruits and vegetables. Eighty-nine percent of survey respondents identified the costs of fruits and vegetables as either a major (34%) or minor (55%) barrier. The perishability of fresh fruits and vegetables and the labor costs associated with fruits and vegetables preparation were also cited (see Figure 4, p. 30).

- **The average cost of the fruits and vegetables prepared at School Breakfast increased by 7 cents per meal served[4], however, 77% of Child Nutrition Directors reported inadequate reimbursement for the CFSP.**

  Although the average cost *per serving* of fruits and vegetables was 14 cents, the increase in cost *per meal served* was 7 cents because on average the school food service increased the offerings of fruits and vegetables by one-half serving per meal served. This is calculated as follows:

  > $0.14 (average cost per serving of fruit& vegetables) x ½ (average # of additional servings (from pre to post) prepared for each meal served) = $0.07 increase (from pre to post) in fruit and vegetable costs per meal

It appears therefore that the 10 cent *per meal* increase in reimbursement provided by the Fresh Start program was adequate to cover the calculated average increase in cost of fruits and vegetables per meal served (7 cents). The discrepancy of this finding with the perception by the Child Nutrition Directors that the funding for CFSP was inadequate, may be due to the non-food related additional costs of the CFSP that they incurred.

[4] The average cost of the fruits and vegetables per meal served was calculated as the dollar value (from invoices) of the fruits and vegetables that were prepared for breakfast on the sample days divided by the number of breakfast meals served on those same days.

- **Despite the perceived inadequacy of the reimbursement, many thought the program was helpful financially and made it easier to provide more fruits and vegetables.**

  Even though most Child Nutrition Directors did not feel that the CFSP reimbursement was adequate, many (45%) still felt the program had a positive impact on the financial health of the breakfast program, some (24%) thought there was no noticeable impact, and just under a third (29%) thought it had had a negative impact.

  Several food service directors commented that the extra reimbursement was a substantial asset to providing a greater variety of fruits and vegetables although it was not thought to completely cover the cost of the additional serving. A few directors believed that the reimbursement helped offset the cost of expensive fruits and vegetables thereby increasing the variety of fruits and vegetables they could offer.

- **Cost is the main reason school food service does not provide more variety of fruit types and presentation styles.**

  Child Nutrition Directors identified cost as the main barrier to providing more variety of fruits and vegetables (Figure 4, p. 30). They tended to serve fruits whole to reduce waste, increase shelf life, and reduce labor costs associated with chopping fruit. Likewise, they served apples, bananas and oranges most frequently because these fruits are the most affordable. Student favorites such as strawberries cost much more (Table 11). To keep costs down the Child Nutrition Directors obtain their fruits and vegetables whenever possible through the commodity food and Department of Defense programs. According to the Child Nutrition Directors, they could serve a greater variety of produce if these programs offered a more consistent supply and greater variety of fruits and vegetables.

  The need for extra resources, including financial, staff, facilities, and support from teachers and school administration, to implement the program was identified by almost all Child Nutrition Directors. Although they appreciated the reimbursement supplied by the CFSP, they stressed the need for continuing and increasing support especially to offset the cost of fruits and vegetables when not available through commodity and Department of Defense programs. The need for financial support was also identified for improving food service facilities and equipment such as refrigeration and storage.

8. CFSP and School Breakfast Program participation

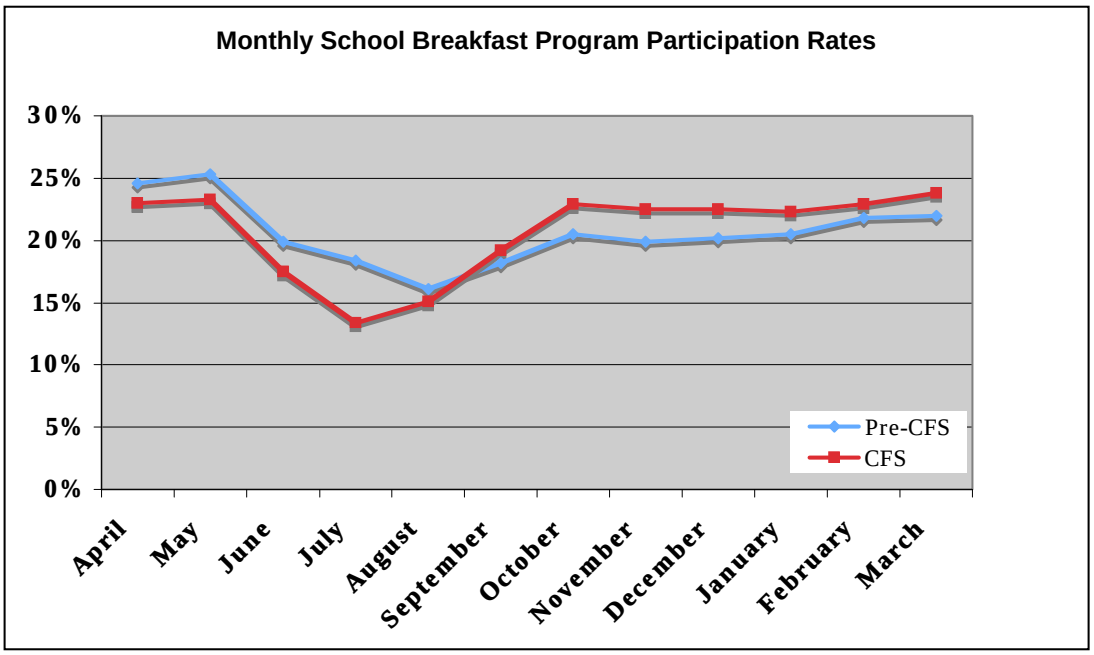
With CFSP improvements in breakfast offerings, students may be more likely to eat breakfast at school and parents and teachers may also be more likely to encourage their children to do so. Furthermore, CFSP-associated education, promotion and marketing efforts could serve as an enticement for more students to eat breakfast at school. Increases in school breakfast participation could benefit children's health and academic performance as well as bring much needed revenues to school food service.

In order to determine the impact of the CFSP, breakfast participation rates[5] were compared for 12 months of the year preceding the CFSP and for the months during the CFSP (Figure 7). At the onset of the CFSP, breakfast participation rates were lower than those reported the previous year. However, for the next seven months of the program participation rates exceeded rates from the pre-CFSP. The average School Breakfast participation rate rose from an average of 20.5% to 21.6%[6], however this increase was even greater when comparing only the period from September through March. When comparing this time period pre and post CFSP, the average participation rate increased by about 2 percentage points from 19.7 to 21.6. This suggests that after the first few months, the CFSP began to have an impact on breakfast participation rates. These increases in breakfast participation were not however statistically significant and therefore no firm conclusion can be drawn.

[5] Defined as the average percent of attending students that are served breakfast per day.

[6] The yearly average is based on data from September through March and excludes June through August due to the limited number of operating days in the summer months and the potential influence of end-of-term and beginning-of-term schedules on the School Breakfast participation rate.

Figure 7. Average School Breakfast Program Participation, by Month in 51 California Schools, April 2005-March 2006 and April 2006-March 2007



Implications

Although the increases in breakfast participation may appear low in terms of percentage points, the impact can be great in terms of the students served and federal dollars that are brought into the state as a result. If breakfast participation rates increased by 1.9 percentage points from the baseline rate for the 2005-06 school year, over 730,000 more breakfast meals would have been served just during the period from July through March. This increase would result in an influx of $980,000 in additional federal dollars throughout the state of California.

9. CFSP impact on school purchases of California grown produce

The CFSP increased sales and distribution of California grown fruits and vegetables due to the increase in quantities and varieties of fruits and vegetables purchased by schools during the CFSP.

Based on production records from schools participating in the CFSP evaluation and interviews with selected produce distributors, estimates of the proportion of California grown produce purchased by schools during CFSP was derived and is shown in Table 12.

Strawberries, oranges, grapes, stone fruits, tangerines and tangelos are the most frequently purchased fruits from California farms (75-95%). A smaller percentage of the apples, kiwis[7], and pears are from California. None of the bananas come from California farms. Data on melons or vegetables were not obtained.

Table 12. Estimated percent of California grown fruits purchased by CFSP during the pilot program

Type of Fruit	Estimated percent grown in CA
Apples	35%
Oranges	95%
Grapes	97%
Kiwi	53%
Stone Fruits	75%
Pears	45%
Strawberries/Blueberries	95%
Tangerines/Tangelos	95%

- **If all schools in California were to increase fresh produce offerings at School Breakfast as occurred in CFSP schools, annual school purchases of California grown fruits would increase by an estimated 26 million servings per year, valued currently at just under $4 million per year.**

  The above estimates are based on an average increase of at least one-third of a serving of fresh fruit per School Breakfast meal served, that 47% of the fresh fruit served would be California grown, and an average cost per serving of 15 cents. Given this scenario, in dollar terms, an additional $8.3 million would be spent on fresh produce, of which 3.9 million would be spent on California grown and 4.4 million would be spent on fresh produce from other sources.

  If students' favorites, which are primarily California grown, were served more often at School Breakfast, the findings suggest that students would take even more fruit at

[7] Kiwis grown in California have become increasingly available in 2006 and 2007 according to distributors interviewed for this study.

breakfast and therefore the increase in the value of school purchases of California grown would be even higher.

- **An increased purchase of California grown produce is a win-win for schools, students, distributors and farmers**.

  Food distributors indicated that they prefer to purchase fresh fruit from California farmers, when available, as they are more affordable than those imported from out of state. Schools benefit from these savings and farmers benefit from an increased market demand. Finally, the ultimate beneficiary is the student whose increased consumption of fruits and vegetables will contribute to long-term health.

Conclusions

The CFSP pilot project was effective at increasing the amount of fruits and vegetables and, particularly, the amount of *fresh* fruits and vegetables, offered to California school children each day. Further, the variety of fruits and vegetables offered, especially those that were fresh, increased substantially. Program success demonstrates that schools can have a positive impact on students' diets. Further, this pilot program provided numerous lessons for the implementation and expansion of such a program in the future. Given the well-documented health risks that poor nutrition poses for California's school children, it is critical to closely examine the successes of this pilot effort and build upon them to improve our children's diets and health.

As a direct result of the CFSP, significantly more servings of fruits and vegetables were taken at breakfast during the course of the program compared with the previous year. The rate of increase was greatest for *fresh* fruits. Moreover, this significant increase was observed in the absence of adequate funding to provide technical support to promote the effort and without funding to upgrade facilities and equipment so that fruits and vegetables could be served in a way that would attract more students.

The CFSP was also successful at shifting students from juice consumption toward the consumption of fresh fruits. The program documented that when schools serve less juice at breakfast, students take more fresh produce. Fruits are a healthier option than juice because of their higher levels of fiber, other nutrients, and protective factors that are associated with increased satiety, reduced weight gain, and other positive health outcomes.

While the CFSP demonstrated a doubling of fruits and vegetables offered to students at the breakfast meal and a doubling of *fresh* fruit taken, there was a more modest although still significant increase in *total* fruits and vegetables taken by students. The decrease in juice consumption offset some of the gains in the *total* fruits and vegetables taken, thus, resulting in a reduced measured impact of the CFSP on the *total* fruits and vegetables taken. Other possible factors contributing to this discrepancy included:

- Inadequate variety in fruit and vegetable offerings
- Limited nutrition education and promotion
- Inadequate facilities

The results of the pilot program evaluation suggest that school food service personnel face a dilemma. If they take additional steps to improve the variety, presentation, and promotion of fruits and vegetables, their labor and food costs will increase beyond the 10 cents per meal provided by CFSP. At the same time, more students would likely take more servings of fruits and vegetables, particularly fresh fruits and vegetables, thereby further straining food service budgets. Results suggest that additional financial resources would be required to ensure that most or all students take the recommended two servings of fruits and vegetables at breakfast.

To build upon the successes of the CFSP study findings, it is suggested that the following could contribute to even greater impacts:

- Increased offerings of popular, but less common fruits and vegetables;
- Appealing presentation of fruit and vegetable items;
- Improved dining facilities;
- Creative breakfast options, such as serving ala carte fruit in the classroom or at nutrition breaks;
- Nutrition education and CFSP promotion efforts;
- Program support from school administration, staff, teachers, and students;
- Improved customer service.

The United States is confronting an epidemic of poor nutrition among children. Schools have an important role to play in addressing this epidemic because of the foods they serve as well as the role modeling they provide to parents and students. California has recognized the need to reverse this trend and has acknowledged the responsibility schools have to promote health. Moving schools toward offering students healthier choices, including more fruits and vegetables, is a crucial first step in reversing the trend toward poor nutrition.

Recommendations

Reinstate and expand the funding of the California Fresh Start Program, so that all California schools can participate. For example, if the CFSP reimbursement was increased to 15 cents* in order to more adequately cover the actual costs of a serving of fruit, and if all eligible schools participated, the total CFSP reimbursement required would be about $26 million per year.

Increase the reimbursement rate for fruits and vegetables to cover the costs of providing those fruits and vegetables, particularly varied *fresh* fruits and vegetables, which students have identified as most appealing.

Provide additional funding to schools to serve fresh fruits and vegetables throughout the day. While starting with an increase at breakfast is important, adding fresh fruits and vegetables to school snacks, school lunch, and after school programs can do even more to improve the health of students.

Work with school food service personnel and produce suppliers to facilitate a program whereby suppliers are encouraged to patronize local providers of fresh California grown produce. Food service departments feel that they are not equipped to deal with many small providers, rather than the major suppliers with whom they have ongoing relationships.

*Based on an estimated cost per serving of 13 cents plus 2 cents for labor, transportation, and related nonfood costs.

Provide funding to schools to make improvements to their food service operations in order to support an increase in fruits and vegetables offered and consumed. Food service facilities must be adequate to store, prepare and serve fruits and vegetables in a safe and appealing manner.

Train food service personnel to identify ways to optimize their operations with respect to increasing the provision of fresh fruits and vegetables. By working with schools to help them take advantage of the lessons learned from the CFSP, future program funding could be used more efficiently.

Increase nutrition education and promotion efforts at schools to encourage students to take and consume the fruits and vegetables provided. To achieve this, technical assistance and training for nutrition services personnel may be required.

Pilot test various service styles to determine which are most effective in improving children's consumption of fruits and vegetables. In particular, the "offer vs. serve" method may not be the most conducive to encouraging increased fruit and vegetable intake. Salad-type fruit bars and other creative serving styles are particularly well received by students and show promise.

Review the composition of breakfast meals to ensure that the combinations of foods offered support the inclusion of the fruit and vegetable offerings. For example, if the entrée is a sweetened cereal or pastry, students may not find fruits as appealing a side dish as they would if the entrée were a more savory or less sweet option.

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1. Evaluation methods

The evaluation of the CFSP included a variety of measures, both quantitative and qualitative, in order to best capture the impact of the program on schools, staff, and students. The primary types of data collected included:

1. Demographic data on participating schools, obtained from the CDE.
2. Breakfast menu production records and invoices from food purchases, obtained from Child Nutrition Directors.
3. Interview data from Child Nutrition Directors both participating in the CFSP and not participating.
4. Data from classroom discussions conducted with students during site visits.
5. Survey data from self-administered questionnaires given to Child Nutrition Directors and students.
6. Finally, site visits were conducted at the same time as some of the interviews described above. During the site visits, physical observations were made and program discussions with students were conducted during class time.

Figure A-1 illustrates the evaluation design, main components, and quantity of data supplied for each component. Each method is described in more detail below along with the program objective or question it aims to answer.

Selection of schools for the evaluation: California school districts were stratified by elementary, middle and high school and randomly selected for participation in the CFSP evaluation. A total of ninety-three schools were contacted, 20 were ineligible to participate because they were not participating in the CFSP and four declined to participate. Thus, sixty-nine schools throughout the state (23 elementary, 23 middle, and 23 high schools) agreed to participate in the evaluation. Of these, 61 schools were able to supply sufficiently complete data for the evaluation of impacts of the CFSP.

Breakfast menu production records and invoices were sought from Child Nutrition Directors for 20 randomly selected days during the months of May, September, October, and November (2005) for the period *before* implementation of the CFSP and 20 matched days in 2006 *after* implementation of the program. These periods are referred to as "Pre-CFSP" and "CFSP". Non-food expenses directly related to operating the CFSP were also reported in a separate form during the pre and CFSP periods. Data from the menu production records included the nature and number of fruit and vegetable servings prepared and taken by students at breakfast

A survey of Child Nutrition Directors was conducted April through August 2007. A self-administered questionnaire was completed by 55 directors, and documented directors' views about the impact of the CFSP on nutrition services operations, perceived student satisfaction, challenges and barriers to operating the program, nutrition education and promotion materials and activities used as part of the program, and staff training topics and needs.

Field/site visits were conducted at 16 of the 18 schools that had been selected to be roughly representative of those participating in the CFSP in terms of school level, enrollment, geographic location, free- and reduced-price meal enrollment and student ethnicity. Two high schools declined to participate, therefore the final sample included 6 elementary, 6 middle and 4 high schools. At the field visits, data were gathered as follows:

Student survey: 1205 self-administered questionnaires were distributed to students in grades 4-12 in a convenience sample of one to two classes (total of 28) and the cafeteria during breakfast at each of the 16 site-visited schools. Both the classroom and cafeteria questionnaires included questions regarding basic sociodemographic information, where breakfast is consumed, how often fruits and vegetables are consumed at breakfast, favorite fruits to eat at breakfast, importance of eating fruit at breakfast and change in fruit and vegetable consumption compared to last year. The cafeteria questionnaire asked additional questions regarding opinions of the School Breakfast and perceptions of changes in the breakfast since last year. The classroom questionnaire included additional questions regarding barriers to eating the School Breakfast. For the cafeteria survey, a convenience sample of up to 50 students in no grade lower than the fourth grade was selected at each school. The classroom survey was administered to all students present; there were no refusals. The classroom questionnaire was two pages long and took about five to ten minutes to complete.

Classroom discussions with students were held in 28 classes in grades 4-12. A convenience sample of one to two classes participated at each school (6 elementary, 6 middle and 4 high schools). Students were questioned regarding their views about breakfast in general, the School Breakfast program, the CFSP and factors influencing their School Breakfast participation and food choices. Trained research staff experienced in qualitative methods facilitated the discussions based on questions and prompts outlined in a discussion guide. A trained note taker manually recorded the responses according to a standardized method. Discussions were not audio-recorded.

Interviews with Child Nutrition Directors were conducted at each of the 16 site-visited schools. The interviews were conducted by trained research staff experienced in qualitative methods according to questions and prompts outlined in a discussion guide. A trained note taker recorded the responses manually. Discussions were not audio-recorded.

Observations of the breakfast environment were made at each of the 16 site-visited schools by trained research staff. A recording form with structured responses was used that included both subjective and objective information regarding the cafeteria facilities and manner and type of foods offered at breakfast.

School Breakfast Program Participation was recorded by Child Nutrition Directors on a standardized form developed by research staff. Monthly data were obtained from April 2005 through August 2007, including number of operating days and school average daily attendance.

Interviews with Child Nutrition Directors at non-participating and drop-out districts: A list of all CFSP-eligible districts was obtained from the CDE that included dates of entry and withdrawal from the CFSP. Twenty-five districts were randomly selected from the list of the 529 that had never participated. A brief interview was conducted regarding their reasons for not participating. Interviews were successfully completed with 22 of the 25 selected districts. All three of the districts that had dropped-out of the CFSP were also interviewed as to their reasons for dropping out. In both cases the interviews were conducted by telephone by trained research staff who followed questions as outlined in a discussion guide. Responses were manually recorded by the interviewer; interviews were not audio-recorded. Interviews lasted approximately ten minutes.

Data analysis: Costs of specific fruits and vegetables are based on invoices provided by the Child Nutrition Directors. Costs of fruits and vegetables prepared are based on the total value of the prepared items reported on the menu production records. The costs per meal are based on the total value of the fruits and vegetables actually taken by students reported on the menu production records divided by the number of meals served. When schools reported "assorted" fresh fruit(s) on their breakfast production records but did not specify the specific fruits, a weighted average cost per unit was estimated based on the usual product mix for that school.

Non-food expenses identified on invoices and reported by Child Nutrition Directors were classified by types: transportation, facilities, large and small equipment, material, promotional, training, additional staff, time, and other. The percentage of total non-food expenses from each category was calculated.

School Breakfast Participation rate was calculated for each month and for the pre-CFSP and CFSP periods as:

(Average SBP participation / # operating days) / average daily attendance (ADA)

The ADA was missing or could not be supplied by six schools and the ADA was estimated for these schools using school year enrollment and percent attendance data from the CDE[8].

Differences in mean total and fresh fruits and vegetables taken by and the variety offered to students at each school were calculated from menu production records and analyzed by t-test.

[8] Enrollment for school years 2004-2005, 2005-2006 and 2006-2007 were found on the CDE DataQuest website and downloaded from http://www.cde.ca.gov/datastat and average percent attendance was obtained from Nutrition.

Cut-points for classification of more and less successful schools for the outcomes of interest were derived from the distributions of the differences in fruits and vegetables taken by students at School Breakfast before and after implementation of the CFSP. Schools with increases of 0.10 or more units of total and fresh fruits and vegetables taken, and greater than 0.09 for (variety) number of different fresh fruits offered were classified as more successful.

Univariate analyses were conducted to assess the significance of factors related to school success with the CFSP. Table A-1 lists all of the variables included in the analyses. Chi-squared tests were used to test associations for categorical factors, except where the sample was less than three per cell. For these, Fishers exact test was used. Non-parametric methods, principally the Mann-Whitney test, were used to assess relationships between outcomes and continuous factors which were non-normally distributed. Correlations with observational data collected during site visits were analyzed using Pearson's pairwise test. The McNemar's test was used to determine if changes (from pre to post CFSP) in maximum number of servings allowed was statistically significant.

The manually recorded qualitative data from interviews with Child Nutrition Directors and classroom discussions with students were reviewed by trained research staff and the recorded comments were grouped by theme, nature and frequency of the response. These data was used to enhance the interpretation of the quantitative data.

Figure A-1: California Fresh Start Program Evaluation Components and Sample Sizes

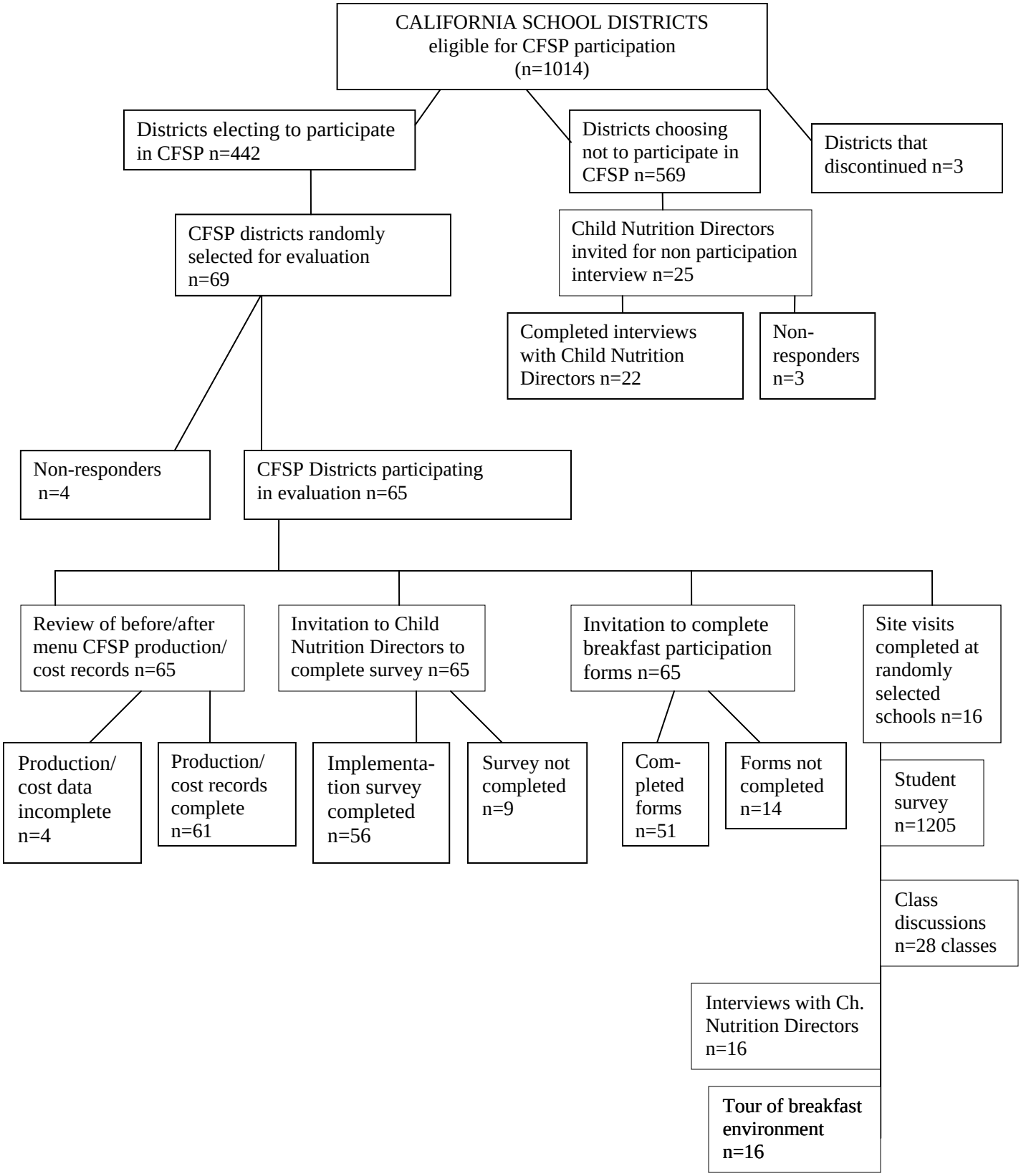

Table A-1: Analysis variables for the CFSP

School and Student Characteristics	
School Type (Elementary, Middle, High)	Enrollment
Urban/Rural (continuum of 8 categories)	Percent White
Percent Enrolled in Free- and Reduced-Price Meal Program	Percent Hispanic
Number and Types of Fruits and Vegetables Served	
Change in How Frequently Juice Was Offered	Change in Average Cost of Fruits Offered
Change in Variety of Fruits Offered (Total and Fresh)	Change in Number of Unusual Fruits Offered
Change in Number of Fruit Servings Offered (Total and Fresh)	
Change in Number of Top 3 Favorite Fruits Offered	
Perceived Change: Breakfast Menu in General	
Perceived Change and Impact: Quality/Appeal of Fruit and Vegetable Options at Breakfast	
Breakfast Service Styles and Policies	
Grab-n-Go (Before CFSP)	Last Chance Breakfast (Before CFSP)
Change in Salad-type Fruit Bar	Change in Universal Breakfast Policy
Change in Maximum Number of Servings Allowed	
Nutrition Education and Promotion	
Nutrition Education or Promotion Materials or Curricula as Part of CFSP	
Nutrition Education or Promotion Activities/Classes as Part of CFSP	
Perceived Change: Breakfast Program Promotion	
Perceived Change: Nutrition Education Effort by Nutrition Services	
Perceived Change: Promotion of Free- and Reduced-Price Meal Program Nutrition Services	
Perceived Change: Nutrition Education Effort by Other School Staff	
Barrier: Lack of Nutrition Education for Students	
Food Service Facilities	
Perceived Barriers: Inadequate Kitchen Facilities and Lack of Storage Space/Facilities	
Customer Service	
Perceived Change: Customer Service by Nutrition Service Staff	
Perceived Impact on Students	
Perceived Student Reaction	Perceived Barrier: Student Acceptance of Fruits and Vegetables
Perceived Change: Student Consumption of Fruits and Vegetables	
Perceived Change: Student Attitude Toward the School Breakfast	
Perceived Change: Student Attitude Toward Fruits and Vegetables	
Perceived Impact on Stakeholders	
Nutrition School Staff Additional Training Received	Perceived Adequacy of Reimbursement
Perceived Barrier: Finding a Supplier or Vendor	Perceived Barrier: Cost of Fruits and Vegetables
Perceived Barrier: Program Requirements/Regulations	
Perceived Barrier: Inadequately Trained Staff	
Perceived Barrier: Perishability of Fruits and Vegetables	
Perceived Barrier: Labor Costs Associated with Handling and Preparing Fruits and Vegetables	
Perceived Impact: Parental Support for the Meal Program	
Perceived Impact: School Staff Support for the Breakfast Program	
Perceived Impact: Financial Health of the Breakfast Program	
Perceived Impact: Nutrition Services Staff Interest in Procuring and Serving Fruits and Vegetables	
Perceived Impact: Nutrition Services Staff Fruit and Vegetable Preparation and Handling Skills	
Perceived Impact: Efficiency of Breakfast Service	

2. Additional Findings of Interest

- **Eating the School Breakfast is significantly related to higher consumption of, and positive attitudes toward, fruits and vegetables.**

  According to the student survey responses (Table A-2), eating the School Breakfast more frequently is statistically significantly related to:
  - More frequent consumption of fruits and vegetables at breakfast
  - More importance given to fruit consumption at breakfast
  - An increase in fruit and vegetable consumption since the CFSP started at their school

  These data suggest that school food service has been successful in improving student intake of, and attitudes toward, fruits and vegetables. The CFSP may have contributed to this effect.

Table A-2. Relationship between school breakfast participation and student attitudes and self-reported behaviors (n=1158-1198 students)

	Eat breakfast at school		
Breakfast fruit or vegetable consumption*	**Always/Often**	**Sometimes**	**Never**
Always/Often	34%	35%	26%
Sometimes	43%	42%	50%
Never	22%	23%	24%
Importance of having fruit At breakfast **	**Always/Often**	**Sometimes**	**Never**
Very Important	54%	47%	31%
A little Important	29%	33%	38%
Not Much/Not at all important	17%	20%	32%
Change in fruit and vegetable consumption since last year **	**Always/Often**	**Sometimes**	**Never**
Eating More	36%	34%	34%
Eating Fewer	23%	20%	12%
Eating About the same	41%	46%	55%

* Significant at $p < 0.05$ ** Significant at $p < 0.0005$

- **The average cost of the fruits and vegetables served at breakfast increased modestly from 12 to 13 cents per serving after implementing the CFSP.**

  Compared to the corresponding pre-CFSP period, the average cost per serving of fruits and vegetables offered at breakfast increased by one cent, from 12 to 13 cents

per serving (Table A-3). Most forms of fruits (fresh, juice and dried) increased in cost per serving whereas frozen fruits decreased and the cost of canned fruits remained constant. The increase in cost per serving for total fruits and vegetables at School Breakfast is likely to reflect a combination of market fluctuations, real price increases, and a change in product mix that included more variety and hence more expensive types of fruits and vegetables after initiation of the CFSP. Many food service operations use commodity and Department of Defense programs to obtain fruits at a low cost.

Table A-3. Change in the average cost per serving of the different forms of fruits and vegetables offered at School Breakfast pre and post CFSP (n=61 schools)

	Pre-CFSP	CFSP
Juice	**$0.13**	**$0.14**
Fresh	**$0.14**	**$0.15**
Canned	**$0.06**	**$0.06**
Frozen	**$0.06**	**$0.02**
Dried	**$0.03**	**$0.04**
All forms	**$0.12**	**$0.13**