



Evaluation of the Fresh Fruit and Vegetable Program (FFVP)

Final Evaluation Report

Food and Nutrition Service

U.S. Department of Agriculture
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Executive Summary

The U.S. Department of Agriculture's (USDA) Fresh Fruit and Vegetable Program (FFVP) is designed to improve the overall diet quality of school children by providing healthful foods and helping children learn more healthful eating habits. FFVP reimburses selected elementary schools with high rates of free and reduced-price meal enrollment for providing fresh fruits and vegetables to students during the school day, outside of normal school breakfast and lunch meals.

Under the 2008 Farm Bill (P.L. 110-234), the Richard B. Russell National School Lunch Act (NSLA) was amended to authorize the expansion of FFVP to selected schools nationwide. Initial funding for the program was \$40 million during the 2008–2009 school year, rising to \$65 million in 2009–2010, and then to \$101 million in 2010–2011, the year in which data for this evaluation were collected. Funding rose to \$150 million in the 2011–2012 school year, and continues at that level thereafter, indexed for inflation. Funding is to be allocated “to schools with the highest percentages of low-income students, to the maximum extent practicable” (language is from the legislation), at a level of \$50 to \$75 per student over the school year.

As part of this authorizing legislation, the Secretary of Agriculture was tasked with conducting an evaluation of FFVP. Abt Associates Inc. and its partner, the Dr. Robert C. and Veronica Atkins Center for Weight and Health at the University of California, Berkeley, conducted the evaluation for the USDA Food and Nutrition Service (FNS).

Evaluation Objectives

The FFVP authorizing legislation mandated an evaluation of the program to determine whether children experienced, as a result of participating in the program, increased consumption of fruits and vegetables and other dietary changes, such as decreased consumption of less nutritious foods. In response, FNS developed an evaluation with two components: (1) an impact study to estimate program effects on participating students and schools; and (2) an implementation study to examine how FFVP operates in participating schools.

The *impact component* of the evaluation estimates the effect of FFVP on two primary outcomes among students in participating schools on days when FFVP fruits and/or vegetables were distributed:

- Total quantity of fruits and vegetables consumed.
- Total energy intake (also referred to as total caloric intake), allowing the assessment of whether any additional fruit and vegetable consumption was in addition to or in place of other foods consumed.

In addition to these primary outcomes, FFVP activities are hypothesized to impact a wide array of secondary outcomes at both the student and school level. The study examines the impact of the program on secondary outcomes, including exploratory analysis of impacts on students, including:

- Students' consumption of other foods, including snack foods.
- Nutritional status of students, measured by nutrient intake and total consumption relative to various nutritional standards.

- Student attitudes towards fresh fruits and vegetables.

The study also examines the impact of FFVP on several aspects of the school environment, including:

- Nutrition education provided to students as part of the school curriculum.
- Availability of competitive foods in schools.
- Differences in school meals, as measured by fruits and vegetables served and the number of meals served.

The **implementation component** provides descriptive and contextual information about several aspects of FFVP operations:

- The FFVP application process, including the characteristics of applicant and participating schools.
- Implementation of FFVP, including distribution methods and frequency, types of fruits and vegetables offered, nutrition education provided, partnerships established in support of the program, and perceptions of the program.
- Student participation in FFVP, including self-reported frequency of participation, characteristics of participants vs. nonparticipants, and reasons for not participating.
- Satisfaction with the program as reported by students, parents, and other stakeholders.

Design, Data, and Methods

The evaluation objectives require estimating program impacts on participating students and schools and analyzing the implementation of FFVP. These two evaluation components required separate samples.

Sampling

This evaluation estimates the *impact* of FFVP using regression discontinuity (RD), which is considered the strongest possible design when random assignment is not possible.¹ Random assignment was not feasible for FFVP because, as noted above, the FFVP legislation requires that available FFVP funding be allocated in each State to the poorest schools, where poverty is defined by the percent of students eligible for free or reduced-price school lunch (FRPSL). The RD approach leverages the procedure by which schools are assigned to participate in FFVP, by comparing schools immediately above and below the funding cutoffs in each of the sampled States. Those schools differ in whether they received FFVP, but are likely to be otherwise quite similar. The impact analysis sample included 4,696 students in 214 schools within 2.5 percentage points of the funding cutoff in each State: 2,471 students in 115 FFVP schools just above the funding cutoff, and 2,225 students in 99 non-FFVP schools just below the funding cutoff.

The internal validity of the RD design is highest when the schools included in the RD sample are deliberately sampled to be as close to each State-specific cutoff as possible. As such, these schools

¹ See for example, Cook, 2008; Dinardo and Lee, 2010.

are not representative of all schools operating FFVP. By contrast, the *implementation* study is intended to provide detailed information on how FFVP is implemented in all participating schools across the country. Addressing such implementation questions requires a national probability sample of participating schools. For the implementation study, the impact analysis sample was therefore supplemented with a randomly selected sample of participating schools that were not included in the impact study. Combining the FFVP schools in the impact sample and the random sample of all participating schools yields an implementation analysis sample of 698 FFVP schools in the 16 study States.

Data Collection

Determining impacts on primary outcomes for the impact study required collection of data at the student level on dietary intake. We collected this information using diary-assisted 24-hour recall interviews conducted by trained interviewers, which have been widely and successfully used with elementary school-aged children. Students also completed brief self-administered surveys about their attitudes and preferences for fruits and vegetables as well as their experiences with FFVP. The implementation study required collection of detailed implementation data from a wide variety of sources. Web surveys of State Child Nutrition (CN) Directors, School Food Authority (SFA) directors, and school principals and self-administered surveys of school food service managers, teachers, and parents provided detailed information on FFVP implementation in the sampled schools.

Analysis

For measuring the impacts of FFVP on student and school outcomes, unweighted linear multivariate regression models appropriate for RD design were used. The research objectives of the implementation analysis are descriptive, and were thus addressed using weighted tabulations and cross-tabulations.

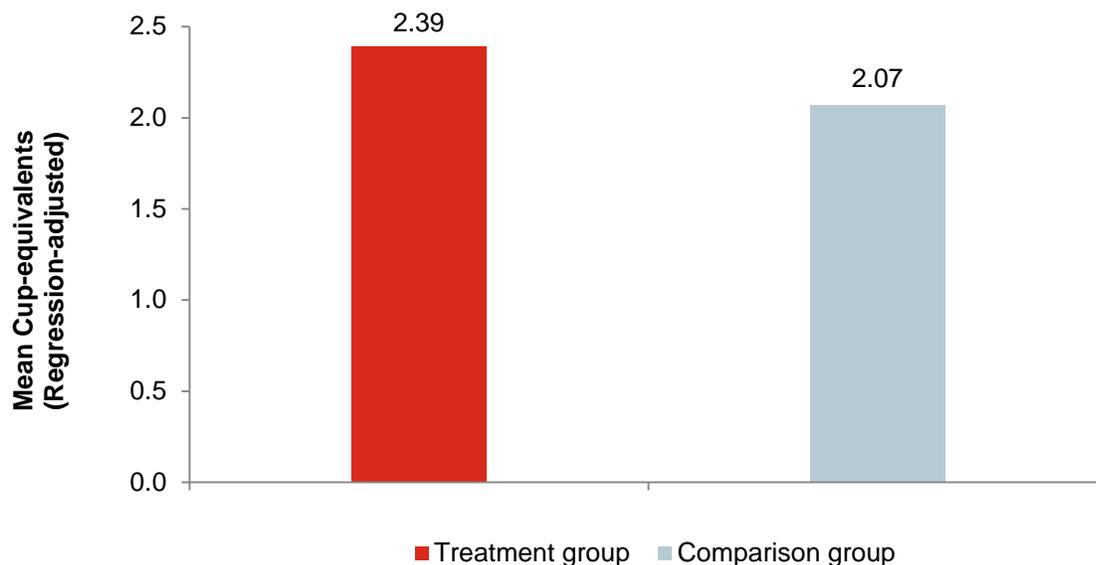
Findings

This section provides an overview of findings from the impact and implementation studies.

Impact Study

We focus the discussion of the impact study findings on our two, pre-specified, primary outcomes: total fruit and vegetable consumption and total energy intake. We also discuss statistically significant results for secondary outcomes which provide a richer characterization of the study results. Unless otherwise noted, in this section only treatment/comparison differences that are statistically significant at conventional significance levels are discussed.

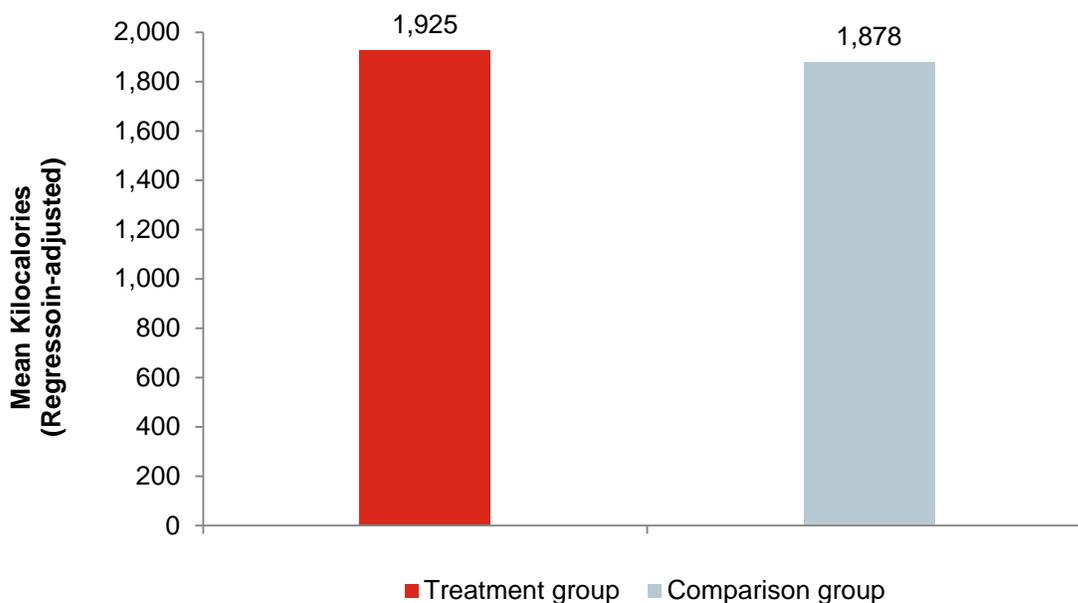
The analysis found strong evidence that fruit and vegetable consumption was higher among students in FFVP schools. Students in FFVP schools consumed approximately one-third of a cup (0.32 cups) more fruits and vegetables on FFVP days than students in comparable schools not participating in the program (Exhibit ES.1). FFVP appears to have been especially effective in improving fruit consumption, with approximately a quarter cup (0.26 cups) of the total impact on fruit and vegetable intake coming from fruits.

Exhibit ES.1: FFVP Increased Consumption of Fruits and Vegetables by 0.32 Cups

Comparing students in FFVP schools and in schools not participating in the program, there was no evidence of a statistically significant difference in total energy intake (Exhibit ES.2). If we had found higher total energy intake among students in FFVP schools, we might have been concerned that FFVP participation could contribute to weight gain. If we had found lower total energy intake, we would have concluded that greater fruit and vegetable consumption displaced consumption of other, more calorie-dense foods. In the absence of a statistically significant finding in either direction, we cannot definitively accept or reject either hypothesis.²

In addition, the secondary analyses found no consistent evidence of differences in intake of foods besides fruits and vegetables between students in FFVP and non-FFVP schools. On balance, these combined findings provide weak evidence that FFVP fruit and vegetable consumption was in addition to, rather than in place of, other foods. Further study of FFVP impacts on total energy consumption with a larger sample size may be warranted to investigate this question.

² The statistical power resulting from the sample size is insufficient to detect an impact on total energy resulting from consuming an additional one-third cup of fresh fruits and vegetables.

Exhibit ES.2: No Evidence that FFVP Affected Total Energy Intake

We hypothesized two general mechanisms by which FFVP might increase fruit and vegetable intake:

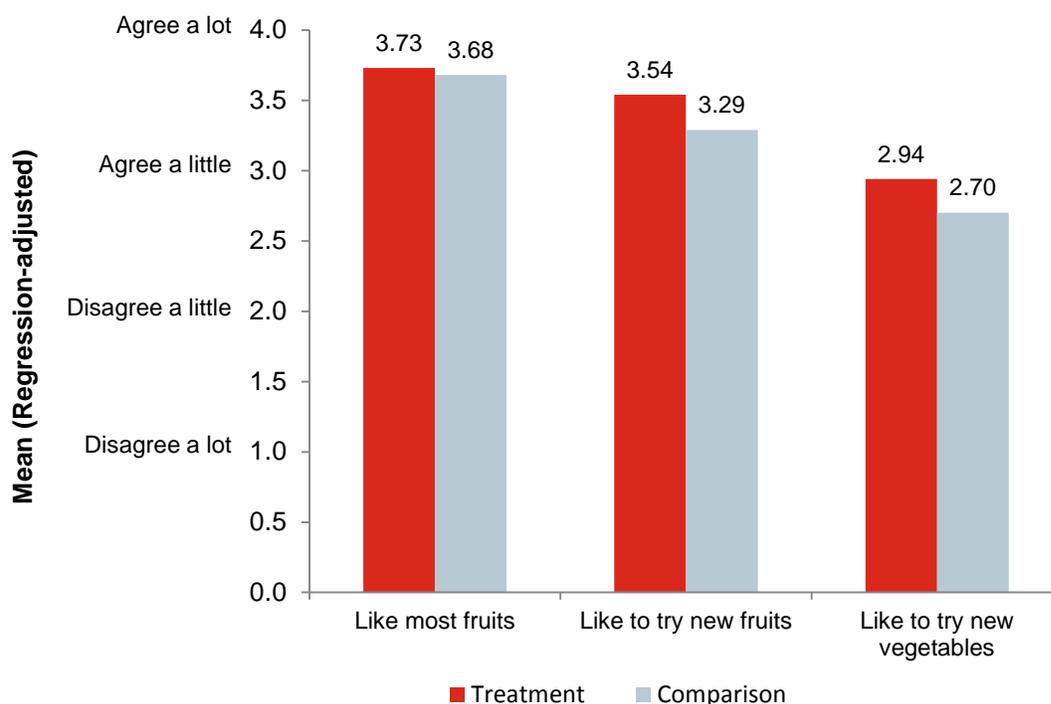
- directly, through student consumption of the FFVP fresh fruit and vegetable snacks provided; and
- indirectly, by influencing student knowledge, attitudes, and perceptions towards fruits and vegetables, thereby leading to increased student consumption in contexts outside of FFVP.

The exploratory analyses suggest that most, but not all, of the observed difference in consumption is attributable to direct effects on intake due to consumption of FFVP snacks. FFVP snacks provided students with approximately one-quarter cup of fresh fruits and vegetables. This represents most (80 percent) of the total observed difference in fruit and vegetable consumption.

Students in FFVP schools also consumed slightly, but statistically significant, more fresh fruits and vegetables outside of school (0.06 cups) than did students in schools not participating in the program, providing some evidence that FFVP may also indirectly increase fruit and vegetable consumption.

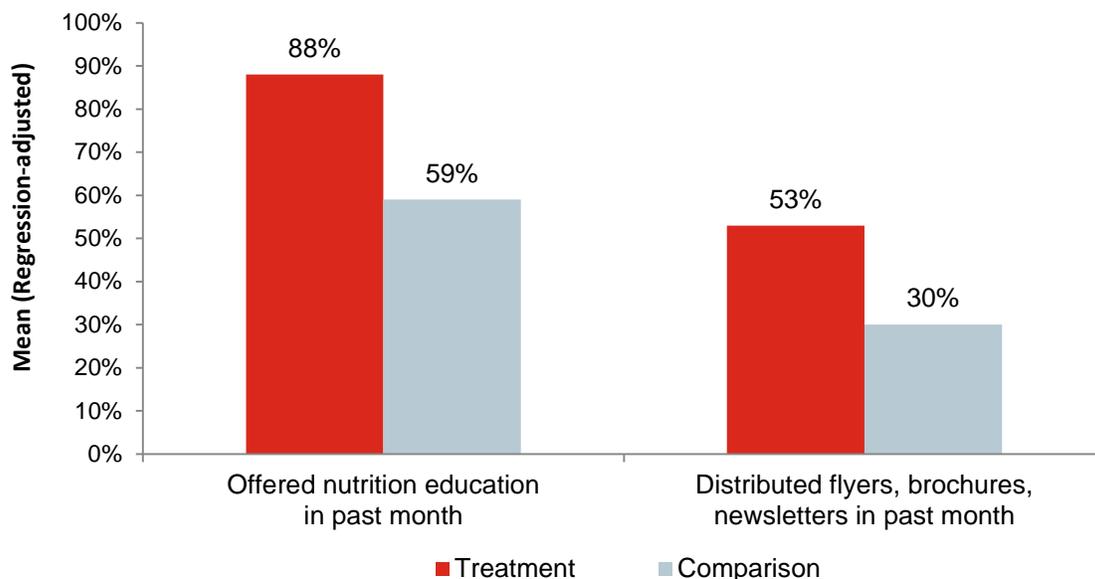
The exploratory analyses also found improvements in knowledge, attitude, and perception measures, consistent with the observed higher levels of out-of-school fruit and vegetable consumption among FFVP students. Students in FFVP schools had more positive general attitudes towards fruits and vegetables (Exhibit ES.3). Specifically, students participating in FFVP were more likely to agree that they “like most fruits” and that they “like to try new fruits and new vegetables.” (There was no difference between FFVP students and students not participating in the program in agreeing that they “like most vegetables.”) In addition, results indicated that FFVP improved student familiarity with a number of specific fruits and vegetables and improved how much they reported liking some specific fruits and vegetables.

Exhibit ES.3: FFVP Participants had More Positive Attitudes towards Fruits and Vegetables



Nutrition education and promotion activities in schools are one potential mechanism through which FFVP may affect student attitudes, leading to increased fruit and vegetable consumption. Nutrition education is considered a critical component of FFVP and schools are strongly encouraged to provide nutrition education along with the FFVP snacks. FFVP schools have markedly greater levels of nutrition education and promotion activities than their non-FFVP counterparts. FFVP schools were more likely to provide nutrition education and to distribute promotional flyers, brochures, and newsletters (Exhibit ES.4).

Exhibit ES.4: FFVP Schools Provided More Nutrition Education and Promotion Activities



On average, FFVP schools offered nutrition education activities 2.4 times per week compared to 0.7 times per week in schools not participating in the program. Additionally, consistent with the primary objectives of FFVP, nutrition education and promotion messages about fruits and vegetables and about trying new kinds of foods were conveyed more frequently in FFVP schools.³

Implementation Study

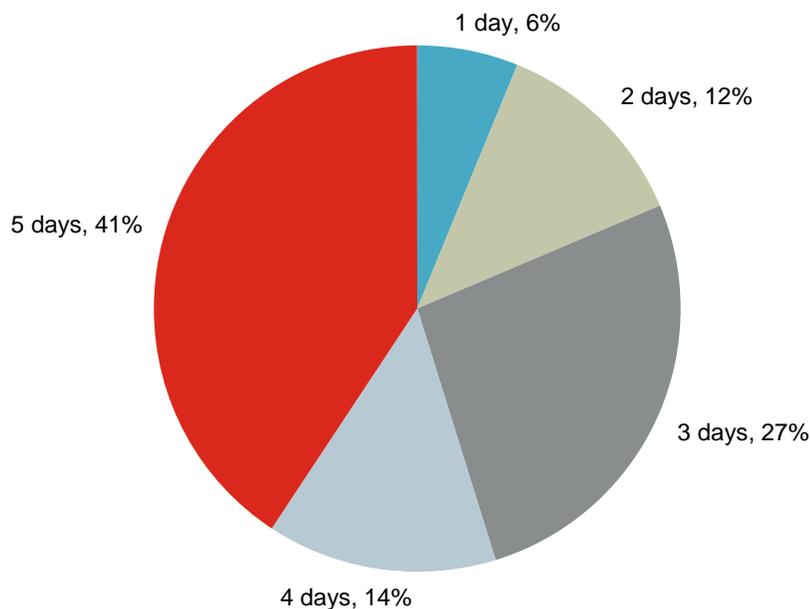
The FFVP legislation and FNS's guidance require States to give priority to the highest need applicant schools, defined as those schools with the highest percent of students eligible for free and reduced-price lunches. Consistent with legislative intent, FFVP is reaching students in the highest need schools. Compared to schools that applied for program funding but did not receive it, FFVP schools had a higher percentage of students eligible for free and reduced-price lunches (85 percent compared to 64 percent), had a higher percentage of non-white students (77 percent compared to 51 percent), and were more likely to be located in urban areas (45 compared to 27 percent) and less likely to be in rural areas (18 compared to 33 percent). Similar patterns are evident when comparing schools participating in FFVP to schools with at least 50 percent of students eligible for free and reduced-price meals (the pool targeted for FFVP) and to all elementary schools in the State.

FFVP implementation appears to be broadly consistent with USDA program guidelines. USDA encourages schools to implement FFVP two or more times per week, and nearly all schools (94 percent) reported doing so (Exhibit ES.5) In fact, 41 percent of FFVP schools chose to provide the free snacks five days a week and another 41 percent of schools offered FFVP snacks three or four

³ Our exploratory analysis did not find differences in FFVP impacts by level of nutrition education and promotion offerings.

times per week. Consistent with the program goal of exposing students to a variety of fresh fruits and vegetables, schools reported serving, on average, six different fruits or vegetables each week.

Exhibit ES.5: Number of Days FFVP Snacks Are Offered Each Week



Serving FFVP snacks in classrooms was to be the preferred method for most schools. Just over half the schools (55 percent) served the snacks exclusively in classrooms, and 89 percent served them in the classroom at least some of the time. Serving from mobile carts, in the cafeteria, and in hallways were other common methods. Almost 90 percent of schools served the FFVP snacks using just one or two distribution methods.

States, school districts, and schools are encouraged to form partnerships with outside organizations to support implementation and operation of FFVP. While most States (82 percent) have established partnerships, relatively few districts (26 percent) and schools (12 percent) have developed such independent relationships, though schools and districts likely benefit directly or indirectly from State partnerships. Partners are most likely to provide support for nutrition education activities, including educational materials, and demonstrations or instruction for students.

Finally, FFVP is a popular program among all its constituencies. Program administrators, including SFA directors, principals, school food service staff, and teachers, all expressed strong support for FFVP. Nearly all respondents (over 95 percent) in each group agreed that their overall opinion of FFVP was favorable and that they would like FFVP to continue at their school. Parents also expressed strong support (98 percent) and would like the program to be offered more frequently (96 percent). Student opinions mirrored those of their parents and the program administrators. Almost all students (97 percent) wanted the program to continue. While the majority of students (86 percent) agreed that the fruit and vegetable snacks “looked and tasted good,” students expressed a decided preference for fruits.

Conclusions

The increase in fruit and vegetable consumption of one-third cup per day among students in schools participating in FFVP is important because population dietary changes are generally small and incremental. While there is no consensus as to what constitutes a meaningful change in fruit and vegetable intake, it is generally accepted that children with the lowest intakes are at greatest risk of poor health outcomes, and that the greatest benefit would be conferred by increasing intakes of fruits and vegetables among this group (USDA & DHHS, 2010). Further, children from socioeconomically disadvantaged families tend to have the lowest intakes of fruits and vegetables.⁴ By focusing on higher need schools, FFVP specifically targets this at-risk group. Thus, increasing fruit and vegetable intakes by this population even by small amounts may confer a health benefit.

Further research on FFVP to understand more about how the program can affect fruit and vegetable consumption would be beneficial. Future investigations could consider exploring how nutrition education can best be used to reinforce the direct impact of providing fresh fruits and vegetables to students. Examining how variations in implementation affect outcomes and providing “best practices” for States and school districts could help maximize program impacts. Investigating ways to specifically increase vegetable intake could be particularly useful. Finally, studying longer term impacts, both over multiple years of FFVP exposure and after students have left elementary school and are no longer participating in FFVP, would provide valuable information to policy makers.

⁴ See, for example, Krebs-Smith et al., 1996; Darmon and Drewnowski, 2008; Dubowitz et al., 2008; Lorson et al., 2009.

Chapter 1: Introduction

The U.S. Department of Agriculture (USDA) Fresh Fruit and Vegetable Program (FFVP) is intended to improve overall diet quality by providing healthful foods and helping children learn more healthful eating habits. FFVP, which currently operates nationwide, provides funding for the distribution of free fresh fruits and vegetables to students in selected elementary schools with high rates of free and reduced-price meal enrollment. The selected schools are reimbursed for providing fresh fruits and vegetables to students during the school day, outside of normal school breakfast and lunch meals.

Under the 2008 Farm Bill (P.L. 110-234), the Richard B. Russell National School Lunch Act (NSLA) was amended to authorize the expansion of FFVP to selected schools nationwide. As part of this authorizing legislation, the Secretary of Agriculture was tasked with conducting an evaluation of FFVP to determine whether FFVP increased consumption of fruits and vegetables, induced other dietary changes such as decreased consumption of less nutritious foods, and/or influenced other outcomes among children in participating schools.

Abt Associates Inc. and its partner, the Dr. Robert C. and Veronica Atkins Center for Weight and Health at the University of California, Berkeley, conducted the evaluation for the USDA Food and Nutrition Service (FNS) during the 2010–2011 school year.

In this chapter, we first discuss the nutritional and statutory context for the evaluation and then present the detailed study objectives and the conceptual model underlying the analysis. In the following section, we discuss previous research conducted on FFVP and research on similar programs. The final section provides a guide to the organization of this report.

1.1 Nutritional Context

Reducing the prevalence of obesity among children and adolescents in the U.S. by 10 percent is a key national health objective in Healthy People 2020 (DHHS, 2011). However, data from the ongoing National Health and Nutrition Examination Surveys (NHANES) show the combined prevalence of overweight and obesity for U.S. children and adolescents aged 2–19 years to be 32 percent for boys and 31 percent for girls (Ogden, 2010a). Moreover, there was no improvement in obesity rates among U.S. children and adolescents from 1999–2000 through 2009–2010 (Ogden, 2012). While no socioeconomic group is immune, overweight and obesity are more prevalent among children and adolescents of lower socioeconomic status; prevalence is up to 10 percent higher among children in the lowest income group compared with the highest (Gordon-Larsen et al., 2003; Wang & Zhang, 2006; Ogden et al., 2010b).

Although the evidence is not completely consistent, epidemiologic studies have shown that increased consumption of fruits and vegetables is associated with a reduction in long-term obesity risk (He et al., 2004; Ledoux, 2010). Because fruits and vegetables are relatively high in water and fiber, their increased consumption is thought to contribute to lower overall dietary energy density and total energy intake. Consistent with this hypothesis, experimental interventions involving the addition of fruits and vegetables to the diet have demonstrated short-term effectiveness in reducing body weight in some cases, particularly when paired with advice to reduce dietary fat and/or overall energy intake (Rolls et al., 2004; Jebb, 2005; Carlton-Tohill, 2007). Additionally, epidemiologic and cohort studies have consistently found a relationship between increased fruit and vegetable consumption and

reduced risk of heart disease and some cancers (Steinmetz & Potter, 1996; Riboli & Norat, 2003; Dauchet et al., 2006).

On this basis, authoritative bodies, including the 2010 Dietary Guidelines for Americans (USDA & DHHS, 2010) and Healthy People 2020 (DHHS, 2010), have issued recommendations for population increases in fruit and vegetable intakes. The U.S. Institute of Medicine (IOM, 2012) also urges school action to increase student fruit and vegetable intake along with other changes to prevent obesity.

Despite the evidence of the health benefits of higher consumption of fruits and vegetables, and authoritative recommendations to increase population intakes, relatively few children and adolescents consume five or more servings a day: 78–87 percent of 9–18 year olds consume less than the minimum recommended amounts of fruits and 95–98 percent consume less than the minimum recommended amounts of vegetables (Krebs-Smith et al., 2010).

The Role of Schools. Children spend a substantial proportion of their time in school, and meals and snacks consumed at school are a large share of total daily consumption of food and nutrients for many students (DHHS, 2007; Lin et al., 1999). Most of the fruits and vegetables consumed by students are eaten at school (Gordon et al., 2007). School is thus a promising context in which to deliver interventions to increase children’s consumption of fruits and vegetables (Wechsler et al., 2000; Kubik et al., 2003; French, 2005).

Through the School Breakfast Program (SBP) and the National School Lunch Program (NSLP), the federal government has long had a major role in school nutrition policy and child food consumption.⁵ The Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296) seeks to improve the nutritional content of school meals through performance-based reimbursement rates and simplified eligibility criteria, as well as by providing additional funding for farm to school and school garden programs to improve schools’ access to fresh produce.

However, NSLP and SBP meals are not the only foods children consume in school. “Competitive foods,” defined as foods and beverages offered in schools outside school meals programs, are increasingly available and appear to represent an increasing share of student diets (Gordon & Fox, 2007). In its 2007 report, *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth*, the IOM recommended that the federally reimbursable school nutrition programs be the main source of nutrition at school and that opportunities for foods available outside the school meals programs be limited. Further, in its 2012 report, *Accelerating the Progress in Obesity Prevention: Solving the Weight of the Nation*, the IOM recommends that the U.S. Department of Education and school districts adopt the strictest interpretation of the IOM school meal and competitive food standards.

FFVP is responsive to this recommendation and complements existing efforts to improve the nutritional content of foods served in schools by offering free fresh fruits and vegetables outside of regular meal times. The FFVP approach of offering *free* fruits and vegetables is consistent with evidence that students’ food choices are price sensitive (French et al., 2004) and the plausible conjecture that price is particularly salient for children from lower income families (Drewnowski &

⁵ For more information on the National School Lunch Program and the School Breakfast Program see the FNS school meals programs website at <http://www.fns.usda.gov/cnd/>.

Darmon, 2005). FFVP provision of fresh fruits and vegetables to all students, regardless of economic status, in lower income schools free of charge may therefore be an effective tactic for inducing consumption of fruits and vegetables in place of less healthful foods available for purchase in schools.

1.2 Statutory Context

FFVP has its origins in the Fresh Fruit and Vegetable Pilot Program, which was authorized as part of the 2002 Farm Bill (the Farm Security and Rural Investment Act of 2002; P.L. 107-171). The pilot was intended “to identify best practices for increasing fresh fruit and vegetable consumption among students, and to determine the feasibility and students’ interest.”⁶ By the 2005–2006 school year, the pilot program was operating in 14 States and several Indian Tribal Organizations.

The 2008 Farm Bill (the Food, Conservation, and Energy Act of 2008; PL 110-234) converted the pilot program into the nationwide FFVP.⁷ USDA FNS administers the program through States. States are required to solicit applications from individual elementary schools, to select specific elementary schools for funding, and to provide oversight of school implementation. Schools are to use FFVP funds to make fresh fruits and vegetables available to students at times other than at meal service periods and at no cost to students. USDA considers nutrition education critical to the program’s success and schools are strongly encouraged to provide appropriate nutrition education in conjunction with the distribution of fresh fruits and vegetables.

Initial funding for the program was \$40 million during the 2008–2009 school year, rising to \$65 million in 2009–2010, and then to \$101 million in 2010–2011, the year in which data for this evaluation were collected. Funding rose to \$150 million in the following school year, and continues at that level thereafter, indexed for inflation. Funding is to be allocated “to schools with the highest percentages of low-income students, to the maximum extent practicable” (language is from the legislation), at a level of \$50 to \$75 per student over the school year, or roughly \$2 per week.⁸

Beyond any immediate impact on food intake, USDA views FFVP as an important catalyst for changing consumption behaviors. By introducing students to fresh fruits and vegetables in the school context, FFVP is meant to encourage both short-term and long-term shifts towards increased fruit and vegetable consumption at home as well as in school. Such shifts in ongoing food choices would be expected to reduce childhood obesity, leading to better health outcomes. Indeed, the goals of FFVP are to:

- Create healthier school environments by providing healthier food choices.
- Expand the variety of fruits and vegetables children experience.
- Increase children’s fruit and vegetable consumption.

⁶ Language is from the USDA FFVP Fact Sheet.
<http://www.fns.usda.gov/cnd/FFVP/Resources/FFVPfactsheet.pdf>.

⁷ Officially, The Food, Conservation, and Energy Act of 2008 amended the Richard B. Russell National School Lunch Act (NSLA). FFVP is described in Section 19 of the amended NSLA.

⁸ Spending per week calculated by dividing annual per student spending by 38 weeks (average length of the school year).

- Make a difference in children’s diets to impact their present and future health.⁹

1.3 Evaluation Objectives

The FFVP authorizing legislation mandated an evaluation of the program with several key objectives to determine whether children experienced, as a result of participating in the program, increased consumption of fruits and vegetables and other dietary changes, such as decreased consumption of less nutritious foods. In response, FNS developed an evaluation with two components: (1) an impact study to estimate program impacts on participating students and schools; and (2) an implementation study to examine how FFVP operates in the selected schools.

The *impact component* of the evaluation estimates the impact of FFVP on two primary outcomes among students in participating schools on days when FFVP fruits and/or vegetables were distributed:

- Total quantity of fruits and vegetables consumed.
- Total energy intake (also referred to as total caloric intake),¹⁰ allowing the assessment of whether any additional fruit and vegetable consumption was in addition to or in place of other foods consumed.

In addition to these primary focal outcomes, FFVP activities are hypothesized to impact a wide array of secondary outcomes at both the student and school level. The study examines the impact of the program on secondary outcomes, including exploratory analysis of:

- Students’ consumption of other foods, including snack foods.
- Dietary status of students, measured by nutrient intake and total consumption relative to various nutrition standards.
- Student attitudes towards fresh fruits and vegetables.

We also examine the impact of FFVP on the school environment, specifically:

- Nutrition education offered to students.
- Availability of competitive foods.
- Differences in school meals, as measured by fruits and vegetables served and the number of meals served.

The *implementation component* provides descriptive and contextual information about FFVP operations. In this report, we examine:

- The FFVP application process, including the characteristics of applicant and participating schools.

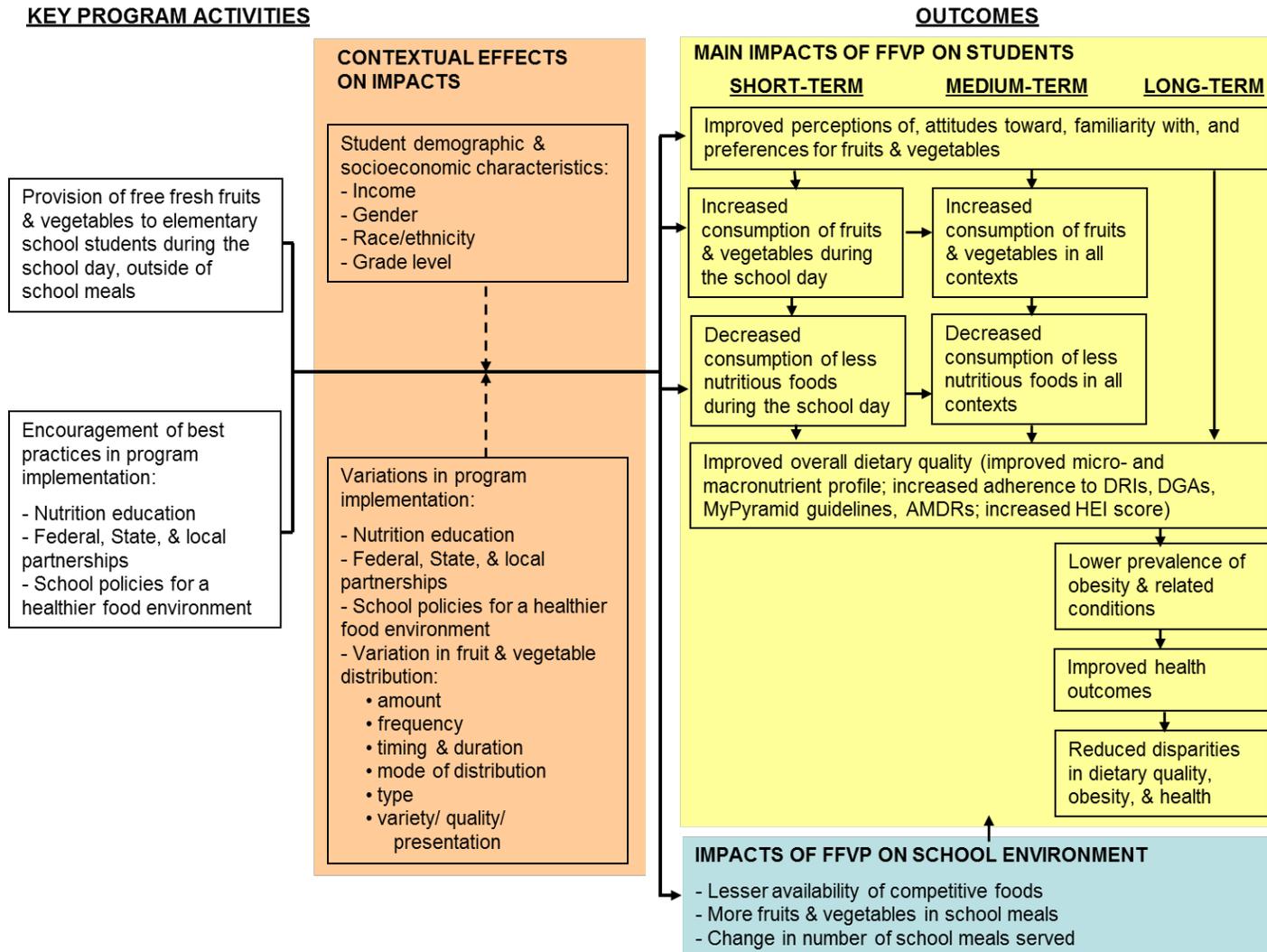
⁹ Goals as stated in USDA FFVP Handbook (USDA, 2010).

¹⁰ “Total energy intake” is the preferred terminology among nutrition researchers, consistent with language used in the Dietary Reference Intakes (DRIs), the most recent set of dietary recommendations established by the Food and Nutrition Board of the Institute of Medicine (IOM, 2005).

- Implementation of FFVP, including distribution methods and frequency, types of fruits and vegetables offered, nutrition education provided, partnerships established in support of the program, and perceptions about the program.
- Student participation in FFVP, including self-reported frequency of participation, characteristics of participants vs. nonparticipants, reasons for not participating, and satisfaction with the program.

Exhibit 1.1 illustrates the conceptual model that guided the impact and implementation analyses. The model depicts the hypothesized relationships between program activities, anticipated short-, medium-, and long-term impacts on students and the school environment, and contextual factors that may moderate anticipated impacts. The hypothesized pathways depicted therein provide a structure for sequential consideration of intermediate and final outcomes in our exploratory analyses.

Exhibit 1.1: Conceptual Model of FFVP Activities and Impacts



1.4 Previous Research

The current study is the first rigorous evaluation of the nationwide FFVP. There have been three other limited studies of earlier phases of the program. The first study, conducted by USDA's Economic Research Service (ERS), used experiences with the pilot program to explore the feasibility of distributing fresh fruits and vegetables during the school day. That evaluation reported that the program was popular among students, teachers, staff, administrators, and policymakers. Four key factors were identified by ERS as integral to the success of the pilot:

- High levels of cooperation, communication, and commitment among staff, principals, and teachers, perhaps due to the voluntary nature of participation.
- Strong support from States and other partners outside schools.
- Program flexibility allowing each school to develop its own implementation plan.
- Ample funding (averaging roughly \$94 per student per year during pilot program) allowing schools to provide higher quality fruits and vegetables, as well as "value-added products," such as presliced or individually packaged items, and condiments such as dip to be served with vegetables (Buzby et al., 2003).

The ERS study did not however collect data to allow an analysis of the causal impact of the pilot program on children's dietary intake.

The second study, conducted by the Centers for Disease Control and Prevention (CDC), used a pre-post design to explore impacts of a CDC-funded fresh fruit and vegetable program in Mississippi on child nutrition. As in FFVP, schools participating in the CDC program distributed fresh fruit and vegetables to all students in the school, regardless of income, at no cost during the school day. The study, conducted in 25 schools, was relatively small and had limited statistical power. It included surveys of 725 students about their attitudes, preferences, and consumption of fruits and vegetables and 24-hour recall interviews with 200 students.

The study found that the CDC program increased the variety of fruits and vegetables ever tried among the three grades sampled (5th, 8th, and 10th grade). Among 8th grade and 10th grade students only, overall consumption of fruit (but not vegetables) increased, along with positive attitudes and preferences for fruits. However, consumption of fruits and vegetables among 5th grade students remained unchanged, and their reported preferences and attitudes towards fruit and vegetables worsened (Coyle et al., 2009).

Study authors note that their findings are subject to several important limitations. Because of the one-group pretest-posttest study design, they cannot rule out the possibility that positive impacts on variety ever tried and on fruit consumption are attributable to factors other than program participation that changed over time. Additionally, despite the large number of outcomes and age groups considered, the estimates were not adjusted to account for multiple comparisons, increasing the likelihood that the statistically significant impacts identified were in fact due to chance.

The study authors further suggest that, because nutrition education activities and other complementary strategies were not required as part of the CDC program,¹¹ and because many Mississippi schools experienced start-up and implementation challenges, the intervention may have been relatively weak overall (CDC, 2006).

A third quasi-experimental study, using a cross-sectional post-intervention survey, compared fruit and vegetable consumption in two high schools in Texas: one school receiving FFVP and the other school not receiving FFVP (Davis et al., 2009). Data on frequency of fruit and vegetable consumption over the preceding seven days were collected at the end of the school year using seven questions from the Youth Risk Behavior Surveillance System. Significantly more students in the intervention school than students in the comparison school reported eating fruit at least one time per day (59 versus 41 percent, respectively). There were no group differences in vegetable intake. It should be noted, however, that this relatively small quasi-experimental study relied only on a post-intervention survey and did not include a baseline assessment of fruit and vegetable intake.

In addition, FNS prepared several reports describing FFVP operations based on participating schools' year-end reports and on informal conversations with program operators and State agency staff. These reports noted the ongoing popularity of FFVP with students, parents, school administrators, and foodservice staff in participating schools, as well as continued strong interest in FFVP participation, with States "overwhelmed" by applications from schools wishing to participate (USDA, 2007).

Previous studies of other school-based interventions attempting to increase fruit and vegetable consumption have found positive impacts of the programs examined. However, the evidence is largely limited to relatively small random assignment studies and controlled clinical trials, mostly focused on local or regional interventions with relatively small sample sizes. Knai et al. (2006) found positive effects on fruit and vegetable intake of 0.3 to 0.9 mean servings per day in 10 of the 15 studies included in their review. A recent systematic review of interventions to promote fruit and vegetable consumption among elementary school children also reported several effect sizes between 0.2 and 0.35 mean servings per day (Delgado-Noguera et al., 2011). A large Canadian study of over 1,200 students in 26 elementary schools found a greater effect (0.49 mean servings/day) of fruit and vegetable intake among the group receiving free fruit and vegetable snacks and enhanced nutrition education compared to the control group (He et al., 2009). The interventions reviewed in these studies were primarily school-based, extended over months or years, and included one or more of the following components: integration of nutrition education on fruits and vegetables into the school curriculum; computer-based programs for child learning and goal-setting related to fruit and vegetable consumption; school meal and other food service changes; free or subsidized fruits and vegetables offered at school; promotional campaigns such as posters and videos; teacher training; and parent involvement. Considering the limitations of previous studies, the present study was designed to rigorously evaluate FFVP.

¹¹ See Reynolds et al. (2000), Story et al. (2000) and Perry et al. (2004) for evidence of the importance of nutritional education efforts in conjunction with the distribution of fresh fruits and vegetables.

1.5 Organization of the Report

The balance of the report proceeds in seven chapters. The next chapter discusses the study methodology, including the design for both the impact and implementation components of the evaluation. Chapter 2 also provides information on the sampling strategy, data collection activities, and analytic methods.

Then, Chapters 3, 4, and 5 present findings from the implementation analysis: Chapter 3 discusses the FFVP school application process, Chapter 4 provides details of how FFVP is being implemented in participating schools, and Chapter 5 discusses student experiences.

Impacts of FFVP on students are presented in Chapter 6 and program impacts on the school environment are described in Chapter 7. Chapter 8 summarizes the findings, discusses their implications, and considers directions for future research.

Chapter 2: Design, Data, and Methods

FNS’s objectives for the evaluation—examining how FFVP has been implemented in participating schools and estimating its impact on students served—required a study design that could address two competing objectives. Our design used regression discontinuity methodology to estimate program impacts, supplemented by an additional sample to describe program implementation. This chapter first discusses the evaluation design and in the second section provides an overview of data collection activities in support of the design. In the final section of the chapter, we discuss the analytic methods used to address the research objectives.

2.1 Overview of Design

The design for the evaluation required separate samples for the two study components: the impact study and the implementation study. This section discusses the rationale for the different samples and how they were selected.

The main Congressional research questions are explicitly causal in nature. For various student- and school-level outcomes, we wish to compare outcomes under FFVP to what outcomes would have been without FFVP, holding all else equal. In practice, we can never observe outcomes with and without FFVP for the same child in the same time period. Instead, while we observe outcomes for children in FFVP schools, we need to estimate what outcomes would have been in the absence of the program for these students.

Random assignment, universally considered ideal for estimating causal impacts, was not possible in this evaluation due to the legislative requirement that FFVP funds be allocated in each State to the highest need schools. Recent developments in methods research suggest that when appropriate, regression discontinuity (RD) designs are the strongest possible alternatives when random assignment is not feasible.¹² Specifically, RD designs are not subject to the standard omitted variables critique of quasi-experimental strategies.

The RD approach used in this evaluation leverages the requirements States must use in determining which schools receive FFVP funding. Specifically, the FFVP legislation and FNS guidance require that available FFVP funds be allocated in each State to the highest need schools, where poverty is defined by the percent of students eligible for free and reduced-price school lunch (FRPSL) in the previous school year. Our RD design estimates impacts by comparing students in schools immediately above and below the funding cutoffs in each of the sampled States. The last few schools to get FFVP and the first few schools not to get FFVP differ only very slightly in percent of students eligible for FRPSL. Within this narrow FRPSL window, it is implausible that the trivial differences in FRPSL eligibility percentages between the groups could explain any differences in dietary outcomes. Therefore, when appropriate statistical tests allow us to conclude that a difference in outcomes between schools with and without FFVP is not due to chance, such a difference can reasonably be attributed to FFVP.¹³

¹² See for example, Cook, 2008; Dinardo and Lee, 2010.

¹³ In a valid RD application, correlates of the outcome—observed and unobserved—should be balanced between units near the cutoff that do and do not get the intervention. With respect to observed correlates,

The nature of the RD design is such that the schools (and students) included in the RD sample are not nationally representative. By contrast, the implementation study is intended to provide detailed information on how FFVP is implemented in all participating schools across the country, which requires a national probability sample of participating schools. For the implementation study, the sample of participating schools used in the impact study was therefore supplemented with a randomly selected sample of participating schools that were not included in the impact study.

Impact Sample

In selecting the sample for the RD design, we used a four-stage sampling strategy, selecting States, schools, classrooms, and students.¹⁴ The design comprised:

- **Stage 1: Selection of States.** In the first stage of sampling, we randomly selected 16 States from the 48 contiguous States and Washington, DC, using probability proportional to size (PPS) sampling within strata defined by Census region and percent of children who are non-Hispanic white.¹⁵ All seven FNS regions were represented in the sample.
- **Stage 2: Selection of Schools.** In the second stage, we drew a total of 256 schools. These schools were not selected randomly. Instead, we chose applicant schools closest to each State-specific FFVP funding cutoff: 128 schools participating in FFVP directly above State-specific funding cutoffs and 128 nonparticipating schools directly below State-specific FFVP funding cutoffs. We sampled more schools in larger States and fewer schools in smaller States.
- **Stage 3: Selection of Classrooms.** In the third stage, we randomly selected three classrooms in each school from grade levels eligible for the evaluation (grades 4, 5, and 6).¹⁶
- **Stage 4: Selection of Students.** In the final stage, we randomly selected 10 students from each of these classrooms, and attempted to complete interviews with at least 8 of these students (allowing for student absences, lack of parental consent, and school scheduling issues).

this assumption is testable (and we test it below). Section 8.2 (Limitations) discusses other threats to RD validity (non-adherence to the assignment rule based on a score and a cut-off value; the local nature of the argument for the consistency of RD) and other limitations of the approach (the local nature of the RD estimates). That section also discusses the steps we have taken in our design and the tests that we have done to address these issues.

¹⁴ Appendix A provides more detail on the strategy and specific implementation issues at each stage, including response rates. Appendix Exhibit A.1 provides a graphical depiction of the sampling plan and unit counts at each level.

¹⁵ In order to ensure adequate representation of geographical and racial/ethnic subgroups in the treatment and comparison samples, we selected States within strata defined by Census region and percent of children who are non-Hispanic white. (Note that students of all races/ethnicities were included in the analysis). See Appendix A for further details.

¹⁶ While all elementary students in participating schools receive FFVP, this study focused on older elementary ages as some aspects of data collection (e.g. self-reports of intake and related attitudes and behaviors) were not suited to younger children.

To select the sample of schools at Stage 2, we rank-ordered all eligible applicant schools from highest to lowest along the main selection criterion dimension (i.e., percent of students eligible for free and reduced-price lunches). The RD sample includes schools as close as possible to the State funding cutoff. Schools just above the funding cutoff that participated in FFVP during the 2010–2011 school year served as the treatment schools. Schools just below the cutoff, which while eligible for the program did not participate due to funding limitations, served as the comparison schools.

This four-stage sampling plan yielded an initial target sample size of 24 students per school, and a total of 6,144 students (3,072 participating and 3,072 nonparticipating) from the 256 schools.

Due to issues that arose during data collection and cleaning (described in Appendix A), we completed 5,890 student interviews in 252 schools (an average of approximately 23 per school, slightly below the target sample size of 24). From this full sample, our analytic sample excludes 330 students for whom data on gender, grade level, race/ethnicity, or FRPSL eligibility were not reported by either students or parents. The full analytic sample size was therefore 5,560 students in 252 schools. For some analyses, we used a preferred analytic sample that includes only the 214 schools within two and a half percentage points of each State's funding cutoff. That sample included 4,696 students.

Implementation Sample

As noted above, the RD sample is not a random sample of all FFVP schools. In order to obtain nationally representative estimates for the implementation study, we drew a supplemental school sample using a two-stage design, selecting States and then schools within States. The first-stage sample consisted of the 16 States selected for the impact sample.

At the second stage, within each of the 16 States we created two strata of schools participating in FFVP:

1. Schools selected for the impact sample that are above the State-specific cutoff.¹⁷
2. All remaining schools in the State that participated in FFVP.

Schools in the first stratum (stratum 1) were selected with certainty for the implementation sample. Across the 16 States the first stratum included 128 participating schools. Schools in this stratum participated in both the impact and the implementation components of the evaluation.

For the second stratum (stratum 2), we selected an initial random sample of 565 participating schools. The first step involved assembling a sampling frame of stratum 2 FFVP schools for each of the 16 States. A key goal of the sample design was to have a self-weighting national sample of stratum 2 FFVP schools. The second step therefore took into account the selection probability of each of the States and the number of stratum 2 FFVP schools in the State to determine the number of sample schools to allocate to each State. In the third step SAS PROC SURVEYSELECT was used to draw a simple random sample (without replacement) of schools from each State. Details of the sample design are presented in Appendix A.

¹⁷ The schools in the impact study sample below the cutoff did not implement FFVP and therefore do not contribute to the implementation study.

The full implementation sample thus consists of 128 schools from the first stratum and 565 schools from the second stratum, or 693 FFVP-participating schools across the 16 States. During the data collection period, some schools in stratum 1 that were not initially selected to operate FFVP received funding, thus increasing the number of treatment schools in the impact sample. In addition, a smaller number of sampled treatment schools chose not to operate the program. The final implementation sample thus includes 698 FFVP schools.

As described in more detail below, school implementation data were collected from three web surveys (to minimize respondent burden). Response rates exceeded 80 percent for each of the web surveys, resulting in 554 to 599 school-level responses. With appropriate sample weighting this sample yielded nationally representative estimates for the implementation analyses, as required.

2.2 Data Collection Activities

The goals of this study require assembling information from a wide variety of information sources, including States, school principals, School Food Authority (SFA) directors, school food service managers, teachers, parents, and students.

In this section, we provide a brief overview of our general approach to collecting information from each of these groups and our objectives for each. We proceed in this description sequentially through the four sampling stages as described in the previous section: States, schools, classrooms, and students. The student data collections are of primary importance for the impact analysis and the other data sources provide information for the implementation analysis.

Data for the study were collected during the school year (SY) 2010–2011. Exhibit 2.1 presents information for each group of respondents and each data collection instrument on the number of respondents sampled, the number completing the survey, and the resulting response rates. Survey instruments can be found in Appendix F.

Exhibit 2.1: Data Collection Activities: Sample Sizes and Response Rates

Data collection instrument	Sample	Sample size	Number completed	Response rate (%)
State CN Director web survey				
Round 1	Universe	54	50	93
Round 2	Universe	54	48	89
SFA director web survey				
District-level data	Impact & Implementation	340	298	88
School-level data	Impact & Implementation	811	695	86
Principal web survey	Impact & Implementation	811	666	82
School food service manager survey	Impact (FFVP schools only)	133	129	97
Teacher survey	Impact (FFVP schools only)	380	329	87
Parent survey	Impact only	7,518*	5,949	79
Student survey and 24 hour dietary recall	Impact only	7,518*	6,004	80

*Includes some ineligible students—primarily sampled students that we did not attempt to interview as we had already completed 24 interviews in the school. Parents were included in the sample only if their child was sampled and parent surveys were only used if the student completed the interview.

States—Child Nutrition Agencies

State Child Nutrition (CN) agencies in the 16 randomly selected study States provided data on schools that applied and were selected to participate in FFVP. These data were used for sampling and when combined with information from the Common Core of Data (CCD)¹⁸ provided additional detail on the characteristics of FFVP applicant and participating schools.

All State Child Nutrition Directors were asked to respond to two rounds of web surveys to collect data on FFVP implementation. Topics included: selection of FFVP schools, State guidance and oversight, State-level partnerships established in support of FFVP, and FFVP costs. Most survey questions were developed and pretested specifically for this study. Where possible, we used validated questions from other surveys.

Currently, 54 CN agencies operate FFVP, including those in the 50 States, DC, Puerto Rico, Guam, and the Virgin Islands. Response rates for the two rounds of surveys were 89 percent and 93 percent.

¹⁸ CCD school characteristics data used in the analysis were for SY 2009–2010. We used this year because States selected FFVP schools for SY 2010–2011 during the spring/summer 2010. Selection was based on the percentage of students in schools eligible for free and reduced-price lunches as of fall 2009.

Schools—SFA Directors, Principals, School Food Service Managers

SFA directors of the districts in which sampled schools were located provided most of the information about FFVP implementation in the schools. For each sampled school, this included data on methods of distribution, frequency with which FFVP was offered to students, and specific fruits and vegetables offered. SFA directors also reported on the availability of competitive foods offered in SFA-operated venues in the schools. Finally, these respondents provided information on SFA-level partnerships established to support FFVP and their attitudes about FFVP. Sampled FFVP schools were located in 302 different districts and an additional 38 districts contained non-FFVP schools included in the impact sample. SFA directors from all 340 districts were asked to complete the web survey. Response rates exceeded 85 percent.

Principals in the sampled schools were asked to complete a web survey that collected data on nutrition education activities occurring in the school, competitive foods available to students at the school, partnerships established at the school level in support of FFVP, and attitudes about the program. Principals from all 811 schools sampled to participate in the evaluation—impact or implementation component—were included in the survey effort. The response rate for the survey was 82 percent.

School food service managers in the FFVP schools included in the impact sample completed a brief survey focused on their perceptions of and attitudes towards FFVP. School food service managers in 133 FFVP schools in the impact sample were asked to complete this self-administered survey as part of the in-school data collection activities.¹⁹ The response rate for the survey was 97 percent.

Most questions asked of SFA directors, school principals, and school food service managers were developed and pretested specifically for this study. Where possible, we used validated questions from other surveys.

Classrooms—Teachers

Teachers in sampled classrooms of FFVP schools (average 3 classrooms per school) in the impact sample completed a short self-administered survey focused on their perceptions and attitudes about FFVP. Most survey questions were developed and pretested specifically for this study. Where possible, we used validated questions from other surveys. In total, 380 teachers in the sampled classrooms received the survey and 87 percent of them completed the survey.

Students

The key outcomes for the impact study are student dietary outcomes. Within each sampled classroom, we randomly sampled 10 students (whose parents had given consent) to participate in the study. In total, we sampled 7,518 students; 80 percent of them completed data collection activities.

We collected information from students in the impact sample on student food intake using diary-assisted 24-hour recall interviews. The selection of this method was based on findings of studies showing superior validity of children's dietary intake data using child-kept food diaries for three days,

¹⁹ This includes the 128 FFVP schools originally selected for the impact sample and an additional 5 schools that were sampled as comparison schools for the impact sample but began operating the FFVP prior to the start of data collection activities, and thus became treatment schools.

followed by a review with each child by a nutrition researcher to verify entries and portions and probe for forgotten items (Crawford et al., 1994). This method combines features of the diary and recall methods, and has been used successfully in several studies with elementary school aged children (Lytle et al., 1998; Lytle et al., 1993; Weber et al., 2004). In the FFVP impact study we utilized this method, augmenting the 24-hour recall interview with a one-day food diary completed by students in advance of the interview in order to improve recall accuracy. Students sampled for the study were instructed as a group by dietary researchers on how to keep the one-day food diary, which asked for details of meals and snacks, location, food description, and amounts consumed using household measures. A standardized 24-hour recall interview was then conducted with each child at school 1–2 days later, using the diary as the basis for the modified multiple pass 24-hour recall, aided by food models to verify portion sizes.²⁰ A second diary assisted recall was obtained from 10 percent of sampled students, collected approximately one week later. Interviews were conducted by trained and certified dietary interviewers on whom quality control checks were made by the research supervisor throughout the study.

In FFVP schools, the diary was completed on a day on which FFVP fruits and/or vegetables were offered to students, allowing us to estimate the impact of FFVP on intake on FFVP days. On the day before the recall interviews were conducted, interviewers collected data on the types and portions of FFVP snacks offered and details of the types and amounts of foods served at school breakfast and school lunch, to assist with the subsequent day recall interviews and in coding school foods.

Students also completed a brief self-administered survey that included a set of food frequency questions and questions about their attitudes and preferences for fruits and vegetables. In FFVP schools, students also responded to questions about FFVP.

The parents of students in the impact sample were asked to complete a self-administered survey about their child's eating habits and demographic characteristics. Parents of students participating in FFVP also answered questions about their perceptions and attitudes toward FFVP. Most survey questions were developed and pretested specifically for this study. Where possible, we used validated questions from other surveys. We obtained parent surveys for 79 percent of the students sampled.

2.3 Analytic Approach

The research questions this evaluation addresses require estimating program *impacts* on participating students and schools and analyzing the *implementation* of FFVP. This section briefly describes our approach to these two different types of analyses.

Impact Analysis

For measuring the impacts of FFVP on student and school outcomes, we used econometric models appropriate for our regression discontinuity design.²¹ As long as our schools are close enough to the cutoff and outcomes are not too sensitive to FRPSL, a simple comparison of mean outcomes for

²⁰ The multiple pass recall is a structured interview in which dietary intake is reviewed more than once in an effort to retrieve forgotten eating occasions and foods. Standardized prompts, proceeding from general to more specific, are used to elicit responses.

²¹ See Appendix A for technical details of our approach.

students in participating schools just above the FRPSL cutoff (“treatment schools”) and nonparticipating schools just below the FRPSL cutoff (“comparison schools”) would yield consistent estimates of the impact of FFVP. However, estimating impacts using a linear multivariate regression approach allowed us to account for the following technical issues:

- ***Variations in Outcomes Associated with Student Characteristics:*** Including student characteristics as regressors in the models improves the precision of impact estimates by controlling for some portion of the variation in observed outcomes. We therefore incorporated covariates for student gender, grade level, race/ethnicity, and FRPSL eligibility, as well as indicator variables for each State. Estimated coefficients were then combined with observed covariate means to compute regression-adjusted means.
- ***School Effects:*** Students are clustered within schools, and it seems likely that there are unobservable school-level differences. To adjust for this, we report robust standard errors that account for school-level clustering (Moulton, 1986, 1990).
- ***Varying Distance of Schools from the Cutoff:*** Inclusion of schools that are far from the FRPSL cutoff may threaten the validity of the RD approach and therefore of the impact estimates. To address this concern, our preferred specification excludes schools that are more than two and a half percentage points from the cutoff. Students in the included schools comprise 84 percent of students in the full analytic sample.²² An alternative approach which we also explore is to include FRPSL as a regressor.

Our sampling design yields a roughly self-weighting sample of students. We expect that impacts are approximately homogeneous within the narrow band of FRPSL eligibility status represented in our sample, so that introduction of sampling weights would not materially influence results. We therefore present unweighted results for the RD analysis.

Prospective power calculations indicated that our sample size would be sufficient to detect impacts on total fruit and vegetable intake of 0.18 to 0.26 cup-equivalents, and impacts on total energy intake of 104 to 150 calories, depending on varying assumptions about assumed intraclass correlation coefficients. In practice, retrospective power calculations based on standard errors of our regression-based impact estimates indicate sufficient precision to detect an impact of approximately 0.22 cup-equivalents for total fruits and vegetables, and 98 calories for total energy.

The research questions requested analyses of impacts on a very large number of outcomes. When we estimate impacts for a large number of outcomes, just due to chance some of them will appear to be significant, even if none of them are. Our approach to this “problem of multiple comparisons” was to specify two confirmatory outcomes—fruit and vegetable consumption and total energy intake—prior to analyzing the data, stating that they would be treated as separate domains, such that no further multiple comparison adjustment would be needed. All other outcomes are considered exploratory.

Our strategy for reporting statistical significance in the exhibits and in the text discussion is:

²² Study results for the full sample of schools and for alternative multivariate regression specifications (some of which include a regressor for school FRPSL percentage) are presented in Appendix C.

- In the exhibits, we use asterisks to indicate statistical significance: * $p < .10$; ** $p < .05$; and *** $p < .01$.
- In the text discussion we consider p-values lower than 0.05 as statistically significant and discuss those results. We consider p-values of 0.05 or higher as indicating a lack of relationship and thus we do not discuss these results in the text.

Our reason for this strategy is as follows. In conventional tests of a single impact, a result with a p-value between 0.05 and 0.10 is considered to be borderline significant (sometimes the phrase “some evidence for an impact” is used). When testing many outcomes and not correcting formally for multiple comparisons, as is true in this evaluation, some impacts will spuriously appear to be statistically significant merely due to chance (Schochet, 2009). Not discussing results with p-values between 0.05 and 0.10 seems to be a reasonable accommodation for the large number of outcomes considered. If anything, this adjustment is too liberal and we should set the critical value even lower (e.g., not 0.05, but 0.01).

Measuring dietary intake and calculating outcome variables involves specialized processing, discussed below.

Processing 24-Hour Dietary Recalls. Completed recalls were coded using a system developed specifically for this study, using the USDA Food and Nutrient Database for Dietary Studies (FNDDS) version 3.0. We developed coding manuals with codes for all foods, including school foods, in order to standardize coding and data entry. Trained staff coded the data as soon as possible after completion of each interview; a 10 percent subsample of recalls was double-entered as a consistency check. Extreme and/or questionable values for selected outcome variables such as fruit and vegetable cup-equivalents, food energy, and selected nutrients were identified and corrected, if necessary. Values that were verified were retained.

Finally, nutrient values from the FNDDS version 3.0 and food group equivalents from the MyPyramid Equivalents Database (MPED) version 2.0 were used to calculate student-level intake amounts of food groups from individual reported foods.²³ MPED equivalents of fresh forms of fruits and vegetables were calculated by identifying all fresh raw fruits and vegetables, or those cooked from fresh, such as components in mixed dishes. Cup-equivalents were then derived for each fresh fruit and vegetable from MPED data base values. HEI scores were calculated using scoring criteria and algorithms developed and used in the Healthy Eating Index 2005 (Kennedy et al., 1995). Intake of discretionary foods was calculated by grouping foods according to procedures used in the SNDA-III data analysis (Gordon et al., 2007).

Calculating Usual Intake. All sampled students completed one 24-hour diary-assisted recall interview. A 10 percent subsample completed a second interview in order to estimate usual intake distributions. We used the coded first- and second-day 24-hour recall data to estimate the usual intake distributions employing methodology developed by the National Cancer Institute (NCI) in collaboration with staff at the USDA Center for Nutrition Policy and Promotion. The NCI method

²³ Where necessary, new FNDDS 3.0 foods were matched by our team of expert nutritionists to similar existing foods in the MPED 2.0 database to derive approximate food group equivalent amounts for these foods. In June 2011 (after data collection for this study was completed), USDA replaced MyPyramid with MyPlate.

models usual intake as the product of the probability of consumption of a food or nutrient on a given day and the average amount consumed per consumption day.²⁴

Implementation Analysis

The research questions addressed by the implementation analysis are descriptive, and can be addressed using weighted tabulations and cross-tabulations. The analysis presents an overall picture of implementation of FFVP in elementary schools across the country, addressing all aspects of program operations, from school application to distribution of fresh fruits and vegetables to students.

Sampling weights are needed for the implementation analysis in order to provide national estimates. Base sampling weights were calculated for the 698 FFVP schools in the implementation sample. The base sampling weight equals the inverse of the selection probability of the school. For stratum 1 the base sampling weight equals the inverse of the selection probability of the State, because schools in stratum 1 were selected with certainty within State. For stratum 2 the base sampling weight equals the inverse of the product of the probability of selection of the State and the probability of selection of the school within the State.

Weights were adjusted for survey nonresponse using standard sample weighting procedures. Respondent and nonrespondent schools were categorized by the State and five CCD variables to ensure representativeness on those measures that were available. Categories were formed using:

- State (16 categories).
- Degree of urbanicity (5 categories).
- Percent black non-Hispanic school enrollment (4 categories).
- Percent Hispanic school enrollment (4 categories).
- Percent free and reduced-price lunch eligible students (4 categories).
- Total student enrollment in the school (4 categories).

For each category of these six variables the sum of the base sampling weights of the respondent and nonrespondent schools was calculated to form an estimated total. An iterative procedure known as raking was then used to adjust the base sampling weights of the respondent schools so that within each category of the six variables, the nonresponse-adjusted base sampling weights summed to the estimated total.

The nonresponse-adjusted base sampling weights allow for inferences to be drawn from the sample to all FFVP schools in the U.S. There is also interest in making student school-based inferences. The nonresponse-adjusted base sampling weights of the respondent schools were multiplied by the student enrollment of the school to form the enrollment school-based weight. This weight allows for inferences to be drawn about students attending FFVP schools in the U.S.

Details of the weighting methodology are given in Appendix B.

²⁴ See Appendix E for a detailed discussion of usual intake estimation.

Chapter 3: FFVP School Application Process

Federal funding for FFVP is distributed to States annually with funding levels based on their population. States administer the program and are required to solicit applications annually from schools and districts interested in participating in the program. This chapter examines the application and school selection process used by States to identify schools to participate in FFVP each year.

In the first section, we describe the requirements for application and selection according to the law and USDA requirements. The following two sections then discuss the application process as implemented by States and the characteristics of schools approved for FFVP across all States. In the fourth section, we describe characteristics of schools that participated in FFVP in our study States, comparing them to other applicant schools that were not selected for FFVP and other elementary schools in the State. The chapter concludes with a discussion of key findings.

The discussion in this chapter draws on three sources. First, we reviewed official program materials (the statute and USDA materials and memoranda; Section 3.1). Second, we conducted a survey of all State Child Nutrition Directors (Sections 3.2 and 3.3). Third, we analyzed the school-level data that we collected as part of implementing the Regression Discontinuity approach to estimating the impact of FFVP (Section 3.4).

3.1 Federal Requirements for Soliciting Applications and Selecting Schools

The 2008 Farm Bill, which expanded FFVP to operate nationwide, included requirements for how States should solicit applications and select schools to participate in the program. FNS developed the *Fresh Fruit and Vegetable Program Handbook for Schools (FFVP Handbook)*, which provided specific directions for States, districts, and schools.²⁵ Additionally FNS provided memoranda, templates and other examples to assist States in developing outreach, application, and school selection processes.

The FFVP statute and FNS materials required States to engage in outreach activities to inform schools about FFVP and encourage them to apply for FFVP funding. Specifically, States are required to reach out to the low-income elementary schools, including Native American schools, with the highest percentage of students eligible for free and reduced-price meals. At a minimum, State agencies are directed to provide information on FFVP to all elementary schools with 50 percent or more students eligible for free and reduced-price meals. From this group, States should target schools that are likely to receive FFVP funding based on the percent of students eligible for free and reduced-price meals. As part of the outreach process, FNS also directed States to assist high-need schools in completing the application. This outreach should be conducted prior to selecting schools to participate in FFVP.

Schools (generally through their SFA) are required to submit an application for program funding. Applications must include the total number of enrolled students and the percent of students eligible for free and reduced-price meals. Certifications of support for participation in FFVP signed by the school food manager, the school principal, and the district superintendent or equivalent must also be

²⁵ FNS issued a proposed rule on February 24, 2012 with regulations for FFVP operations. The proposed regulations reflect FNS guidance issued in the *FFVP Handbook*. As of the time this report was prepared, the regulations had not been promulgated.

included with the application. The application must also include a program implementation plan that includes a discussion of how FFVP will be integrated with other health and nutrition efforts, obesity prevention goals, or the promotion of physical activity. Each school is also encouraged to include a description of any partnerships they have developed or are exploring with outside organizations to provide resources in support of FFVP. This application process is required each year.

To be selected to participate in FFVP, a school must meet the State's definition of an elementary school and operate the NSLP.²⁶ Public, private, and parochial schools are eligible. At least 50 percent of the students in the school must be eligible to receive free and reduced-price meals.²⁷ States are directed to select schools to participate in FFVP based on the percent of students eligible for free and reduced-price meals with highest priority given to schools with the greatest percentage of low-income students. States cannot waive this primary selection criterion in order to provide geographic dispersion of FFVP or to give all schools in the State an equal chance to participate in the program. States may, however, select a school with a lower percentage of students eligible for free and reduced-price meals over a school with a higher percentage if there are concerns about the school's ability to successfully implement and operate FFVP.

3.2 FFVP Application Process

The first step in the FFVP implementation process is to solicit applications for the program and then select schools to receive funding. Through an evaluation-fielded web survey, State CN agencies provided information on how they conducted the FFVP application process for SY 2010–2011. Almost all (50 of 54) implementing State agencies responded to the survey. This section discusses the process.

The survey asked States to describe how they solicited applications, who they targeted to apply for FFVP, and how schools submitted applications. Exhibit 3.1 presents State responses. Most States—at least three-quarters—used electronic methods, at least in part, to solicit applications. Specific electronic methods included emails, on-line applications, and announcements. When websites were used for announcements or applications, States generally used Child Nutrition agency websites, though some posted information on education agency or other websites. Non-electronic methods for soliciting applications, such as mailings or in-person meetings, were less common; 36 percent or less States engaged in these types of activities.

While individual schools are awarded FFVP funding, the program is operated as part of the school meals program and thus SFAs were the most common target audience when States solicited

²⁶ The requirements discussed in this section applied to the selection process in SY 2010–2011, the year data were collected for this evaluation. The 2008 Farm Bill was passed in May 2008, and schools that had already been selected to participate in FFVP during the SY 2008–2009 school year were permitted to participate that year regardless of the new selection criteria. For SY 2009–2010, however, all schools were required to meet the selection criteria, with the exception that secondary schools already participating in FFVP were permitted to participate. After SY 2009–2010, secondary schools were no longer permitted to participate.

²⁷ There is one exception to this rule. If all eligible schools with 50 percent or more students eligible for free and reduced-price meals have been selected, and funding remains, the law also permits the selection of eligible schools with less than 50 percent of students eligible for free and reduced-price meals.

applications. Roughly equal number of States chose to solicit applications from all SFAs, from SFAs meeting minimum FFVP eligibility requirements, or from particular SFAs targeted for recruitment to participate in FFVP (usually the schools with the very highest fraction of students eligible for free and reduced-price lunches). Fewer States viewed principals or other interested parties as their target audience (see Exhibit 3.1).

Most States (84 percent) allowed schools to apply for FFVP using paper applications. Thirty percent of States allowed schools to submit electronic applications that were either emailed or uploaded, and 10 percent of States utilized online applications. In most of the States (85 percent) where an eligible school submitted an application that could not be approved as submitted, the school or SFA was notified of the problem and allowed to resubmit the application.

Exhibit 3.1: Methods of Soliciting and Collecting FFVP Applications in SY 2010–2011

Methods	States reporting	
	Number	Percent
How States solicited applications		
Email or electronic newsletter announcement	37	74.0
Application form and instructions or online application available on website	27	54.0
Announcement or invitation to apply on website	24	48.0
Announcement or letter of invitation by mail	18	36.0
Meeting where SFAs or others could learn about FFVP and get application materials	12	24.0
Application materials by mail	10	20.0
Visits by State personnel to SFAs or other locations	6	12.0
Other (phone calls, press releases, and newsletters)	7	14.0
Who States targeted (by email, mail, meetings, or visits)		
All SFAs	26	52.0
SFAs meeting minimum FFVP eligibility requirements	23	46.0
SFAs targeted for recruitment to participate in FFVP	23	46.0
Principals	16	32.0
Other interested parties	9	18.0
How schools submitted applications		
Paper application	42	84.0
Electronic application submitted via email/upload	15	30.0
Online application	5	10.0

Source: State survey. 50 (of 54) State agencies completed the web survey.

Following federal guidance, most States (68 percent) ranked eligible applicant schools by the percentage of students eligible for free and reduced-priced meals and starting at the top of the list, selected schools in this order until the expected allocation equaled the available funds (see Exhibit 3.2). Two States (4 percent) used a slight variation on this process—after ranking schools according to the percent of students eligible for free and reduced-price meals, they contacted schools in order

starting with the highest percentage, asking them to submit an application. Schools that responded by the due date received funding. An additional 16 percent of States approved all eligible schools that applied, adapting the FFVP funds per student to match the total funds available. The remaining 12 percent ranked schools by an application score that included the percentage of students eligible for free and reduced-price lunches as well as other factors, and selected schools in that order until the expected allocation equaled the available funds.

Exhibit 3.2: Approach to Selecting Schools to Participate in FFVP in SY 2010–2011

Approach	States reporting	
	Number	Percent
Primary approach		
Eligible applicant schools ranked by percentage of students eligible for free and reduced-price meals and selected in this order	34	68.0
All applicant schools eligible under federal rules were approved	8	16.0
Eligible applicant schools ranked by an application score and selected in this order	6	12.0
Other	2	4.0
Other criteria		
Satisfactory performance if FFVP school in prior year	23	46.0
Grades served by school	13	26.0
FFVP school in SY 2009–2010	12	24.0
Satisfactory Coordinated Review Effort/School Meals Initiative (CRE/SMI) review	11	22.0
Presence or number of partners	10	20.0
Number of days per week/month for FFVP to be offered	9	18.0
Number of schools applying from same SFA	6	12.0
Quantity of nutrition education for FFVP	6	12.0
Participates in Team Nutrition	4	8.0
Geographic region	4	8.0
Has implemented a satisfactory school wellness policy	3	6.0
Cash or in-kind contributions by SFA or partners	1	2.0
Other	7	14.0

Source: State survey. 50 (of 54) State agencies completed the web survey.

States reported that they used other criteria as well to select schools to receive funding. Many States excluded schools if there was concern about their ability to operate FFVP—46 percent of States required satisfactory performance in operating FFVP if the school had received funding in a prior year and 22 percent required that schools have a satisfactory coordinated review effort or school meals initiative review. Some States (24 percent) gave priority to schools that participated in FFVP during SY 2009–2010. Approximately one-quarter considered the grade range of the school during the selection process and 20 percent considered the presence and number of partnerships. Some States considered how often FFVP would be offered (18 percent) and how much nutrition education would

accompany FFVP (12 percent). A handful of States (12 percent) also took into account how many schools were applying for FFVP from the same SFA.

3.3 Schools Approved for FFVP

During our study year, SY 2010–2011, 4,950 schools participated in FFVP nationwide, serving an estimated 1.9 million students.²⁸ Total FFVP funding for the year was \$110,300,000. States are allocated FFVP funding based on their population, so larger States received more funding than smaller States.²⁹ Legislation requires FFVP allocations to range between \$50 and \$75 per student, giving States substantial discretion about how many schools to fund each year. In 2010–2011, the minimum number of schools funded in a State was 41 and the maximum number was 209. The majority of States funded between 50 and 100 schools.

FFVP funding increased by 43 percent between SY 2010–2011 and SY 2011–2012, to \$158,000,000. This allowed States to fund a total of 6,647 schools and an estimated 2.7 million students. Within States, the number of schools funded and the number of students participating in the program increased. States funded between 64 and 315 schools, with the majority of States funding over 100 schools (Exhibit 3.3).

²⁸ Seven of the 54 States participating in the FFVP did not provide data on number of participating FFVP schools and students in SY 2010–2011 and we imputed values for these States, based on the size of the State, the median number of schools per state, and the average number of students per school. Ten States did not provide complete data for SY 2011–2012. We used information from FNS on the total number of FFVP schools and imputed values for the number of students served, based on the number of schools in the State (imputed when necessary as in 2010–2011, while also accounting for the percent increase in FFVP funding), and the average number of students per school, in the same way as for 2010–2011.

²⁹ A State's FFVP grant is determined through an allocation formula. After setting aside a portion for FNS administrative costs, FNS awards each State an amount equal to one percent of the funding and allocates the remaining funds on the basis of population. Territories do not participate in the initial one-percent allocation.

Exhibit 3.3: Distribution of Number of Schools and Students Selected to Participate in FFVP in States

Number selected in State	SY 2010–2011		SY 2011–2012	
	Number of States	Percent of States	Number of States	Percent of States
Number of schools selected for FFVP				
41–50	3	6.25	0	0.00
51–100	28	58.33	9	19.15
101–150	14	29.17	23	48.94
151–315	3	6.25	15	31.91
Total	48	100.00	47	100.00
Mean	94.29		138.57	
(Std. deviation)	(35.43)		(54.72)	
Total number of students enrolled in FFVP schools				
13,377–25,000	14	29.79	5	10.87
25,001–50,000	27	57.45	23	50.00
50,001–100,000	4	8.51	15	32.61
100,001–125,000	2	4.26	1	2.17
125,001–179,612	0	0.00	2	4.35
Total	47	100.00	46	100.00
Mean	37,553.77		53,060.87	
(Std. deviation)	(22,560.28)		(32,387.78)	

Source: State survey. Excludes States that did not respond to the question and excludes imputed values.

As discussed in the previous section, schools must submit applications to receive FFVP funding. Most States received more applications than they could fund in SY 2010–2011 (see Exhibit 3.4). Across all States, an average of 74 percent of the applicant schools were selected to participate in FFVP. Twenty-seven percent of States were able to fund all schools that applied. On the other hand, 22 percent of States received so many applications that they could only fund 50 percent or less of applicant schools. About half of the States funded between 50 percent and 99 percent of the schools that applied.

Exhibit 3.4: Percent of Applicant Schools in States Selected to Receive FFVP

Percent of applicant schools selected	SY2010–2011		SY 2011–2012	
	Number of States	Percent of States	Number of States	Percent of States
29.83–50.00	10	22.22	1	2.22
50.01–75.00	11	24.44	14	31.11
75.01–99.99	12	26.67	15	33.33
100	12	26.67	15	33.33
Total	45	100.00	45	100.00
Mean	74.32		83.69	
(Std. deviation)	(22.46)		(17.02)	

Source: State survey. Excludes States that did not respond to the question.

The increased funding in SY 2011–2012 allowed States to expand FFVP to more schools—funding an average of 84 percent of the applicant schools. The number of applications increased, but some States (33 percent) were still able to fund all schools that applied. Only one State could fund less than half of the schools that applied, and most States funded between 50 percent and 99 percent of the schools that applied.

States are directed to provide FFVP funding to the highest need applicant schools, as defined by the percent of students eligible for free and reduced-price school lunches. Exhibit 3.5 shows that across all States, 67 percent of funded schools had more than 75 percent of their students eligible for free and reduced-price lunches in SY 2010–2011. Only 13 percent of funded schools had less than 60 percent of their students eligible for free and reduced-price lunches. Across States there was a wide range in the percent of schools in each of the free and reduced-price categories. State reports for SY 2011–2012 were largely similar.

Exhibit 3.5: Distribution of Schools by Percent of Students Eligible for Free and Reduced-Price School Lunches

Percent of students in school eligible for FRPSL	SY 2010–2011		SY 2011–2012	
	Percent of schools		Percent of schools	
	Nationally	Range	Nationally	Range
Less than 60%	13.06	0–74.12	14.06	0–78.95
60–75%	19.47	0–59.55	19.37	0–66.67
Over 75%	67.48	1.18–100	66.58	6.19–100
Total	100%		100%	

Source: State survey. Excludes States that did not respond to the question. Appendix D, Exhibit D3.1 presents statistics for individual States.

3.4 Characteristics of FFVP Participating and Nonparticipating Schools

The FFVP legislation and FNS's guidance require States to give priority to the highest need applicant schools, as defined by the percent of students eligible for free and reduced-price lunches. In this section, we examine how schools that received funding differ from other schools, particularly other applicant schools that did not receive funding. We also compare FFVP schools to other high need elementary schools in the State and to all elementary schools. In addition to examining differences in the percent of students eligible for free and reduced-price school lunches, we examine differences in school location (urban/suburban/rural), racial/ethnic composition, enrollment, and grade range of schools.

This analysis is based on application data provided by the 16 States in our evaluation sample, supplemented with data on school characteristics. As part of the school sampling process, study States provided lists of schools that applied for FFVP funding for SY 2010–2011, along with indicators of whether the school was selected for FFVP and the percent of students in the school eligible for free and reduced-price school lunches. We merged these lists with school demographic data from the CCD, a program of the U.S. Department of Education's National Center for Education Statistics (NCES). We did not have sufficient information on nonparticipating applicant schools from two of our study States, and thus this analysis considers only 14 States.³⁰

For these 14 States, Exhibit 3.6 presents characteristics of all schools participating in FFVP, schools that applied to participate in FFVP but were not selected, all elementary schools in which at least 50 percent of students were eligible for free and reduced-price meals, and all elementary³¹ schools in these 14 States. State-level variables were created by averaging across schools within each State and then all States were averaged to present the characteristics shown in Exhibit 3.6. Paired t-tests were conducted on participant school averages and nonparticipant school averages in each State to determine any significant differences between participating and nonparticipating schools across the 14 States.

Our strategy for reporting statistical significance in the exhibits is to use asterisks to indicate statistical significance: $*p < .10$; $**p < .05$; and $***p < .01$. In the discussion we consider p-values lower than 0.05 as statistically significant and discuss those results. We consider p-values of 0.05 or higher as indicating a lack of relationship and thus we do not discuss these results in the text. We note that with large numbers of outcomes one would expect to find statistically significant differences across the treatment and comparison group for some outcomes due to chance alone.

³⁰ In addition, we were unable to find the NCES IDs for 24 applicant schools across the 14 States, so we were unable to link them to the CCD and they were excluded from the analyses on applicant schools.

³¹ In Exhibit 3.6, elementary schools are defined as having pre-kindergarten, kindergarten, or grades 1, 2, or 3 as the lowest grade or as having grades 4 or 5 as the lowest grade and having grades 4, 5, 6, or 7 as the highest grade. Definitions of elementary schools vary across States. We have used the broadest possible definition to define our comparison groups, with the understanding that in some States some of these schools are not deemed eligible to participate in FFVP.

Exhibit 3.6: Demographic Characteristics: FFVP Participating Schools, Nonparticipating Schools, Schools with at Least 50 Percent of Students Eligible for Free and Reduced-Price Meals, and all Elementary Schools in 14 Study States

	FFVP participating schools		FFVP non-participating applicant schools		Test for equality participating vs. non-participating applicant schools	All elementary schools with at least 50% students eligible for free and reduced-price meals ¹		All elementary schools	
	M	SD	M	SD	P-Value	M	SD	M	SD
Free and reduced-price meals¹									
Mean percent FRPSL	84.56	6.69	63.56	12.06	(<0.001)***	75.52	4.56	55.72	11.79
FRPSL > 75% (%)	78.35	19.94	24.07	29.85	(<0.001)***	50.24	12.64	30.70	14.17
FRPSL < 50% (%)	2.28	4.91	13.61	16.46	(0.019)**	0.00	0.00	40.50	17.90
Urban/suburban/rural									
Urban (%)	45.26	21.96	27.45	21.57	(0.012)**	34.09	12.85	25.59	7.75
Suburban ² (%)	36.92	14.22	40.03	15.17	(0.402)	39.67	8.37	43.98	8.64
Rural (%)	17.83	15.43	32.52	22.01	(0.008)***	26.24	15.86	30.43	11.70
Racial/ethnic composition									
Mean percent non-white ³	77.27	14.46	50.72	24.72	(<0.001)***	64.08	14.73	49.95	14.37
Non-white > 90% (%)	48.48	24.67	19.80	28.41	(<0.001)***	31.27	15.06	19.80	11.41
Non-white < 25% (%)	8.48	11.64	27.06	27.15	(0.002)***	16.18	16.58	30.47	19.75
Grade range									
Highest grade ≥ 6th (%)	31.79	16.69	26.89	14.50	(0.159)	36.53	15.49	36.06	12.11
Lowest grade ≤ K (%)	92.32	6.45	88.68	7.59	(0.006)***	91.36	4.47	90.44	4.79
Enrollment									
Mean enrollment	443.51	90.72	441.78	104.07	(0.916)	438.66	87.88	435.70	81.81
Very small schools ⁴ (%)	5.32	4.42	5.02	5.11	(0.831)	6.50	2.53	9.90	0.13
Very large schools ⁵ (%)	1.15	1.18	.62	1.16	(0.158)	0.92	0.42	1.05	0.04

Source: State administrative data and CCD data.

Asterisks indicate statistically significant differences between participating and nonparticipating schools: *p<0.10, **p<0.05, ***p<0.01.

¹ The percentage of students receiving free and reduced-price meals was not available for private schools, which are excluded from these analyses.

² Schools in areas categorized as a suburb or town are coded as suburban.

³ Non-white includes Hispanics as well as blacks and other non-white races.

⁴ Very small schools are defined as the bottom 10 percent of schools by enrollment by State. The cutoffs ranged from 60 to 317 students.

⁵ Very large schools are defined as the top 1 percent of schools by enrollment by State. The cutoffs ranged from 867 to 1,389 students.

Consistent with the FFVP school eligibility requirements, among schools that applied for funding, those that were selected were higher need (defined as having a higher percentage of students eligible for free and reduced-price school lunches) than schools not selected for the program. In addition, among all schools that applied for FFVP funding, schools participating in FFVP had a higher percentage of non-white students, and were more likely to be located in urban areas and less likely to be in rural areas than were schools that did not receive FFVP. All these observed differences are statistically significant. As Exhibit 3.6 shows, 85 percent of students in FFVP schools were eligible for free and reduced-price meals, on average, compared to 64 percent in nonparticipating applicant schools. On average, in FFVP schools, 77 percent of students were non-white, compared to 51 percent in applicant schools that were not funded. Similarly, a greater proportion of participating schools were predominantly minority compared to nonparticipating applicant schools, and a greater proportion of nonparticipating schools were predominantly white compared to participating schools. Almost half (45 percent) of FFVP schools were located in urban areas compared to 27 percent of nonparticipating applicant schools. FFVP schools were less likely to be found in rural areas than nonparticipating applicant schools—18 percent versus 33 percent.

FFVP schools and nonparticipating applicant schools were similarly sized, as defined by enrollment. The grade ranges were fairly similar, though FFVP schools were more likely to include kindergarten and preschool.

Comparing FFVP elementary schools to all elementary schools in the State and all elementary schools with at least 50 percent of students eligible for free and reduced-price meals, similar patterns emerge: FFVP schools are more likely to be higher need, primarily non-white, and located in urban areas. As would be expected, the observed disparities along these dimensions are greater when comparing FFVP schools to all elementary schools in the State than in comparing FFVP schools to elementary schools with at least 50 percent of students eligible for free and reduced-price meals.

3.5 Discussion

FFVP is targeted to students in the highest need schools in the country, and federal law and FNS requirements have established rules for how States should solicit applications and select schools to participate in the program. States have established procedures to make information readily available to districts. At least three-quarters of all States used electronic methods, at least in part, to solicit applications. Forty percent of States allowed electronic submission of applications; paper applications were allowed in over 80 percent of States.

Following federal guidance, most States (68 percent) ranked eligible applicant schools by the percentage of students eligible for free and reduced-priced meals and selected schools with the highest percentages. An additional 16 percent of States were able to approve all eligible schools that applied for funding. The other 12 percent ranked schools by an application score that included the percentage of students eligible for free and reduced-price lunches as well as other factors, and selected schools with the highest scores.

During SY 2010–2011, 4,950 schools participated in FFVP nationwide, serving an estimated 1.9 million students. Funding increased for SY 2011–2012, allowing 6,647 schools and 2.7 million students to participate in the program. On average, in SY 2010–2011, States funded 74 percent of schools that applied. While the number of applications increased in SY 2011–2012, with the increased funding levels, States were able to fund 84 percent of applicant schools.

Schools that received FFVP funding were higher need, had a higher percentage of non-white students, and were more likely to be located in urban areas and less likely to be in rural areas than were schools that applied for program funding but did not receive it. Comparing schools participating in FFVP to all elementary schools in the State and all elementary schools with at least 50 percent of students eligible for free and reduced-price meals, similar patterns emerge. Given that children from socioeconomically disadvantaged families tend to have the lowest intakes of fruits and vegetables (Lorson et al., 2009; Dubowitz et al., 2008), these findings suggest that, consistent with legislative intent, FFVP is reaching students in the highest need schools.

Chapter 4: Implementation of FFVP

Understanding how schools have implemented FFVP is one of the central objectives of this evaluation. While the authorizing legislation and FNS materials provide guidelines for program implementation, each school tailors the implementation within those guidelines to best fit with its students and local community. This chapter describes key aspects of FFVP implementation. The first section describes how the free fresh fruits and vegetables are distributed within schools—methods of distribution, number of times per week the program is operated, and frequency of distribution during the day. The second section describes nutrition education activities and promotion accompanying FFVP. The third section examines the partnerships that have been established, at the State, district, and school levels in support of FFVP. The final section analyzes attitudes towards the program as reported by district and school officials.³²

The discussion in this chapter is based on data collected from web surveys of SFA directors, school principals, and State CN agency directors. The sample of schools is nationally representative, drawn from the 16 States in the evaluation sample and including both the schools in the (nonrepresentative) impact sample and schools from a randomly selected supplemental sample (see Chapter 2 for details). SFA directors of the districts in which sampled schools were located provided most of the information on FFVP implementation, as they were responsible for overall administration of FFVP. School principals responded to questions concerning nutrition education provided to students. All types of respondents provided information on partnerships established to support FFVP and opinions about the program.

In the exhibits in this chapter, we report findings from two perspectives. First, we show the percentage of schools reporting a given practice, weighting the sample to count each school equally. Second, we report the percentage of students enrolled in schools engaged in a given activity. This analysis gives equal weight to each student and thus schools with higher enrollment contribute more to the findings. In general, the findings from these two perspectives are similar and thus we focus our discussion on the school as the unit of analysis.

4.1 Distribution of FFVP in Participating Schools

We begin this section with a review of the statutory requirements and FNS guidance with respect to how FFVP foods should be distributed by schools to students. Then, we provide evidence on how food was actually distributed: specific fruits and vegetables offered; methods of distribution; number of days per week and time of day FFVP operated.

Legal Requirements and FNS Guidance

As specified in the FFVP authorizing legislation, participating schools are required to make fresh fruits and vegetables available to students for free throughout the school day, but outside normal school meals, in one or more areas of the school, and to widely publicize within the school the

³² States were asked about the costs of implementing the FFVP, by component. Respondents had difficulty providing the level of detail requested, and we did not feel that we can make reliable estimates of the breakdown of FFVP costs by component. Analysis is reported in Appendix D, Exhibit D4.1 for interested readers.

availability of free fruits and vegetables under the program. All students who normally attend a participating school, including children who are enrolled in a Head Start program, a split-session kindergarten class, or a child care center located in the school, are eligible to participate (USDA, 2010).

Beyond these fundamental requirements, schools have considerable flexibility in implementing the program. As noted in the pilot evaluation (Buzby et al., 2003), this flexibility is viewed as a key factor in the success of FFVP. However, FNS has provided substantial guidance and technical assistance to schools about best practices in program implementation, which we describe in greater detail below.

Fresh fruits and vegetables procured by schools under FFVP must be graded and inspected in accordance with all relevant federal, State, and local guidelines. Purchases made under FFVP are subject to the “Buy American” provision in the NSLP (as described in 7 CFR 210.21(d)). Under this requirement, SFAs must, to the maximum extent practicable, purchase domestic commodities or products.³³ Subject to these restrictions, schools have a wide array of available options in selecting suppliers and vendors for their fresh fruit and vegetable purchases. These options may include: wholesale providers and vendors; local grocery stores; farmers’ markets; *DoD-Fresh*³⁴; and farm-to-cafeteria projects.³⁵ Schools are permitted, but not required, to give preference to locally grown products when selecting fresh fruit and vegetable providers (USDA, 2010).

The stated intent of FFVP is to provide children with free fresh fruits and vegetables. Program funds may not be used to purchase: 1) other non-fruit or vegetable products, such as nuts or cottage cheese; 2) products like trail mix, fruit or vegetable pizza, or smoothies in which fruits or vegetables are commingled with other types of foods; 3) processed/prepared fruit and vegetable products such as canned, frozen, dried, or vacuum-packed fruits and vegetables, fruit leather or jellies, or fruit with added flavorings; or 4) fruit or vegetable juices. Dips for fruits are not permitted under FFVP requirements, but small amounts of lowfat dips for vegetables are acceptable. Schools may serve cooked vegetables once per week, but only as part of a nutrition education lesson (USDA, 2010).

Schools are explicitly encouraged to distribute a wide variety of fresh fruits and vegetables, including new and unusual fruits and vegetables to which students might not otherwise be exposed. Finally, fruits and vegetables are to be prepared and presented in a way that maximizes convenience and appeal whenever possible. This may include preslicing or cutting fruits or vegetables to make them easier for students to eat (USDA, 2010).

Schools can offer fresh fruits and vegetables to students through a variety of distribution methods under FFVP. In general, schools are encouraged to choose distribution methods that maximize

³³ Produce which is not generally domestically grown, such as bananas, or foreign products that are significantly lower in cost than domestic products, may still be purchased using FFVP funds.

³⁴ The Department of Defense’s Fresh Fruit and Vegetable Program, which obtains fresh fruit and vegetables through a large network of produce suppliers, and delivers this produce directly to schools along with DoD deliveries to military installations or other sites in the United States.

³⁵ These are collaborations between local farmers and schools designed to bring locally grown products into schools.

students' ease of access to the fruit and vegetable products. However, schools may balance this consideration with concerns related to labor intensity associated with administration, preparation, and/or cleanup; financial costs, including ongoing operational expenses and/or necessary investments in equipment or facilities; and minimization of disruptions to other school classes and activities.

Methods to distribute fruits and vegetables include, but are not limited to:

- ***Inside classrooms.*** Particularly for elementary school students, classroom distribution of fresh fruits and vegetables may ease the burden of supervising FFVP activities for teachers and staff, helping to reduce mess and minimize disruptive behavior. Teachers must effectively balance eating time with other classroom activities.
- ***Kiosks.*** Kiosks are convenient for students to access, and allow for distribution of a variety of products. Fruits and vegetables distributed via this method must be easy for children to handle with a minimum of mess and supervision, which may increase required preparation time for some foods. Additionally, schools must coordinate student access to kiosks to ensure that all students have the opportunity to participate, and to minimize interruptions during class time.
- ***Vending machines.*** Like kiosks, vending machines offer maximal convenience for student access. However, only some fresh fruits and vegetables are appropriate for distribution via vending machine. Schools must invest adequate time and resources to regularly restock machines.
- ***Cafeteria.*** Schools with cafeterias may find this is a convenient venue for distributing fruits and vegetables. Distribution would have to be coordinated to not coincide with serving times for breakfast and lunch.
- ***Other locations, including hallways, school offices, or nurse's offices.*** Distributing fruits and vegetables in these areas of the school may be more convenient for staff, but depending on the setting may potentially limit the range and preparation of fruits and vegetables to be distributed, and may not be as easy for students to access.

As noted above, FFVP funds are to be used to distribute fresh fruits and vegetables to students throughout the normal school day (not including before school or during afterschool programs), but may not be used to provide access to fresh fruits and vegetables to be served during school breakfasts or lunches.³⁶ Schools are encouraged to maximize student access and participation by making fresh fruits and vegetables available to students at multiple times during the school day (USDA, 2010).

Fruits and Vegetables Served through FFVP

In this section, we examine the specific fruits and vegetables that schools served through FFVP during SY 2010–2011. We collected data during the spring of 2011 and respondents were asked what they served during the specific reference week (a one-week period around the time of the on-site data

³⁶ Unanticipated leftovers from FFVP activities may be included in school meals in order to reduce waste, although schools are instructed to plan appropriately to avoid this to the extent possible (USDA, 2010).

collection) and what they had served at some time during the year.³⁷ We also examined the variety of fresh fruits and vegetables offered in the reference week.

Schools served a wide variety of fruits and vegetables throughout the school year, including foods from each of the MyPyramid food subgroups (citrus, melon, berry, and other fruits; and dark-green, orange, and other vegetables) as shown in Exhibit 4.1. Apples were by far the most frequently served fruit, with 99 percent of FFVP schools reporting having served them at some point during the year. Other commonly served fruits, with more than 90 percent of FFVP schools offering them, were grapes, oranges, bananas, cantaloupe or honeydew, and strawberries.

Carrots were the most commonly served vegetable, with 92 percent of schools reporting having served them during the year (see Exhibit 4.2). Other popular vegetables served include tomatoes, celery, broccoli, and cucumber.

Exhibit 4.1 also shows that some varieties of fruits and vegetables were much less likely to be served in schools than other types. At least one-quarter of all schools reported that they had not served and did not plan to serve cherries, blackberries/raspberries, grapefruit, mangoes, or mandarin oranges (see the “Not planned/served” column in Exhibit 4.1). The most common reasons cited for not serving these fruits include (see Exhibit 4.3)³⁸:

- Cherries: too expensive, out of season, hard to obtain, and too messy. A number of SFA directors cited a concern that children might choke on the pits.
- Blackberries/raspberries: too expensive, out of season, hard to obtain, too easily damaged or spoiled, and too messy.
- Grapefruit: unpopular with students, too much work to prepare, and too messy.
- Mangoes: too much work to prepare, too expensive, hard to obtain, out of season, and too messy.
- Mandarin oranges: hard to obtain, too expensive, and out of season.

At least one-quarter of schools reported that they did not serve string or green beans, yellow squash, lettuce or leafy greens, zucchini, snow peas, or snap peas in FFVP during the year. The most common reasons for not serving these vegetables were (see Exhibit 4.4)³⁹:

- String or green beans: unpopular with students and hard to obtain.
- Yellow squash: unpopular with students and too much work to prepare.

³⁷ Some fruits and vegetables may not yet have come into season during the school year at the time we collected data. In addition, seasonality would have affected different areas of the country differently.

³⁸ Appendix D, Exhibit D4.2 presents the student-weighted results for fruits (giving equal weight to each student so that schools with higher enrollment contribute more to the results).

³⁹ Appendix D, Exhibit D4.3 presents the student-weighted results for vegetables (giving equal weight to each student so that schools with higher enrollment contribute more to the results).

- Lettuce and other leafy greens: unpopular with students and too much work to prepare. A number of SFAs mentioned that they did not serve lettuce because it was available nearly daily as part of the NSLP.
- Zucchini: unpopular with students and too much work to prepare.
- Snow peas: unpopular with students and hard to obtain.
- Snap peas: unpopular with students, hard to obtain, and too expensive.

Exhibit 4.1: Fruits Served in FFVP during SY 2010–2011

Fruit	Percent of schools that report...				Percent of students in schools that report ...			
	Ever served ¹	Plan to serve ²	Not planned/served	Not Reported	Ever served ¹	Plan to serve ²	Not planned/served	Not Reported
Citrus								
Grapefruit	49.7%	4.0%	30.5%	15.9%	49.1%	3.7%	30.3%	16.9%
Mandarin oranges	48.5%	8.3%	27.0%	16.2%	48.5%	7.5%	26.1%	17.9%
Oranges	95.8%	1.5%	1.4%	1.3%	96.1%	1.6%	1.2%	1.1%
Tangerines	80.3%	2.9%	9.4%	7.4%	80.2%	2.7%	8.1%	9.0%
Melon								
Cantaloupe or honeydew	91.6%	2.3%	3.9%	2.2%	91.3%	2.3%	3.6%	2.8%
Watermelon	75.4%	8.5%	11.1%	5.0%	75.4%	7.9%	10.7%	6.0%
Berries								
Blackberries or raspberries	49.6%	7.0%	30.3%	13.0%	46.9%	6.8%	31.3%	15.0%
Blueberries	60.4%	12.0%	17.5%	10.2%	59.1%	12.3%	17.4%	11.3%
Kiwis	80.4%	3.9%	8.2%	7.4%	80.3%	3.7%	7.9%	8.1%
Strawberries	91.2%	3.2%	2.3%	3.3%	90.3%	4.3%	2.1%	3.3%
Other								
Apples	98.5%	0.4%	0.4%	0.7%	98.5%	0.4%	0.2%	0.9%
Apricots, nectarines, peaches	71.9%	7.4%	11.8%	9.0%	70.6%	7.1%	11.9%	10.3%
Bananas	93.6%	1.6%	2.9%	1.9%	93.3%	1.5%	3.0%	2.2%
Cherries	15.5%	20.2%	45.5%	18.8%	15.4%	19.5%	45.3%	19.8%
Grapes	96.4%	1.4%	1.1%	1.1%	95.8%	2.0%	1.1%	1.1%
Mangoes	50.4%	5.2%	28.1%	16.3%	50.3%	4.3%	27.9%	17.6%
Pears	89.2%	2.7%	3.8%	4.3%	88.6%	2.4%	4.0%	5.0%
Pineapple	89.6%	2.1%	4.7%	3.6%	90.5%	1.5%	4.4%	3.5%
Plums	70.1%	8.3%	12.9%	8.6%	71.5%	7.7%	11.5%	9.4%
Unspecified fruits	8.7%				10.0%			
Unweighted N	599							

Source: SFA school-level survey. Data reported in the first 4 columns (“Percent of schools that report...”) have been weighted so that each school receives equal weight. The last 4 columns (“Percent of students in schools...”) have been weighted so that equal weight is given to each student, so that schools with higher enrollment contribute more to the results.

¹ Data collected in spring 2011. Reported serving fruit sometime during SY 2010–2011.

² Data collected in spring 2011. Planning to serve fruit before end of the school year.

Exhibit 4.2: Vegetables Served in FFVP during SY 2010–2011

Vegetable	Percent of schools that report...				Percent of students in schools that report ...			
	Ever served ¹	Plan to serve ²	Never served	Not Reported	Ever served ¹	Plan to serve ²	Never served	Not reported
Dark-green vegetables								
Broccoli	81.3%	2.7%	8.8%	7.2%	79.3%	2.4%	9.9%	8.4%
Orange vegetables								
Carrot	91.9%	1.4%	1.6%	5.1%	91.2%	1.5%	1.4%	6.0%
Yellow squash	32.3%	13.4%	34.5%	19.8%	34.9%	11.5%	32.3%	21.3%
Other vegetables								
Cauliflower	66.4%	7.6%	13.9%	12.0%	62.6%	8.5%	15.2%	13.8%
Celery	82.7%	2.9%	6.5%	7.9%	82.2%	2.3%	6.4%	9.0%
Cucumber	73.4%	7.5%	9.9%	9.2%	72.9%	7.0%	10.5%	9.6%
Lettuce, other leafy greens	41.7%	6.4%	33.0%	18.9%	41.2%	6.1%	32.6%	20.1%
Peppers	64.9%	5.7%	18.1%	11.3%	64.5%	5.6%	17.6%	12.3%
Snap peas	54.1%	6.4%	25.7%	13.9%	58.3%	5.4%	21.8%	14.5%
Snow peas	40.4%	10.9%	28.8%	19.9%	43.2%	10.0%	25.9%	20.9%
String/green beans	27.7%	14.7%	35.2%	22.4%	29.8%	12.8%	33.5%	23.9%
Tomatoes	84.0%	3.6%	7.2%	5.2%	83.7%	3.7%	6.6%	6.0%
Zucchini	38.6%	13.2%	29.3%	18.9%	42.2%	11.2%	26.8%	19.9%
Unspecified vegetables	9.9%				9.8%			
Unweighted N	599							

Source: SFA school-level survey. Data reported in the first 4 columns (“Percent of schools that report...”) have been weighted so that each school receives equal weight. The last 4 columns (“Percent of students in schools...”) have been weighted so that equal weight is given to each student, so that schools with higher enrollment contribute more to the results.

¹ Data collected in spring 2011. Reported serving vegetable sometime during SY 2010–2011.

² Data collected in spring 2011. Planning to serve vegetable before end of the school year.

Exhibit 4.3: Reasons Schools Do Not Serve Specific Fruits (School-Weighted)¹

Fruit	Schools that have not and will not serve (N=599)		Reasons schools have not and will not serve fruits								
	(N)	(%)	Too expensive (%)	Too messy (%)	Too much work to prepare (%)	Out of season (%)	Hard to obtain (%)	Too easily damaged/spoiled (%)	Unpopular with students (%)	Poor quality (%)	Other (%)
Citrus											
Grapefruit	187	30.5	4.4	9.3	15.9	2.2	6.1	0.0	54.4	0.7	11.8
Mandarin oranges	157	27.0	17.7	4.0	2.8	10.1	36.4	0.0	5.8	0.8	24.6
Oranges	9	1.4	0.0	22.2	2.6	28.8	0.0	0.0	0.0	0.0	34.0
Tangerines	50	9.4	7.9	4.5	6.7	19.7	22.7	0.0	6.8	2.3	20.5
Melons											
Cantaloupe or honeydew	24	3.9	10.2	6.6	39.5	13.3	0.8	7.9	0.7	0.0	24.8
Watermelon	70	11.1	12.0	33.0	19.8	14.6	0.0	2.1	0.0	0.0	16.6
Berries											
Blackberries/ raspberries	180	30.3	34.5	11.7	2.2	22.6	19.4	14.4	6.3	0.0	7.1
Blueberries	105	17.5	18.7	16.3	2.4	16.7	20.4	5.1	8.7	19.1	0.0
Kiwis	51	8.2	24.6	3.3	22.6	2.6	6.5	0.0	2.1	0.0	34.6
Strawberries	17	2.3	9.6	1.2	7.7	9.0	25.3	16.0	0.0	0.0	9.5
Other											
Apples	3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.8
Apricots, nectarines, peaches	73	12.2	14.7	4.8	1.5	39.0	16.3	4.6	9.6	2.1	20.4
Bananas	17	2.9	0.0	0.0	0.0	0.0	6.5	14.5	0.0	0.0	52.8
Cherries	268	45.5	23.4	14.2	0.5	16.1	15.5	2.3	2.8	0.6	34.6
Grapes	10	1.1	2.6	0.0	0.0	9.6	0.0	0.0	0.0	0.0	34.7
Mangoes	170	28.1	20.8	10.1	22.2	18.1	20.7	0.6	3.3	2.7	7.4
Pears	24	3.8	5.1	0.0	10.4	11.8	13.9	0.0	33.4	0.0	11.1
Pineapple	35	4.7	40.6	25.0	13.4	0.6	4.8	0.0	3.9	0.0	8.8
Plums	81	12.9	1.5	7.7	4.6	30.7	17.8	0.3	12.7	8.5	18.1

Source: SFA school-level survey.

Note: Multiple responses allowed (rows do not sum to 100%).

¹ Weighted to represent all FFVP schools nationally (schools are given equal weight).

Exhibit 4.4: Reasons Schools Do Not Serve Specific Vegetables (School-Weighted) ¹

Vegetable	Schools that have not and will not serve		Reasons schools have not and will not serve vegetables								
	(N)	(%)	Too expensive (%)	Too messy (%)	Too much work to prepare (%)	Out of season (%)	Hard to obtain (%)	Too easily damaged/spoiled (%)	Unpopular with students (%)	Poor quality (%)	Other (%)
Dark-green vegetables											
Broccoli	50	8.8	0.0	0.0	6.9	0.0	0.0	6.8	64.2	0.0	16.8
Orange vegetables											
Carrot	14	1.8	0.0	0.0	0.0	0.0	16.4	0.0	27.7	0.0	36.3
Yellow squash	207	34.5	6.2	0.0	23.2	4.8	8.1	0.5	51.1	0.0	9.6
Other											
Cauliflower	81	13.9	3.6	0.0	2.8	1.5	3.7	2.9	79.3	0.0	4.1
Celery	42	6.5	0.0	0.0	10.5	0.0	0.0	0.0	47.4	0.0	33.6
Cucumber	58	9.9	0.0	0.0	55.6	0.0	3.4	1.8	24.9	0.0	9.6
Lettuce, other leafy greens	204	33.4	3.9	5.7	21.5	0.5	1.0	7.7	38.0	0.0	16.6
Peppers	121	18.1	1.3	0.0	4.2	0.0	8.4	1.9	74.8	0.0	22.5
Snap peas	162	25.7	15.1	0.0	8.6	5.1	20.0	0.0	40.9	0.7	10.9
Snow peas	174	28.8	9.2	0.0	6.2	2.1	19.9	0.6	44.7	0.6	16.8
String/ green beans	215	35.2	6.7	0.0	9.3	2.4	12.2	0.2	53.1	0.6	15.0
Tomatoes	51	7.4	3.0	24.8	7.3	0.0	2.1	5.9	44.8	0.5	7.1
Zucchini	172	29.3	6.7	0.0	22.2	3.7	4.0	0.0	58.0	0.0	8.0

N = 599

Source: SFA school-level survey.

Note: Multiple responses allowed (rows do not sum to 100%).

¹ Weighted to represent all FFVP schools nationally (schools are given equal weight).

Most schools (73 percent) reported serving both fruits and vegetables during the reference week, with schools serving 6.1 different types of fruits and vegetables on average during the reference week (see Exhibit 4.5).⁴⁰ Approximately 23 percent of schools served only fruits, with an average of 3.6 types of fruits during the reference week. Very few schools served only vegetables (less than 1 percent), and these schools served 2.2 different vegetables on average during the reference week. A small number of schools (3 percent) reported serving neither fruits nor vegetables; FFVP was not in operation during the reference week.⁴¹

Exhibit 4.5: Combinations and Number of Types of Fruits and Vegetables Offered in Reference Week

	School-weighted					Student-weighted				
	% Schools	Number of FFVP items offered				% Schools	Number of FFVP items offered			
		Mean	Median	Low value	High value		Mean	Median	Low value	High value
None	2.8%					2.5%				
Fruit only	23.2%	3.6	4	1	8	24.4%	3.8	4	1	8
Vegetable only	0.9%	2.2	2	2	3	1.1%	2.1	2	2	3
Both fruit and vegetable	73.2%	6.1	5	1	29	72.0%	6.0	5	1	29
N	585									

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 14 schools that did not respond to question.

Methods of Distribution

Schools used a variety of methods and locations to distribute the fresh fruit and vegetable snacks to students, including classrooms, carts and other mobile methods, cafeterias, hallways, offices, kiosks, snack bars, and school stores (Exhibit 4.6). No schools reported using free vending machines as part of FFVP. By far the most common location for distributing the snacks was in the classroom—89 percent of schools reported serving the snacks in students' classrooms, at least some of the time. Other common distribution methods (used by 14–19 percent of schools) included cart/mobile methods, cafeterias, and hallways.

⁴⁰ Schools reported all fruits and vegetables served through FFVP for the entire week to the entire school. It is not known whether all students were offered all of the fruits and vegetables that schools reported serving.

See Appendix D, Exhibit D4.6 for a frequency distribution of the numbers of fruits and vegetables served in the reference week.

⁴¹ Most SFAs reported that the reference week was a typical week for FFVP at their school (86.1 percent). The remaining schools reported that school schedules were different due to holidays, that they offered fresh fruits and vegetables fewer days than usual, or that they offered less variety than usual during the reference week.

Exhibit 4.6: Distribution Methods Used in FFVP during Reference Week

Distribution method	School-weighted	Student-weighted
Inside classrooms	88.9%	88.6%
Cart or other mobile method	19.4%	21.1%
School cafeteria	16.2%	15.5%
Hallway	14.0%	14.2%
Office (nurse, other)	10.3%	10.8%
Kiosk	3.8%	5.0%
Snack bar	0.5%	0.7%
School store	0.2%	0.2%
Free vending machines	0.0%	0.0%
Other methods	3.3%	4.7%
N	576	

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 8 schools that did not respond to question and 15 schools that did not offer fruit or vegetables during the reference week.

Note: Multiple responses allowed (columns do not sum to 100%).

Most schools (61 percent) used just one distribution method for delivering snacks, and another 27 percent of schools used two distribution methods (Exhibit 4.7). As Exhibit 4.8 shows, the most popular combinations of distribution methods used the classroom along with another venue: classroom and mobile/cart (10 percent of schools); classroom and office (6 percent of schools); classroom and cafeteria (4 percent of schools); and, classroom, cafeteria, and hallway (3 percent of schools).

Exhibit 4.7: Number of Distribution Methods Used during Reference Week

Number of distribution methods	School-weighted	Student-weighted
1	61.4%	60.2%
2	27.2%	28.1%
3	7.1%	6.1%
4	1.5%	1.2%
5	1.3%	1.6%
6	1.4%	2.7%
8	0.2%	0.2%
Mean	1.6	1.6
Median	1	1
Min	1	1
Max	8	8
N	576	

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 8 schools that did not respond to question and 15 schools that did not offer fruit or vegetables during the reference week.

Exhibit 4.8: Most Frequently Used Single or Combined Distribution Methods during Reference Week

Distribution method	School-weighted	Student-weighted
Classroom	55.2%	54.6%
Classroom and mobile	9.9%	10.4%
Classroom and office	6.4%	7.3%
Classroom and cafeteria	3.6%	2.9%
Cafeteria	2.9%	2.0%
Classroom, cafeteria, and hallway	2.6%	2.5%
Classroom and hallway	2.3%	1.9%
Cafeteria and hallway	2.0%	2.1%
Mobile	1.4%	1.6%
Classroom, hallway, and mobile	1.3%	1.2%
Classroom and other	1.3%	1.6%
Classroom, cafeteria, hallway, mobile, kiosk, and other	1.2%	2.3%
N	576	

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 8 schools that did not respond to question and 15 schools that did not offer fruit or vegetables during the reference week.

Frequency of Distribution—Days of Week, Time of Day

The survey asked schools to report the days on which they operated FFVP, the grade levels served on those days, and the time of day FFVP snacks were served in the various grades during the reference week. We cannot determine from the responses whether individual classes participated in FFVP multiple times per week or at multiple times per day since many schools had more than one classroom per grade.⁴²

Schools varied in how often and when FFVP operated. Nearly all schools served fruits and vegetables three to five times per week, exceeding USDA's suggestion to serve two or more times each week. As Exhibit 4.9 shows, during the reference week, 41 percent of schools provided FFVP snacks five times per week, 14 percent served FFVP snacks four times per week, and 27 percent served FFVP snacks three times per week. Very few schools served only once each week. The number of days per week schools served FFVP snacks was fairly similar across grades, except that 7th and 8th grades were somewhat more likely to be offered FFVP snacks only once or twice per week compared to younger grades.

⁴² For example, if a school reported that fruit was served twice to 3rd graders, it could have been to different classes at different times, or twice to all classes.

Schools served the FFVP snacks at various times during the day (Exhibit 4.10). Slightly less than half the schools (45 percent) provided FFVP snacks only after lunch and about one-third of schools (31 percent) served the FFVP snacks only before lunch. The remaining one-quarter of schools served FFVP snacks both before and after lunch.

There are some differences between the times of day that different grades participate: 6th, 7th, and especially 8th graders appear more likely to participate in FFVP before lunch only, though there were relatively few schools in the study that included these grades.⁴³

⁴³ In some States, 7th and 8th grades are included in the definition of elementary school and thus eligible for the FFVP. As shown in Exhibits 4.8 and 4.9, relatively few study schools included these grades.

Exhibit 4.9: Number of Days FFVP was Served during the Reference Week

# days FFVP is offered each week	School-wide		Pre-K/K		1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade		7th grade		8th grade	
	School-weighted	Student-weighted																		
1	6.2%	6.0%	7.4%	6.7%	7.4%	6.5%	7.5%	6.6%	7.8%	6.7%	7.6%	6.7%	7.9%	7.0%	9.5%	10.4%	11.4%	12.2%	12.6%	12.5%
2	12.4%	12.3%	12.6%	12.7%	12.2%	12.7%	12.1%	12.5%	12.5%	12.6%	12.9%	12.9%	12.9%	12.9%	7.3%	7.1%	12.5%	9.9%	13.8%	10.1%
3	26.6%	25.8%	26.6%	25.2%	25.2%	24.9%	25.5%	25.2%	25.5%	25.3%	25.1%	24.8%	24.1%	23.5%	22.2%	21.4%	23.1%	18.9%	21.8%	17.7%
4	14.1%	13.4%	14.1%	13.8%	15.2%	14.7%	15.2%	14.7%	15.1%	14.7%	14.1%	13.7%	15.6%	15.0%	14.9%	10.8%	11.1%	7.2%	9.1%	5.2%
5	40.7%	42.5%	39.4%	41.5%	40.0%	41.1%	39.7%	41.1%	39.2%	40.7%	40.3%	42.0%	39.5%	41.6%	46.0%	50.3%	41.9%	51.7%	42.7%	54.4%
N	571		406		448		446		451		450		434		163		54		48	

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 13 schools that did not respond to question and 15 schools that did not offer fruit or vegetables during the reference week. Not all schools have all grades, and not all schools provided grade level information.

Exhibit 4.10: Time of Delivery during the Reference Week

Time of Day	School-wide		Pre-K/K		1st grade		2nd grade		3rd grade		4th grade		5th grade		6th grade		7th grade		8th grade	
	School-weighted	Student-weighted																		
Before lunch only	30.9%	33.9%	34.1%	36.2%	37.5%	39.5%	37.5%	39.7%	36.4%	38.9%	35.2%	37.6%	36.4%	38.9%	41.8%	48.4%	42.7%	54.3%	49.7%	60.4%
After lunch only	45.0%	40.6%	48.9%	45.5%	50.5%	47.1%	50.7%	47.1%	51.4%	47.5%	52.6%	48.7%	51.4%	47.3%	47.7%	40.5%	45.3%	36.0%	38.7%	29.9%
Before and after lunch	24.1%	25.5%	17.0%	18.3%	12.0%	13.4%	11.8%	13.2%	12.2%	13.6%	12.2%	13.6%	12.2%	13.8%	10.5%	11.1%	12.0%	9.7%	11.6%	9.7%
N	491		406		448		446		451		450		434		163		54		48	

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 93 schools that did not respond to question and 15 schools that did not offer fruit or vegetables during the reference week. Not all schools have all grades, and not all schools provided grade level information.

4.2 Nutrition Education Accompanying FFVP

Many States required interested schools to submit a detailed nutrition education plan as part of the FFVP application process. The *FFVP Handbook* states that nutrition education is “critical” to the success of FFVP in schools, and encourages a wide range of nutrition education activities for participants. As noted in Chapter 1, nutrition education activities have proven to be an effective strategy in increasing fresh fruit and vegetable intake among students. The *Handbook* recommends building nutrition education into classroom lesson plans whenever possible, and especially during the preparation and service of fruits and vegetables.

Participating schools are also encouraged to involve students in program promotional activities, through the creation of fruit- and vegetable-themed posters, banners, and fliers, and contributions to a monthly nutrition newsletter. Announcements via the student address system and on menus sent to parents may additionally be used to promote FFVP.

According to the Interim Report to Congress for the 2007 fiscal year, participant schools pursued multiple strategies for incorporating nutrition education and promotion into school activities. While some schools focused on integrating nutrition education into existing classes, others developed independent lesson plans, school announcements, and activities focused on a specific fruit or vegetable each week. The report also notes that the USDA’s Team nutrition publication, *Fruits & Vegetables Galore: Helping Kids Eat More*, was used in many school promotional activities (USDA, 2007).

All States responding to the web survey reported that they provided nutrition education materials to participating schools for use in conjunction with FFVP (Exhibit 4.11). Most frequently, they provided the *FFVP Handbook* (94 percent) or a list of resources or links to websites (76 percent). Nearly half of the States (44 percent) provided specific nutrition education materials or curricula.

Exhibit 4.11: State-Provided Materials for Use with FFVP

Materials	States
FNS <i>FFVP Handbook</i>	94.0%
Other list of resources or links to websites	76.0%
Specific nutrition education curricula or materials	44.0%
None of these	0.0%
N	50

Source: State survey.

Note: Multiple responses allowed (column does not sum to 100%).

Exhibit 4.12 shows that among States that provided materials or curricula, the most popular topics in the materials focused directly on FFVP messages, including the role of fresh fruit and vegetables in a complete diet (82 percent); where fresh fruits and vegetables come from and links to local farms (73 percent); and trying new foods (68 percent).

Exhibit 4.12: Messages Included in State-Provided Nutrition Education Curricula or Materials

Messages	States
Role of fresh fruit and vegetables in a complete diet	81.8%
Where fresh fruits and vegetables come from, links to local farms	72.7%
Trying new foods, variety	68.2%
Cooking with fresh fruits and vegetables	40.9%
Physical activity	31.8%
Healthy and less healthy snacks	27.3%
Eat lower fat foods more often	13.6%
Healthy weight and overweight	9.1%
Other	18.2%
N	22

Source: State survey.

Sample: Includes 22 States that provided nutrition education curricula or materials.

Note: Multiple responses allowed (column does not sum to 100%).

USDA recommends that nutrition education be delivered to students as part of FFVP, both with the FFVP snack and on days when there is no FFVP service. Two-thirds of the schools offered nutrition education at least once in the reference week (Exhibit 4.13). On average, schools offered nutrition education 2.1 days per week during that week. Older students (6th, 7th, and 8th grade classes) received the nutrition education the fewest times per week, with 64 percent of 6th grade classes and 83 percent of 7th and 8th grade classes receiving none during the reference week.

Exhibit 4.13: Distribution of Nutrition Education Offerings during the Reference Week

Nutrition Education Offerings	School-wide		Pre-K/K		1st		2nd		3rd		4th		5th		6th		7th		8th	
	School-weighted	Student-weighted																		
No nutrition ed	33.0%	33.3%	39.6%	39.3%	36.9%	37.1%	37.1%	37.2%	36.8%	37.1%	37.0%	37.1%	38.2%	38.3%	63.9%	64.1%	82.8%	82.7%	82.6%	81.8%
Has nutrition ed	67.0%	66.7%	60.4%	60.7%	63.1%	62.9%	62.9%	62.8%	63.2%	62.9%	63.0%	62.9%	61.8%	61.7%	36.1%	35.9%	17.2%	17.3%	17.4%	18.2%
1 day/ week	11.1%	11.3%	10.9%	11.1%	12.6%	12.1%	11.8%	11.2%	12.9%	12.2%	12.8%	12.5%	12.3%	12.5%	9.0%	7.9%	3.8%	3.4%	4.9%	4.6%
2 days / week	14.8%	13.3%	13.9%	13.3%	15.2%	14.3%	15.8%	15.0%	14.4%	13.5%	14.3%	13.3%	13.5%	12.5%	7.1%	7.1%	3.4%	3.2%	3.9%	3.8%
3 days / week	15.6%	15.9%	14.7%	14.7%	14.2%	14.7%	13.6%	14.2%	13.7%	14.2%	14.1%	14.6%	13.6%	13.7%	8.2%	8.6%	4.2%	4.2%	3.6%	3.8%
4 days /week	7.9%	7.8%	7.2%	7.0%	7.3%	6.9%	7.7%	7.3%	8.3%	7.9%	8.5%	8.1%	8.4%	8.3%	5.5%	6.1%	0.9%	1.4%	0.7%	1.3%
5 days / week	17.6%	18.4%	13.6%	14.7%	13.8%	15.0%	13.9%	15.0%	14.0%	15.2%	13.4%	14.4%	14.0%	14.7%	6.3%	6.2%	4.9%	5.1%	4.4%	4.8%
Mean (days/week)	2.1	2.1	1.8	1.8	1.8	1.9	1.8	1.9	1.9	1.9	1.8	1.9	1.8	1.9	1.0	1	0.5	0.5	0.5	0.5
Median (days/week)	2	2	1	1	2	2	2	2	2	2	2	2	1	1	0	0	0	0	0	0
Range (days/week)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
N	542		443		478		475		479		481		467		268		202		202	

Source: Principal survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 12 schools that did not respond to question. Not all schools have all grades, and not all schools provided grade level information.

While not all FFVP schools reported providing nutrition education classes during the reference week, the majority of schools (82 percent) reported having nutrition education sometime during the month that ended with the reference week (Exhibit 4.14). Classes presented a wide variety of messages, some directly pertinent to FFVP and others of a more general nature. Topics covered most frequently during the month were: the importance of physical activity (88 percent), the role of fresh fruits and vegetables in a complete diet (87 percent), and the value of trying new foods (86 percent). Schools were less likely to discuss the value of other types of healthy eating behaviors. Less than half of the schools taught about the values of eating low sodium foods, high fiber foods, or whole grain foods more often.

In addition to nutrition education, USDA encourages the use of posters, banners, fliers, newsletters, and school public address systems to publicize important nutrition and eating guidelines. Poster or banner displays with nutrition topics were used in 86 percent of schools. Fewer schools (41 percent) distributed fliers, brochures, or newsletters to parents or students about nutrition topics. The most popular messages were similar to those covered in nutrition education classes. Many schools also reported displaying posters of the USDA MyPyramid food guidance system.

Following USDA guidance to deliver nutrition education along with fruits and vegetables, nearly two-thirds of schools reported coordinating nutrition education with the foods served in FFVP (Exhibit 4.15). It was also fairly common for schools to coordinate nutrition education with the National School Lunch Program (38 percent) or School Breakfast Program (32 percent). Some schools (21 percent) also reported coordinating messages with foods served in afterschool snacks subsidized by USDA programs. About 27 percent did not coordinate nutrition education with foods served in any USDA meal programs.

Exhibit 4.14: Nutrition Education and Promotion Activities during the Reference Month¹

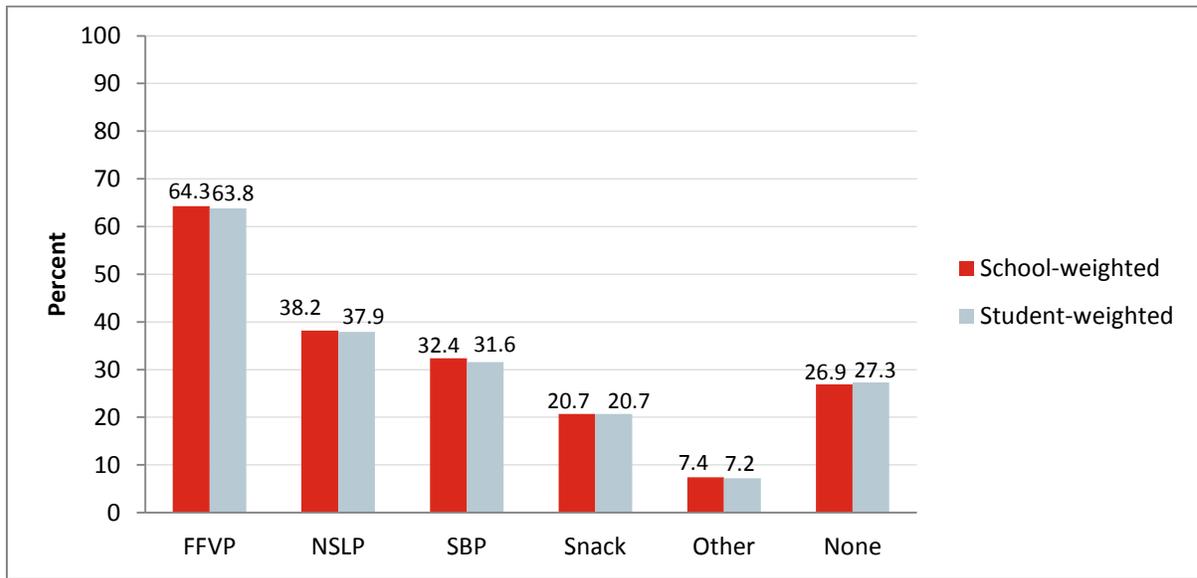
	Percent of schools that report providing...			Percent of students in schools that are providing...		
	Nutrition Education	Nutrition related posters or banner displays	Nutrition related fliers, brochures, or newsletters	Nutrition Education	Nutrition related posters or banner displays	Nutrition related fliers, brochures, or newsletters
Has nutrition education or promotion activities						
Yes	81.6%	86.4%	41.1%	80.4%	85.1%	41.1%
No	18.4%	13.6%	58.9%	19.6%	14.9%	58.9%
N	551	542	542			
For those providing education or promotion, messaging included:						
Physical activity	87.5%	68.0%	58.1%	87.2%	68.0%	57.4%
Role of fresh fruit and vegetables in a complete diet	86.8%	70.3%	66.5%	86.2%	71.8%	68.2%
Trying new foods, variety	86.4%	39.0%	48.8%	85.9%	41.4%	48.4%
Where fresh fruits and vegetables come from, links to local farms	69.0%	24.4%	33.6%	69.8%	25.2%	33.1%
Eating lower fat foods more often	58.0%	21.8%	25.8%	59.7%	24.2%	27.3%
USDA MyPyramid food guidance system	57.7%	71.3%	42.2%	55.8%	72.2%	41.0%
Healthy weight and overweight	56.8%	23.0%	30.0%	57.5%	24.0%	31.0%
Cooking with fresh fruits and vegetables	53.4%	19.2%	30.8%	54.3%	19.4%	31.1%
Eating whole grains more often	48.6%	21.8%	23.7%	48.8%	23.2%	25.0%
Eating higher fiber foods more often	44.1%	13.4%	18.0%	44.5%	14.0%	19.2%
Eating lower sodium foods more often	35.9%	11.3%	14.4%	36.1%	12.1%	14.7%
Other	6.9%	4.8%	12.5%	6.3%	4.9%	13.2%
N	458	466	233			

Source: Principal survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 3–12 schools that did not respond to questions.

¹ Reference month refers to the month that ended with the reference week.

Exhibit 4.15: Nutrition Education Coordination with USDA Meal Programs (N= 451)

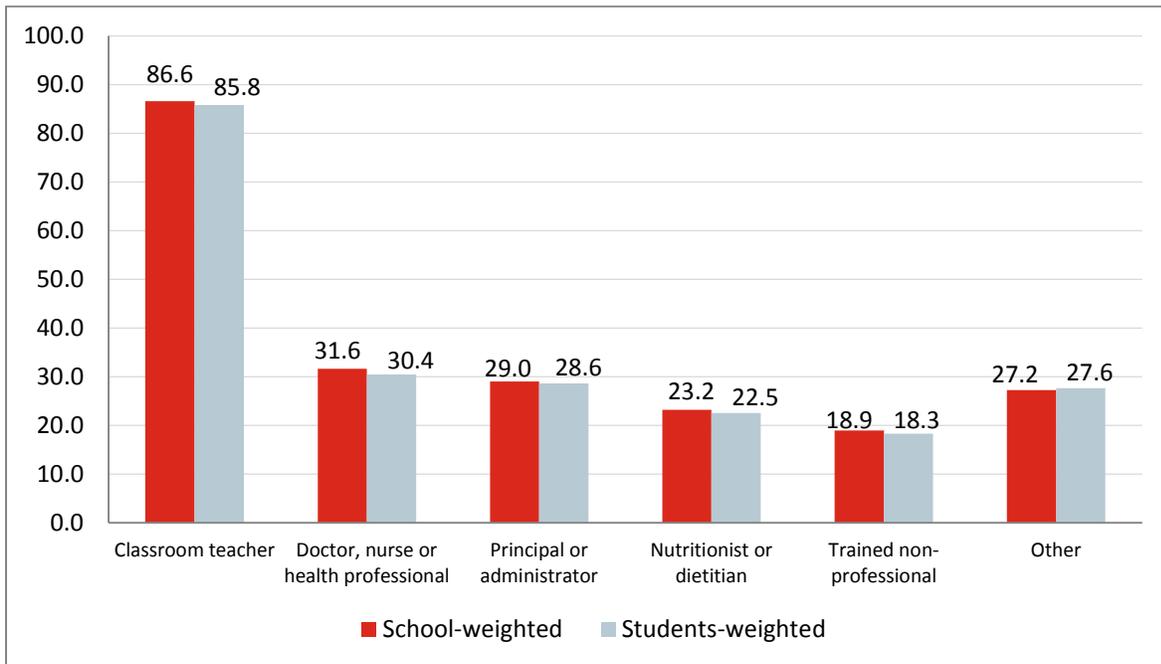


Source: Principal survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 10 schools that did not respond to question and 93 schools that did not offer any nutrition education or promotion activities during the reference month.

Most schools reported that teachers led nutrition education activities (87 percent). Less frequently, doctor/nurse/health professionals (32 percent), principals (29 percent), nutritionists or dietitians (23 percent), or trained nonprofessionals (18.9 percent) led nutrition education (Exhibit 4.16).

Exhibit 4.16: Nutrition Education Activity Leaders (N=450)



Source: Principal survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 11 schools that did not respond to question and 93 schools that did not offer any nutrition education or promotion activities during the reference month.

4.3 Partnerships Established to Implement FFVP

USDA encourages States, districts, and schools to form partnerships with a variety of organizations to aid in the implementation and operation of FFVP. At the national level, FNS has established relationships with the following FFVP partners: the Centers for Disease Control and Prevention; the National Cancer Institute; the United Fresh Produce Association; Produce for Better Health; and the Fruit and Vegetable Program Coordinator (formerly known as the 5-A-Day Coordinator).

State agencies and participating schools and SFAs are encouraged to work with these partners to facilitate successful implementation and operation of FFVP, as well as to pursue relationships with additional partners at the State and local level. In some States, a detailed school plan for establishing partnerships is a required part of the application process. Suggested outside partners may include, but are not limited to, State and national affiliates of the American Cancer, Diabetes, Dietetic⁴⁴ and Heart Associations and School Nutrition Association, community health agencies, county and State health and agriculture departments, dietitians and dietetic interns, extension agents, hospitals and other health providers, local grocers and stores, food distributors, vocational clubs, and health, produce, or nutrition trade associations (USDA, 2010).

Forty-one States (82 percent of respondents) reported having established partnerships with non-federal organizations to carry out FFVP (Exhibit 4.17). Just over half (56 percent) of States establishing partnerships did so with the Cooperative Extension Service, 37 percent with State government agencies such as a health department or agriculture department, and 34 percent partnered with universities, colleges, or other higher education institutions. About one-quarter of States with partnerships reported partnering with grocery stores or other food distributors. Some States formed a variety of other partnerships as shown in Exhibit 4.18.

Exhibit 4.17: Percentage of Schools, Districts, and States with FFVP Partners

Partner status	States	Districts	Schools
Some partners	82.0%	25.9%	12.1%
No partners	18.0%	74.1%	87.9%
N	50	257	534

Source: State, SFA district-level, and Principal surveys.

Sample: Excludes 20 to 39 schools or districts that did not respond to question.

Most States reported that their partners provided education materials (93 percent), encouraged schools to participate in FFVP (85 percent), and advised on nutrition education (85 percent). Many States also had partners that provided instruction or demonstrations for student (78 percent) or trained teachers or staff (70 percent). Also common were partners who provided fresh fruits and vegetables, other foods or supplies, equipment, or cash (Exhibit 4.19).

SFAs were much less likely to have relationships with outside partners as part of FFVP—only 26 percent reported having any outside partners. The most common partner was government agencies (city, county or other local at the district level, 54 percent of those with partnerships). Similar to State

⁴⁴ The American Dietetic Association became the Academy of Nutrition and Dietetics in 2012.

agencies, other common partners were the Cooperative Extension Service or grocery stores and food distributors (Exhibit 4.18).

Exhibit 4.18: Percentage of Schools, Districts and States with FFVP Partners by Type of Organization

Type of Organization	States partnering with... (%)	Districts partnering with... (%)	Schools partnering with... (%)
Cooperative Extension Service	56.1	48.8	19.0
State or Tribal government agency (e.g. health department, agriculture department, etc.)	36.6	26.7	11.5
Universities, colleges, or other higher education institutions	34.1	15.7	45.8
Supermarkets, grocery stores, or other retail stores	24.4	15.1	46.1
Food wholesalers or other food distributors	24.4	46.9	23.0
City, county, or other local government agency (e.g. health department, agriculture department, etc.)	22.0	53.8	26.7
Produce associations/commodity groups (e.g., United Fresh Produce Association)	22.0	13.9	6.7
Nutrition trade associations (e.g. American Dietetic Association, School Nutrition Association)	22.0	22.9	4.7
Healthcare providers, including hospitals and clinics; doctors, nurses, nutritionists, dietitians/dietetic interns, or other clinicians	19.5	30.7	40.6
Produce for Better Health	14.6	14.9	6.5
Farmers' markets	12.2	27.3	30.4
Community action agency, food bank, or other community/faith-based organization	9.8	20.7	36.0
Vocational clubs (e.g., Future Farmers of America, 4-H)	9.8	16.6	1.9
Health associations (e.g. State or National affiliates of the American Cancer, Diabetes, or Heart Associations)	7.3	9.8	12.4
Other partners	24.4	18.8	20.6

Source: State, SFA district-level, and Principal surveys.

Sample: Includes all States, districts, and schools reporting they have partners: 41 States, 60 districts, and 70 schools.

Note: Multiple responses allowed (columns do not add to 100%).

Exhibit 4.19: State Partner Roles

Partner role	States
Provides educational materials (print, video, audio, etc.)	92.5%
Encourage schools to participate in FFVP	85.0%
Advises on nutrition education	85.0%
Provides instruction or demonstrations	77.5%
Trains teachers/staff	70.0%
Provides fresh fruits or vegetables	65.0%
Provides other foods or supplies	62.5%
Provides equipment	57.5%
Provides cash	57.5%
Other role	25.0%
N	40

Source: State survey.

Sample: Includes 40 States reporting they have partners.

Note: Multiple responses allowed (column does not sum to 100%).

SFA partners were most often involved with providing or advising on nutrition education/promotion materials—42 to 83 percent of SFAs reported that their partners assisted in these areas. In about one-third of SFAs with partnerships, the partner provided free fresh fruit and vegetables (Exhibit 4.20).

Even fewer schools (12 percent) partnered with outside organizations as part of FFVP compared to SFAs and States. Among these schools, the most common partners were supermarkets and grocery stores (46 percent), universities, colleges, or other higher education institutions (46 percent), and healthcare providers (41 percent).

Similar to SFA partners, school partners' main roles were to provide assistance with nutrition education—about two-thirds of school partners were involved in this way (Exhibit 4.20). However, schools also frequently had partners who provided free food or supplies (42–58 percent of schools with partners).

Exhibit 4.20: District and School Partner Roles

Partner role	Districts	Schools
Provides free instruction or demonstrations for students	65.5%	64.1%
Provides free nutrition education or promotion materials (print, video, audio, etc.)	83.0%	62.4%
Provides fresh fruits and vegetables for free	32.9%	58.5%
Provides other food (e.g., dips, condiments) for free	5.6%	44.9%
Provides free supplies	13.8%	42.2%
Free advising on nutrition education	42.3%	40.7%
Free training for teachers/staff	31.1%	35.7%
Other role	14.3%	17.0%
N	60	67

Source: SFA district-level and Principal surveys.

Sample: Includes only those with partners and excludes 1–3 districts or schools that did not respond to question.

Note: Multiple responses allowed (columns do not sum to 100%).

4.4 Attitudes, Perceptions, and Satisfaction with FFVP: SFA Directors, Principals, School Food Service Managers, and Teachers

SFA directors, principals, school food service staff, and teachers were all strong supporters of FFVP (Exhibit 4.21). Nearly all respondents (more than 95 percent) in each group agreed that their overall opinion of FFVP was favorable and that they would like FFVP to continue at their schools. When asked if they thought that FFVP was not worth the effort, over 90 percent of respondents in the four groups disagreed. The surveys asked many other questions about attitudes and satisfaction that are reported in Appendix D, Exhibit D4.7. Respondents in all groups were generally pleased with the specifics of FFVP. SFA directors, principals, school food service staff, and teachers all agreed that FFVP snacks should be offered more days each week, but the majority did not think that they should be offered more times each day.

Exhibit 4.21: Overall Opinions Concerning FFVP

Opinion		SFA directors	Principals	School food service staff	Teachers
My overall opinion of FFVP is favorable.	Agree	97.9%	99.0%		96.9%
	Disagree	2.1%	1.0%		3.1%
	N	254	534		327
I would like FFVP to continue in my district.	Agree	97.9%	98.9%	95.3%	96.5%
	Disagree	2.1%	1.1%	4.7%	3.5%
	N	251	535	128	318
I think FFVP is NOT worth the effort it takes.	Agree	4.8%	4.5%	9.2%	7.2%
	Disagree	95.2%	95.5%	90.8%	92.8%
	N	251	519	120	320

Source: SFA district-level, principal, school food service staff, and teacher surveys.

Sample: Excludes 1–45 districts, schools, food service staff, and teachers that did not respond to questions.

The surveys also asked respondents about challenges they encountered implementing FFVP. Few major challenges were reported among any group of respondents (see Appendix D, Exhibit D4.6). SFA directors reported somewhat more barriers than did other types of respondent, though only two major challenges were reported by more than 20 percent of SFA directors: lack of storage space/facilities (23 percent) and high produce prices (21 percent).

Produce Quality

SFA directors were satisfied with the quality of the fruits and vegetables served in FFVP. Fruits were perceived to be of somewhat higher quality than vegetables, with 40.5 percent of all fruits rated of very high quality and 35.7 percent of vegetables rated of very high quality (Exhibit 4.22). The most highly rated fruits with respect to quality were mangoes, plums, and pineapples. Blueberries were the most poorly rated fruit, with 2.5 percent of SFA directors rating them of very poor quality. Tomatoes were the most highly rated vegetable, with string beans and cucumber following not far behind. Vegetables were rarely rated to be of very poor quality (Appendix D, Exhibits D4.7 and D4.8).

Exhibit 4.22: Overall SFA Fruit and Vegetable Quality Rating

	N	Very poor (%)	Somewhat poor (%)	Average (%)	Somewhat high (%)	Very high (%)
Fruits	547	0.2	0.8	27.9	30.6	40.5
Vegetables	374	0.2	0.6	33.0	30.5	35.7
Fruits and vegetables	561	0.2	0.7	28.9	30.4	39.9

Source: SFA school-level survey. Weighted to represent all FFVP schools nationally (schools are given equal weight).

Sample: Includes all schools where 1 or more fruits or vegetables were rated.

4.5 Discussion

FFVP aims to increase students' consumption of fruits and vegetables and expand the variety of fruits and vegetables they experience. Consistent with these goals, schools reported serving a variety of fresh fruits and vegetables each week, on average 6 different foods. Schools also served a wide variety of specific fruits and vegetables. Among 19 specific fruits, 15 fruits had been served by a majority of schools at some time during the year; among 13 specific vegetables, 8 vegetables had been served by a majority of schools. Fruits were served substantially more often than vegetables.

FNS encourages schools to offer FFVP snacks at least two times per week and most schools (94 percent) reported doing so. Many schools provided snacks as many days as possible—41 percent provided FFVP snacks five days a week and an additional 41 percent served snacks three or four days per week. Schools served FFVP snacks both before and after lunch.

Serving FFVP snacks in classrooms appears to be the preferred method for most schools. Just over half the schools (55 percent) served the snacks exclusively in classrooms, and 90 percent served them in the classroom at least some of the time. Serving from mobile carts, in the cafeteria, and in hallways were the most common other venues. Almost 90 percent of schools served the FFVP snacks using just one or two distribution methods.

Nutrition education is considered a critical component of FFVP and schools are strongly encouraged to provide nutrition education along with the FFVP snacks. Two-thirds of schools reported providing nutrition education activities during the reference week. On average, these schools conducted nutrition education lessons three times during the week. While not providing nutrition education every week, 82 percent indicated providing nutrition education in the month prior to completing the survey. Consistent with the intent of FFVP, nutrition education messages focused on the role of fruit and vegetables in a complete diet and on trying new foods.

States, school districts, and schools are encouraged to form partnerships with outside organizations to support implementation and operation of FFVP. While most States (82 percent) have established partnerships, relatively few districts (24 percent) and schools (12 percent) have developed such independent relationships, though schools and districts likely benefit directly or indirectly from State partnerships. Partners are most likely to provide support for nutrition education activities, including educational materials, and demonstrations or instruction for students.

FFVP is a popular program with strong supporters among SFA directors, principals, school food service staff, and teachers. In general, they were pleased with the specifics of the program. Almost all wanted the program to continue in their schools.

Chapter 5: Student Experiences with FFVP

Understanding student experiences with FFVP provides the context for interpreting the analysis of program impacts. In this chapter, we present descriptive analyses of student experiences with FFVP, focusing on their reported participation, their consumption of the fresh fruits and vegetables served, and their attitudes towards and perceptions of FFVP.

The analysis in this chapter is based on data collected using student surveys and diary-assisted 24-hour dietary recall interviews for students in schools included in the impact study sample. As described in detail in Chapter 2, the impact sample is not a representative sample of all schools; rather, it is a purposive sample of schools near the FFVP participation cutoff. Further, this chapter analyzes data for students in FFVP schools in the restricted near-cutoff subsample (our preferred analytic sample specification), which includes only students in FFVP schools within two and a half percentage points of the appropriate State-specific free and reduced-price lunch (FRPSL) percentage cutoff.⁴⁵ These descriptive findings do not therefore necessarily generalize to all students in FFVP schools, many of which are far from the cutoff.

The restricted near-cutoff subsample includes 2,471 individual students in 115 FFVP schools with FRPSL-eligible percentages ranging from 59 to 98 percent⁴⁶. Although it might be supposed that these students were less needy as a group than FFVP participants in general, characteristics of this subsample are in fact similar to the characteristics of students in our representative sample of FFVP schools as described in Chapter 3 with regard to both proportion eligible for FRPSL (82.6 percent versus 84.6 percent) and proportion who identify as a minority race/ethnicity (78.9 percent versus 77.3 percent). For each outcome measure considered, we report results for the analytic sample as a whole, as well as for demographic subgroups (by gender, grade level, race/ethnicity, and FRPSL participation status).⁴⁷

Our strategy for reporting statistical significance in the exhibits is to use asterisks to indicate statistical significance: * $p < .10$; ** $p < .05$; and *** $p < .01$. In the discussion we consider p-values lower than 0.05 as statistically significant and discuss those results. We consider p-values of 0.05 or higher as indicating a lack of relationship and thus we do not discuss these results in the text. We note that with large numbers of tests one would expect to find statistically significant differences within subgroups due to random chance alone. These results must therefore be considered exploratory in nature. Additionally, we note that some differences, while statistically significant, are relatively small

⁴⁵ See Appendix C for details of the RD impact sample, including a discussion of the restricted sample.

⁴⁶ See Exhibit D6.2 in Appendix D for summary information on demographic characteristics in the restricted near-cutoff subsample and the full RD impact sample.

⁴⁷ We report descriptive statistics for those students who responded to each question and include Ns in table headings to identify the number of respondents included. In general, item nonresponse on the student survey was very low (below 10 percent), so we would not expect a different treatment of missing data to materially alter descriptive findings.

For the subgroup analyses, we report point estimates within each subgroup, and p-values for differences across subgroups, based on chi-square tests for binary and categorical measures, and t-tests for continuous measures. All p-values are adjusted appropriately to account for the complex sampling design.

in magnitude, and may not therefore be considered “meaningful” from a nutrition or health perspective.

The remainder of this chapter proceeds as follows: in Section 5.1, we discuss FFVP participation, including student-reported frequency of participation in FFVP and reasons for nonparticipation; Section 5.2 describes students’ intake of fruits and vegetables from FFVP; and the final section examines students’ and parents’ attitudes and perceptions about fruits and vegetables and FFVP.

5.1 FFVP Participation

In order to understand program participation from the student’s perspective, the survey asked a series of questions about how often students chose to take the fruit or vegetable snack when it was offered, how much of the snack they consumed, and reasons they didn’t take the free snack when it was offered.

Frequency of Program Participation. Most students reported that they generally took the fresh fruit or vegetable snacks when offered—85 percent took the fruit snacks most or all of the time they were offered and 63 percent took the vegetable snacks most or all of the time they were offered (Exhibit 5.1).

Students reported that they were substantially more likely to participate in FFVP when fruits were offered than when vegetables were offered (chi-squared test; $p < 0.001$; test not reported in table). For fruits, 48 percent of students reported that they took the snacks every time, and 38 percent of students reported that they took them most times, as compared to 30 percent of students who reported that they took vegetable offerings every time and 33 percent of students who reported that they took vegetable offerings most times. Only 3 percent of students reported that they did not take or eat the FFVP snacks when fruits were offered, as compared to 11 percent of students who reported that they did not take or eat the snacks when vegetables were offered.

Exhibit 5.1 also shows that in FFVP schools, there were no statistically significant differences in the frequency with which students took FFVP fruits and vegetables by gender, grade level, race/ethnicity, or FRPSL status.

Usual Proportion Eaten. While the majority of students reported eating most of the FFVP snacks offered, they usually ate a greater proportion of fresh fruit snacks than of fresh vegetable snacks, as Exhibit 5.2 shows (chi-squared test; $p < 0.001$; test not reported in table). Sixty percent of students reported that they usually ate all of the free fresh fruit snacks when offered, and another 26 percent that they usually ate most of them, with only 3 percent reporting that they usually did not take or eat the fruit snacks. In contrast, only about half as many students (33 percent) reported that they usually ate all of the free fresh vegetable snacks when offered, and another 28 percent that they usually ate most of the free fresh vegetable snacks when offered, with 17 percent reporting that they usually did not take or eat the vegetable snacks.

In sum, while participation in FFVP was high, according to student self-reports, fruit snacks were significantly more popular than vegetable snacks.

Exhibit 5.1: Descriptive Statistics, Self-Reported Frequency of Participation by FFVP Students, Fresh Fruits and Fresh Vegetables, Restricted Near-Cutoff Subsample and Demographic Subgroups

	Frequency of fresh fruit participation (n=2,308)						Frequency of fresh vegetable participation (n=2,305)					
	Takes every time	Takes most times	Takes occasionally	Never takes	Hasn't seen offered	P-value for difference	Takes every time	Takes most times	Takes occasionally	Never takes	Hasn't seen offered	P-value for difference
All students	47.7%	37.5%	10.7%	2.5%	1.6%	N/A	29.9%	33.3%	21.5%	10.8%	4.4%	N/A
Gender												
Male	47.3%	34.9%	13.0%	3.3%	1.6%	(0.070)*	30.3%	31.1%	23.0%	11.8%	3.9%	(0.642)
Female	48.1%	39.5%	9.0%	1.8%	1.5%		29.7%	35.0%	20.4%	10.0%	4.8%	
Grade level												
4th grade	49.7%	35.7%	10.3%	2.9%	1.5%	(0.520)	32.5%	33.2%	19.6%	10.8%	3.9%	(0.782)
5th grade	47.7%	37.9%	10.4%	2.4%	1.7%		28.9%	33.4%	22.0%	10.7%	5.1%	
6th grade	40.4%	43.1%	14.1%	0.8%	1.6%		23.8%	33.6%	27.3%	11.3%	3.9%	
Race/ethnicity												
Hispanic	47.7%	37.3%	11.8%	2.5%	0.7%	(0.327)	26.9%	34.6%	23.7%	10.7%	4.1%	(0.716)
Non-Hispanic black	51.9%	33.2%	10.5%	2.2%	2.2%		35.4%	32.0%	17.7%	10.6%	4.4%	
Non-Hispanic white	43.0%	41.1%	10.5%	2.7%	2.7%		29.0%	31.9%	21.6%	11.3%	6.2%	
Other race/ethnicity	47.5%	42.1%	6.6%	2.7%	1.1%		31.7%	34.4%	21.9%	10.9%	1.1%	
FRPSL status												
Eligible for free lunch	50.2%	36.3%	10.1%	2.2%	1.2%	(0.199)	31.9%	33.5%	20.2%	10.4%	4.0%	(0.567)
Eligible for reduced-price lunch	42.5%	42.5%	10.2%	2.7%	2.2%		24.3%	31.4%	27.6%	12.4%	4.3%	
Not FRPSL eligible	40.3%	40.0%	13.7%	3.3%	2.6%		24.3%	33.6%	24.3%	11.6%	6.1%	

Source: Student survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.2: Descriptive Statistics, Self-Reported Proportion of FFVP Snack Usually Eaten by FFVP Students, Fresh Fruits and Fresh Vegetables, Restricted Near-Cutoff Subsample and Demographic Subgroups

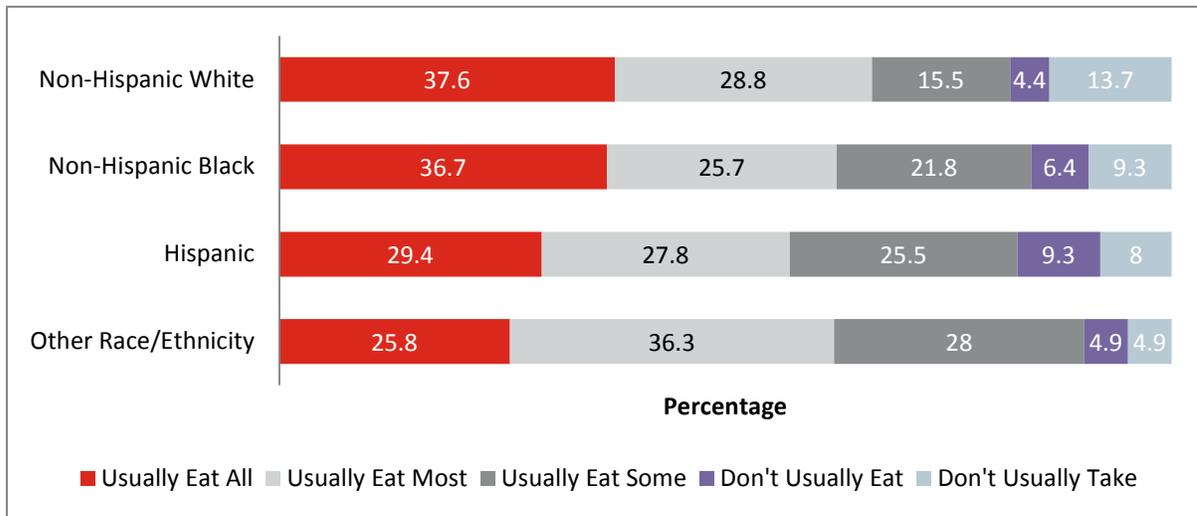
Characteristic	Fresh fruit consumption (n=2,298)						Fresh vegetable consumption (n=2,273)					
	Usually eat all	Usually eat most	Usually eat some	Don't usually eat any	Don't usually take	P-value for difference	Usually eat all	Usually eat most	Usually eat some	Don't usually eat any	Don't usually take	P-value for difference
All students	59.8%	25.6%	11.2%	1.8%	1.6%	N/A	32.8%	28.2%	22.5%	7.1%	9.4%	N/A
Gender												
Male	59.4%	24.7%	11.3%	2.5%	2.1%	(0.146)	33.5%	27.9%	21.4%	8.2%	9.0%	(0.758)
Female	60.1%	26.3%	11.2%	1.2%	1.2%		32.3%	28.4%	23.4%	6.3%	9.6%	
Grade level												
4th grade	60.9%	24.6%	11.0%	2.2%	1.3%	(0.518)	34.9%	28.1%	21.3%	7.0%	8.7%	(0.562)
5th grade	59.8%	25.1%	11.7%	1.4%	2.0%		32.7%	27.0%	23.5%	7.7%	9.1%	
6th grade	55.5%	31.6%	10.2%	1.6%	1.2%		25.0%	32.8%	23.4%	5.5%	13.3%	
Race/ethnicity												
Hispanic	57.1%	27.1%	13.1%	1.5%	1.2%	(0.255)	29.4%	27.8%	25.5%	9.3%	8.0%	(0.006)***
Non-Hispanic black	63.7%	22.3%	10.8%	1.7%	1.5%		36.7%	25.7%	21.8%	6.4%	9.3%	
Non-Hispanic white	59.5%	26.9%	8.8%	2.2%	2.6%		37.6%	28.8%	15.5%	4.4%	13.7%	
Other race/ethnicity	62.6%	24.7%	8.8%	2.7%	1.1%		25.8%	36.3%	28.0%	4.9%	4.9%	
FRPSL status												
Eligible for free lunch	59.8%	25.3%	11.7%	1.8%	1.4%	(0.839)	32.7%	28.1%	23.5%	7.3%	8.4%	(0.758)
Eligible for reduced-price lunch	60.3%	26.6%	10.3%	1.6%	1.1%		31.3%	26.8%	23.5%	6.1%	12.3%	
Not FRPSL eligible	59.4%	26.5%	9.5%	1.9%	2.6%		33.8%	29.0%	18.1%	7.0%	12.1%	

Source: Student survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Although there were no statistically significant differences in self-reported proportion of FFVP fruit snacks usually eaten by demographic subgroup, the distribution of responses for the self-reported proportion of FFVP vegetables usually eaten differed markedly by racial/ethnic subgroup, as reported in Exhibit 5.2 and illustrated in Exhibit 5.3. Non-Hispanic whites and non-Hispanic blacks most frequently reported that they usually ate all of the vegetable snacks when offered (38 and 37 percent, respectively), followed by Hispanics (29 percent), and students of other race/ethnicity (26 percent).⁴⁸

Exhibit 5.3: Self-Reported Proportion of FFVP Vegetable Snack Usually Eaten by FFVP Students, by Racial/Ethnic Subgroup, Percentages by Response Category (N=2,273)



Source: Student survey.

Reasons for Nonparticipation. Students were also asked why they didn’t take the fruit or vegetable snacks when they were offered. (Students were also given the option to check “I already take them every time they are offered” as a possible response.) Exhibit 5.4 shows the percentage of students who identified each possible reason as a cause for nonparticipation. Because students could give multiple reasons, rows do not sum to 100 percent.

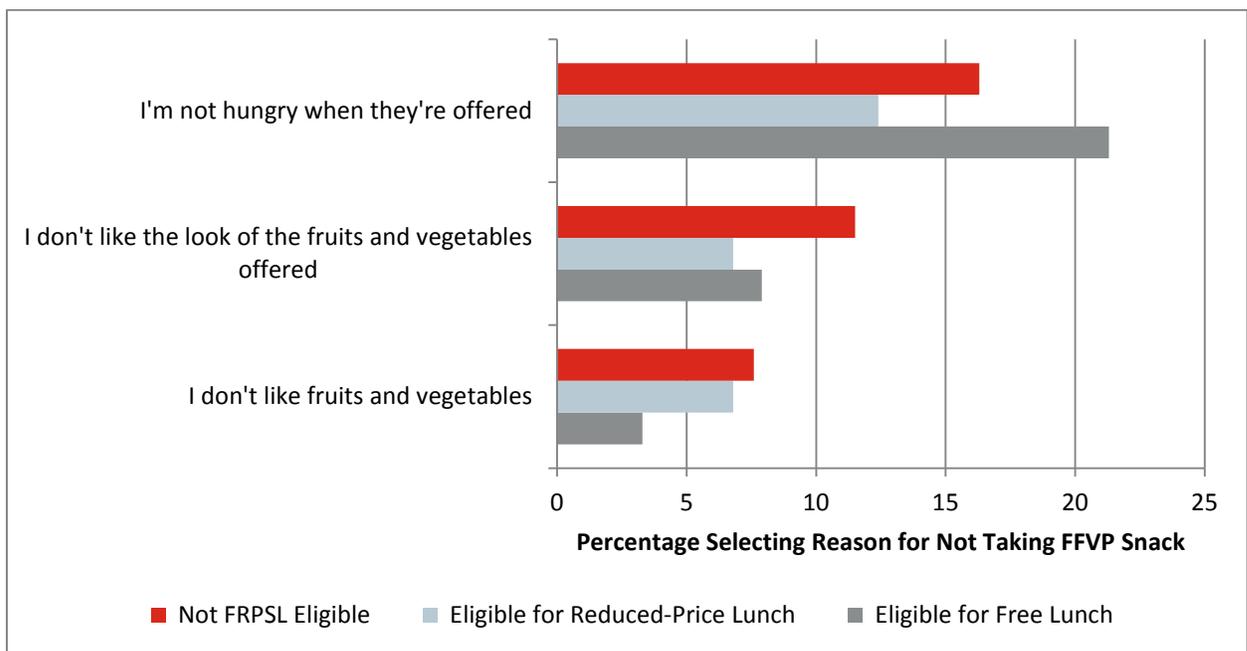
⁴⁸ These four groups comprised 21, 26, 45, and 8 percent of the sample, respectively. (See Appendix D, Exhibit D6.2.)

While the majority of students (53 percent) said that they took the FFVP snacks every time they were offered, the most common reason identified for *not* taking the fruit and vegetable snacks was, “I’m not hungry when they’re offered,” with approximately 20 percent of students identifying this as a reason for nonparticipation. The next most common reason was “I don’t like the look of the fruits and vegetables offered,” selected by approximately 9 percent of students, and the least common reason was “I don’t like fruits and vegetables,” selected by only about 4 percent of students.

There were a number of statistically significant differences in reasons identified for nonparticipation by demographic subgroup (Exhibits 5.4 and 5.5):

- Younger students were significantly more likely to report taking the snacks every time (58 percent of 4th graders, 52 percent of 5th graders, and 43 percent of 6th graders).
- Students eligible for free lunches were more likely to select “not hungry” as a reason for nonparticipation (21 percent) as compared to other students (16 percent of students not eligible for free lunches, and 12 percent of students eligible for reduced-price lunches).
- Non-Hispanic white students (7 percent) and students of “other” race/ethnicities (5 percent) were more likely than Hispanics (3 percent) and non-Hispanic blacks (4 percent) to select “don’t like fruits and vegetables” as a reason.
- Students who were not eligible for free lunches were also more likely to select “don’t like fruits and vegetables” as a reason for nonparticipation (8 percent of FRPSL-ineligible students, 7 percent of students eligible for reduced-price lunches, and 3 percent of students eligible for free lunches).

Exhibit 5.5: Reasons for Nonparticipation, by Free and Reduced-Price Lunch Status Subgroup, Percentages Selecting Each Reason for Not Taking the FFVP Fruit or Vegetable Snacks (N=2,571)



Source: Student survey.

5.2 Fruit and Vegetable Intake from FFVP Snacks

In this section, we use data from the diary-assisted 24-hour dietary recall interview to calculate students' mean daily fruit and vegetable intake from FFVP snacks on FFVP days. We report intake broken down by MyPyramid food group, as well as provide comparisons of total fruit and vegetable intake across demographic subgroups.

Exhibit 5.6 reports total MyPyramid fruit and vegetable cup-equivalent servings consumed by students as part of FFVP.⁴⁹ On average, students in our FFVP sample consumed a little over a quarter of a cup of fruits and vegetables on FFVP days, accounting for approximately 42 kilocalories. Mean fruit intake comprised the majority of this total, about 0.22 cup-equivalents, or 83 percent of total fruit and vegetable servings. Vegetable intake comprised the remainder, about 0.04 cup-equivalents.

There were no statistically significant differences by subgroup in mean intake of fruits, vegetables, or fruits and vegetables combined (Exhibit 5.7).

Exhibit 5.6: MyPyramid Fruit and Vegetable Intake and Total Energy Intake from FFVP Snacks and Comparison to Total Intake among Students in FFVP Schools, Restricted Near-Cutoff Subsample (N=2,903)

MyPyramid food group	FFVP intake		Total intake		FFVP as % of total intake
	Mean	(Standard deviation)	Mean	(Standard deviation)	
Total fruits and vegetables (cup-equivalents¹)	0.260	(0.429)	2.384	(1.690)	10.9
Total fruits (cup-equivalents¹)	0.216	(0.415)	1.460	(1.354)	14.8
Citrus fruits, melons, and berries	0.066	(0.194)	0.524	(0.779)	12.6
Other fruits	0.150	(0.378)	0.936	(1.046)	16.0
Total vegetables (cup-equivalents¹)	0.044	(0.163)	0.924	(0.876)	4.8
Dark-green vegetables	0.007	(0.053)	0.047	(0.201)	14.9
Orange vegetables	0.014	(0.094)	0.073	(0.202)	19.2
Starchy vegetables	0.003	(0.039)	0.287	(0.481)	1.0
White potatoes	0.000 [†]	—	0.215	(0.419)	0.0
Other starchy vegetables	0.003	(0.039)	0.071	(0.211)	4.2
Other vegetables	0.020	(0.104)	0.518	(0.621)	3.9
Tomatoes	0.004	(0.037)	0.278	(0.422)	1.4
Other	0.016	(0.096)	0.240	(0.371)	6.7
Total energy intake (kcal)	42	(39)	1905	(806)	2.2

Source: Student diary-assisted recall interview.

¹ MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

[†] Zero intake.

⁴⁹ Note that because only fresh fruits and vegetables are served by the FFVP, total fruit and intake from FFVP snacks is identical to total *fresh* fruit and vegetable intake from FFVP snacks.

Exhibit 5.7: Fruit and Vegetable Intake from FFVP Snacks, by Demographic Subgroup, Mean Cup-Equivalents Consumed¹, Restricted Near-Cutoff Subsample (N=2,903)

Characteristic	Mean fruit intake	P-value for difference from full sample mean	Mean vegetable intake	P-value for difference from full sample mean	Mean fruit and vegetable intake	P-value for difference from full sample mean
All students	0.216	N/A	0.044	N/A	0.260	N/A
Gender						
Male	0.202	(0.629)	0.044	(0.984)	0.246	(0.621)
Female	0.228	(0.629)	0.044	(0.984)	0.272	(0.621)
Grade level						
4th grade	0.243	(0.356)	0.038	(0.580)	0.281	(0.478)
5th grade	0.197	(0.517)	0.045	(0.912)	0.243	(0.542)
6th grade	0.184	(0.666)	0.065	(0.490)	0.249	(0.873)
Race/ethnicity						
Hispanic	0.163	(0.061)*	0.057	(0.253)	0.220	(0.155)
Non-Hispanic black	0.270	(0.227)	0.029	(0.389)	0.299	(0.378)
Non-Hispanic white	0.277	(0.227)	0.032	(0.548)	0.309	(0.333)
Other race/ethnicity	0.184	(0.713)	0.051	(0.846)	0.235	(0.770)
FRPSL status						
Eligible for free lunch	0.206	(0.521)	0.047	(0.685)	0.253	(0.625)
Eligible for reduced-price lunch	0.216	(1.000)	0.047	(0.941)	0.263	(0.976)
Not FRPSL eligible	0.259	(0.459)	0.032	(0.607)	0.291	(0.593)

Source: Student diary-assisted recall interview and survey.

Asterisks indicate subgroup mean is statistically significantly different from mean for full sample: *p<0.10, **p<0.05, ***p<0.01. (T test, adjusting for clustering of students within schools.)

¹ MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

5.3 Attitudes and Perceptions towards FFVP

Students and their parents were asked a series of questions about general attitudes towards and perceptions of FFVP; in this section, we report on their perspectives on the program.

Students. Overall, FFVP was popular with students, with the great majority (86 percent) agreeing “very much” and 11 percent agreeing “a little” that they hoped FFVP would continue in their schools (Exhibit 5.8). This finding mirrors the opinions of school and district administrators who expressed strong support for the program (see Chapter 4). There were no statistically significant differences in agreement across demographic subgroups by gender, grade level, race/ethnicity, or FRPSL eligibility status.

The majority of students agreed that the FFVP fruit and vegetable snacks “look and taste good,” with about half of students (50 percent) agreeing very much and another 37 percent agreeing a little. There were no statistically significant differences in agreement with this statement by demographic subgroup (Exhibit 5.9).

However, as also shown in Exhibit 5.9, there was some evidence that students favored changes in specific fruit and vegetables offerings, with 55 percent agreeing very much and 28 percent agreeing a little that they “wished they would give us different kinds of fresh fruits and vegetables” as FFVP snacks. Minority students were substantially more likely to agree with this statement, with 60 percent of non-Hispanic blacks, 59 percent of Hispanics, and 58 percent of students of “other” race/ethnicity agreeing “very much,” as compared to just 42 percent of non-Hispanic whites.

While the majority of students (85 percent) agreed “very much” or “a little” that they ate more fruits and vegetables on days when FFVP snacks were offered, fewer (50 percent) students agreed that they did not eat other kinds of snacks on days when FFVP snacks were offered (Exhibit 5.10).

As with the opinion questions on type of fruits and vegetable snacks offered, there were some differences in responses to these items across racial/ethnic subgroups. Non-Hispanic blacks were least likely to agree that they ate more fruits and vegetables on FFVP days (79 percent agreeing very much or a little), and were least likely to agree that they ate fewer other types of snacks (42 percent agreeing). This compares to 87 percent of Hispanics, 86 percent of non-Hispanic whites, and 84 percent of students of “other” race/ethnicity agreeing that they ate more fruits and vegetables on FFVP days, and 55 percent of Hispanics, 51 percent of non-Hispanic whites, and 48 percent of “other” race/ethnicity students agreeing that they ate fewer other snacks.

Additionally, younger students were more likely to agree that they ate more fruits and vegetables on FFVP days with 50 percent of 4th graders agreeing very much, as compared to 44 percent of 5th graders and 35 percent of 6th graders. This is consistent with the finding that younger students were more likely than older students to take the FFVP snack every time it was offered (Exhibit 5.4).

Exhibit 5.8: Descriptive Statistics, FFVP Student General Satisfaction with FFVP, Restricted Near-Cutoff Subsample and Demographic Subgroups

Characteristic	Agreement that “I hope the free fresh fruit and vegetable snack program continues at our school” (N=2,587)				P-value for difference
	Agree very much	Agree a little	Disagree a little	Disagree a lot	
All students	86.0%	10.8%	2.0%	1.1%	N/A
Gender					
Male	85.0%	11.1%	2.4%	1.4%	(0.601)
Female	86.8%	10.5%	1.7%	1.0%	
Grade level					
4th grade	88.1%	8.7%	2.0%	1.2%	(0.220)
5th grade	84.7%	12.3%	1.8%	1.2%	
6th grade	83.1%	13.2%	3.3%	0.4%	
Race/ethnicity					
Hispanic	85.2%	11.7%	2.1%	1.1%	(0.681)
Non-Hispanic black	84.8%	11.8%	1.8%	1.6%	
Non-Hispanic white	87.1%	9.9%	2.2%	0.8%	
Other race/ethnicity	91.8%	5.3%	1.8%	1.2%	
FRPSL status					
Eligible for free lunch	85.7%	11.4%	1.7%	1.2%	(0.437)
Eligible for reduced-price lunch	87.1%	10.7%	1.1%	1.1%	
Not FRPSL eligible	86.9%	8.6%	3.5%	1.0%	

Source: Student diary-assisted recall interview and survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.9: Descriptive Statistics, FFVP Student Opinions of Fresh Fruit and Vegetable Snacks Offered, Restricted Near-Cutoff Subsample and Demographic Subgroups

	Agreement that “The free fresh fruits and vegetables they give us for school snacks look good and taste good” (N=2,584)					Agreement that “I wish they would give us different kinds of fresh fruits and vegetables to eat for school snacks” (N=2,568)				
	Agree very much	Agree a little	Disagree a little	Disagree a lot	P-value for difference	Agree very much	Agree a little	Disagree a little	Disagree a lot	P-value for difference
All students	49.8%	36.5%	11.0%	2.7%	N/A	55.3%	28.3%	9.4%	7.0%	N/A
Gender										
Male	50.2%	35.5%	11.0%	3.4%	(0.550)	54.0%	30.2%	8.9%	7.0%	(0.621)
Female	49.6%	37.3%	11.0%	2.1%		56.4%	26.8%	9.8%	7.0%	
Grade level										
4th grade	53.1%	34.7%	9.6%	2.6%	(0.140)	53.7%	28.8%	10.1%	7.4%	(0.674)
5th grade	48.8%	37.2%	11.0%	3.0%		56.4%	27.7%	8.4%	7.4%	
6th grade	41.2%	40.7%	16.5%	1.6%		57.3%	28.2%	10.8%	3.7%	
Race/ethnicity										
Hispanic	49.4%	37.6%	10.4%	2.6%	(0.742)	59.4%	26.2%	8.4%	6.0%	(<0.001)***
Non-Hispanic black	46.5%	38.0%	12.8%	2.7%		59.6%	25.9%	7.6%	6.9%	
Non-Hispanic white	53.7%	32.1%	11.0%	3.3%		41.7%	34.6%	14.4%	9.3%	
Other race/ethnicity	52.0%	38.0%	8.8%	1.2%		58.2%	29.4%	6.5%	5.9%	
FRPSL status										
Eligible for free lunch	50.9%	35.2%	11.5%	2.4%	(0.682)	57.2%	27.1%	8.9%	6.8%	(0.167)
Eligible for reduced-price lunch	47.5%	40.7%	9.6%	2.3%		55.1%	30.1%	6.3%	8.5%	
Not FRPSL eligible	46.7%	39.6%	9.8%	3.8%		47.9%	32.2%	12.8%	7.1%	

Source: Student diary-assisted recall interview and survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.10: Descriptive Statistics, FFVP Student Perceptions of Changes in Eating Habits, Restricted Near-Cutoff Subsample and Demographic Subgroups

Characteristic	Agreement that “I eat more fruits and vegetables on days when free fresh fruits and vegetable snacks are given at school than on other days” (N=2,589)					Agreement that “On days when I eat a free fresh fruit or a vegetable snack at school, I don’t eat other kinds of snacks” (N=2,568)				
	Agree very much	Agree a little	Disagree a little	Disagree a lot	P-value for difference	Agree very much	Agree a little	Disagree a little	Disagree a lot	P-value for difference
All students	46.0%	38.6%	9.3%	6.1%	N/A	19.2%	31.0%	28.9%	20.9%	N/A
Gender										
Male	45.6%	39.1%	9.2%	6.2%	(0.989)	20.6%	32.1%	28.2%	19.2%	(0.364)
Female	46.2%	38.3%	9.4%	6.1%		18.2%	30.2%	29.3%	22.2%	
Grade level										
4th grade	50.4%	36.8%	8.0%	4.7%	(0.006)***	21.0%	30.9%	27.5%	20.6%	(0.641)
5th grade	44.3%	38.4%	9.6%	7.7%		18.1%	30.7%	29.4%	21.8%	
6th grade	34.7%	46.5%	13.5%	5.3%		16.5%	32.9%	32.1%	18.5%	
Race/ethnicity										
Hispanic	46.2%	40.8%	8.3%	4.7%	(0.048)**	22.2%	32.7%	26.1%	19.0%	(0.035)**
Non-Hispanic black	41.8%	37.1%	12.2%	9.0%		15.8%	26.4%	32.9%	24.9%	
Non-Hispanic white	51.3%	35.1%	7.5%	6.1%		18.1%	33.1%	29.5%	19.3%	
Other race/ethnicity	43.0%	41.3%	11.0%	4.7%		17.1%	30.6%	29.4%	22.9%	
FRPSL status										
Eligible for free lunch	46.9%	38.6%	9.0%	5.6%	(0.655)	20.0%	31.9%	28.1%	20.0%	(0.410)
Eligible for reduced-price lunch	43.5%	40.7%	10.2%	5.6%		20.6%	26.3%	30.9%	22.3%	
Not FRPSL eligible	43.3%	37.8%	10.3%	8.6%		15.4%	29.8%	31.1%	23.7%	

Source: Student diary-assisted recall interview and survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Parents. Like students, parents had generally positive attitudes about FFVP (Exhibits 5.11 and 5.12). Ninety-eight percent of parents agreed strongly or somewhat that FFVP is a good program overall, and 96 percent strongly or somewhat agreed that program should be offered more frequently, particularly parents of younger students, Hispanics, and free-lunch eligible students. Eighty-six percent of parents said they encouraged their child to eat the FFVP offering most or all of the time. Only 17 percent agreed strongly or somewhat that they did not like time taken away from class to give out FFVP snacks, though larger proportions of parents of Hispanic and free-lunch eligible students agreed with this statement overall.

Parents were also asked to report on their children's opinion of FFVP (Exhibits 5.13 and 5.14). Seventy-two percent of parents felt that their child liked to eat the FFVP snack most or all of the time, with parents reporting greater satisfaction with FFVP snacks among girls. Few parents (7 percent) said that their child complained about the quality of the FFVP snack most or all of the time, though more frequent complaints were reported for Hispanic and non-Hispanic black students and free and reduced-price eligible students. Somewhat greater proportions of parents (15 percent) reported that their children got tired of the same FFVP snacks being offered.

Finally, parents were asked to report on their perceptions of their children's eating habits and changes associated with FFVP (Exhibits 5.15 and 5.16). Most parents (66 percent) felt that their children ate fruits and vegetables more frequently (most or all of the time) since FFVP began in their school; slightly less than half (45 percent) said that their children asked for fruits and vegetables at home more frequently, and 34 percent said their children ate fewer unhealthy foods most or all of the time on days when FFVP was offered.

Exhibit 5.11: Descriptive Statistics, FFVP Parent General Satisfaction with FFVP, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Characteristic	Agreement that “Overall, I think the free fresh fruit and vegetable snack program is good” (N=2,720)					Agreement that “The fresh fruit and vegetable snack at school should be offered more frequently” (N=2,690)				
	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	P-value for difference	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	P-value for difference
All parents	90.9%	7.5%	0.9%	0.7%	N/A	75.4%	20.3%	2.6%	1.8%	N/A
Student gender										
Male	90.2%	7.9%	1.3%	0.6%	(0.197)	74.1%	21.1%	3.2%	1.6%	(0.257)
Female	91.5%	7.1%	0.5%	0.9%		76.3%	19.7%	2.0%	2.0%	
Student grade level										
4th grade	91.9%	6.6%	0.5%	1.0%	(0.354)	77.6%	18.4%	2.2%	1.8%	(0.016)**
5th grade	90.0%	8.0%	1.3%	0.7%		75.1%	20.7%	2.3%	2.0%	
6th grade	90.4%	8.8%	0.8%	0.0%		67.5%	26.2%	5.2%	1.2%	
Student race/ethnicity										
Hispanic	91.1%	7.0%	1.4%	0.6%	(0.290)	80.5%	15.5%	2.3%	1.7%	(<0.001)***
Non-Hispanic black	90.4%	8.0%	0.7%	0.9%		74.8%	21.0%	2.2%	1.9%	
Non-Hispanic white	92.4%	6.6%	0.2%	0.8%		67.7%	26.4%	3.4%	2.4%	
Other race/ethnicity	87.6%	10.7%	0.6%	1.1%		68.8%	27.8%	2.8%	0.6%	
Student FRPSL status										
Eligible for free lunch	91.3%	7.1%	0.8%	0.8%	(0.422)	77.8%	18.0%	2.3%	1.9%	(<0.001)***
Eligible for reduced-price lunch	90.2%	7.1%	2.2%	0.5%		76.7%	20.6%	2.2%	0.6%	
Not FRPSL eligible	89.9%	8.9%	0.5%	0.7%		64.7%	29.4%	3.9%	2.0%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.12: Descriptive Statistics, FFVP Parent General Satisfaction with FFVP, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Characteristic	Frequency that “I encourage my child to eat the free fresh fruit and vegetable snacks offered at school” (N=2,738)					Agreement that “I don’t like it when teachers take time from class to give out the free fresh fruit and vegetable snacks to children” (N=2,505)				
	All of the time	Most of the time	Some of the time	Rarely or never	P-value for difference	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	P-value for difference
All parents	65.5%	20.9%	9.2%	4.4%	N/A	10.2%	6.6%	14.0%	69.1%	N/A
Student gender										
Male	63.2%	22.1%	9.9%	4.9%	(0.337)	10.5%	7.5%	14.1%	67.9%	(0.833)
Female	67.3%	20.0%	8.6%	4.1%		10.0%	5.9%	14.0%	70.1%	
Student grade level										
4th grade	67.6%	20.5%	7.7%	4.2%	(0.397)	10.3%	5.6%	13.0%	71.1%	(0.717)
5th grade	64.5%	21.2%	9.8%	4.5%		10.9%	7.4%	13.8%	67.9%	
6th grade	60.8%	21.6%	12.5%	5.1%		7.2%	7.2%	19.1%	66.5%	
Student race/ethnicity										
Hispanic	63.0%	23.4%	9.1%	4.5%	(0.078)*	16.4%	9.9%	14.0%	59.7%	(<0.001)***
Non-Hispanic black	63.3%	20.1%	11.1%	5.5%		6.2%	4.4%	14.3%	75.1%	
Non-Hispanic white	72.6%	16.8%	7.3%	3.4%		4.1%	2.9%	13.0%	79.9%	
Other race/ethnicity	67.0%	21.2%	8.4%	3.4%		7.0%	6.4%	16.6%	70.1%	
Student FRPSL status										
Eligible for free lunch	65.6%	21.1%	9.2%	4.1%	(0.630)	12.0%	7.9%	14.4%	65.7%	(0.013)**
Eligible for reduced-price lunch	61.0%	21.9%	12.3%	4.8%		7.3%	3.0%	16.5%	73.2%	
Not FRPSL eligible	67.1%	19.7%	7.7%	5.5%		4.3%	3.0%	11.7%	81.0%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.13: Descriptive Statistics, FFVP Parent Perception of Child Satisfaction with FFVP, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Characteristic	Frequency that “My child likes to eat the free fresh fruit and vegetable snacks offered at school” (N=2,739)					Frequency that “My child complains about the quality of free fresh fruit and vegetables offered at school” (N=2,644)				
	All of the time	Most of the time	Some of the time	Rarely or never	P-value for difference	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	P-value for difference
All parents	38.1%	34.1%	25.2%	2.7%	N/A	3.0%	4.2%	18.1%	74.7%	N/A
Student gender										
Male	34.5%	35.0%	27.1%	3.4%	(0.046)**	2.2%	5.2%	17.3%	75.4%	(0.107)
Female	40.8%	33.3%	23.7%	2.1%		3.7%	3.5%	18.7%	74.1%	
Student grade level										
4th grade	40.1%	34.8%	22.8%	2.3%	(0.436)	1.8%	4.4%	17.1%	76.6%	(0.193)
5th grade	37.2%	33.5%	26.4%	2.9%		4.0%	4.1%	19.5%	72.4%	
6th grade	33.5%	33.5%	29.9%	3.1%		3.6%	3.6%	16.9%	75.9%	
Student race/ethnicity										
Hispanic	36.3%	33.4%	27.9%	2.4%	(0.064)*	3.6%	5.1%	18.9%	72.4%	(0.006)***
Non-Hispanic black	39.1%	32.5%	26.7%	1.7%		3.8%	4.9%	20.9%	70.4%	
Non-Hispanic white	41.5%	35.5%	18.7%	4.3%		1.8%	2.2%	13.5%	82.5%	
Other race/ethnicity	35.2%	39.0%	23.1%	2.7%		0.6%	2.8%	18.0%	78.7%	
Student FRPSL status										
Eligible for free lunch	39.2%	33.5%	25.3%	2.0%	(0.197)	3.4%	4.3%	19.7%	72.5%	(0.027)**
Eligible for reduced-price lunch	35.1%	34.6%	26.5%	3.8%		1.6%	6.0%	15.4%	76.9%	
Not FRPSL eligible	35.0%	36.2%	24.0%	4.8%		1.9%	2.9%	13.1%	82.0%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.14: Descriptive Statistics, FFVP Parent Perception of Child Changes in Eating Habits, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Characteristic	Frequency that that “My child gets tired of the same kinds of free fresh fruits and vegetables offered at school” (N=2,614)				P-value for difference
	All of the time	Most of the time	Some of the time	Rarely or never	
All parents	5.6%	9.3%	30.0%	55.0%	N/A
Student gender					
Male	5.1%	9.1%	29.1%	56.6%	(0.776)
Female	5.9%	9.5%	30.7%	53.8%	
Student grade level					
4th grade	4.6%	8.6%	28.9%	58.0%	(0.471)
5th grade	6.6%	10.2%	31.6%	51.6%	
6th grade	5.8%	9.1%	28.4%	56.8%	
Student race/ethnicity					
Hispanic	6.3%	9.3%	29.9%	54.5%	(0.605)
Non-Hispanic black	6.8%	10.7%	31.4%	51.2%	
Non-Hispanic white	3.6%	8.0%	29.1%	59.2%	
Other race/ ethnicity	3.4%	9.1%	29.1%	58.3%	
Student FRPSL status					
Eligible for free lunch	6.4%	9.4%	30.4%	53.8%	(0.258)
Eligible for reduced-price lunch	3.8%	9.9%	34.1%	52.2%	
Not FRPSL eligible	3.0%	8.9%	26.9%	61.2%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.15: Descriptive Statistics, FFVP Parent Perception of Child Changes in Eating Habits, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Characteristic	Frequency that “My child eats more fruits and vegetables since they have been offered as a free snack at school” (N=2,671)					Frequency that “My child has asked about fruits and vegetables at home more often since they have been offered as a free snack at school” (N=2,672)				
	All of the time	Most of the time	Some of the time	Rarely or never	P-value for difference	All of the time	Most of the time	Some of the time	Rarely or never	P-value for difference
All parents	28.8%	37.2%	28.4%	5.7%	N/A	19.4%	25.4%	37.7%	17.5%	N/A
Student gender										
Male	24.5%	38.9%	30.3%	6.3%	(0.005)***	16.0%	25.4%	38.4%	20.3%	(0.005)***
Female	32.2%	35.8%	26.9%	5.2%		22.1%	25.4%	37.1%	15.4%	
Student grade level										
4th grade	30.7%	37.7%	26.6%	5.0%	(0.041)**	20.7%	27.6%	36.1%	15.6%	(0.178)
5th grade	29.0%	36.6%	28.1%	6.3%		19.1%	23.6%	39.0%	18.3%	
6th grade	20.2%	37.2%	36.8%	5.9%		15.3%	23.8%	38.7%	22.2%	
Student race/ethnicity										
Hispanic	28.2%	36.7%	29.2%	5.8%	(0.458)	21.6%	27.0%	37.4%	14.0%	(0.007)***
Non-Hispanic black	30.3%	35.6%	29.6%	4.6%		21.0%	24.5%	34.3%	20.3%	
Non-Hispanic white	29.6%	39.6%	23.8%	7.0%		14.7%	24.7%	39.0%	21.5%	
Other race/ethnicity	24.9%	37.9%	32.8%	4.5%		15.0%	20.8%	46.8%	17.3%	
Student FRPSL status										
Eligible for free lunch	30.3%	37.2%	27.9%	4.7%	(0.030)**	21.4%	25.8%	36.5%	16.3%	(0.012)**
Eligible for reduced-price lunch	25.3%	34.6%	32.4%	7.7%		17.3%	23.2%	38.9%	20.5%	
Not FRPSL eligible	24.3%	38.1%	28.7%	8.9%		12.0%	24.7%	42.1%	21.2%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit 5.16: Descriptive Statistics, FFVP Parent Perception of Child Changes in Eating Habits, Restricted Near-Cutoff Subsample and Student Demographic Subgroups

Frequency that that “My child eats fewer unhealthy foods on days that when fresh fruits and vegetables are offered as a free snack at school” (N=2,568)					
Characteristic	All of the time	Most of the time	Some of the time	Rarely or never	P-value for difference
All parents	10.2%	24.2%	35.4%	30.2%	N/A
Student gender					
Male	8.4%	24.1%	37.3%	30.1%	(0.195)
Female	11.6%	24.2%	34.0%	30.3%	
Student grade level					
4th grade	10.6%	24.5%	34.0%	30.9%	(0.946)
5th grade	10.2%	23.7%	36.5%	29.5%	
6th grade	8.3%	24.6%	36.8%	30.3%	
Student race/ethnicity					
Hispanic	10.6%	23.4%	35.6%	30.3%	(0.240)
Non-Hispanic black	8.4%	21.3%	37.1%	33.3%	
Non-Hispanic white	11.9%	29.2%	33.1%	25.8%	
Other race/ethnicity	8.8%	23.9%	35.2%	32.1%	
Student FRPSL status					
Eligible for free lunch	10.5%	22.8%	34.9%	31.8%	(0.162)
Eligible for reduced-price lunch	6.3%	28.4%	36.9%	28.4%	
Not FRPSL eligible	10.9%	27.7%	36.8%	24.6%	

Source: Parent survey.

Asterisks indicate statistically significant differences across subgroups: *p<0.10, **p<0.05, ***p<0.01. (Chi-square test, adjusting for clustering of students within schools.)

5.4 Discussion

Consistent with findings on FFVP attitudes among teachers and administrators as discussed in Chapter 4, FFVP is very popular with students and parents. The great majority of students favored continuation of the program in their schools, and most agreed that the FFVP offerings looked and tasted good; similarly, nearly all parents felt that FFVP was a good program overall, and felt the program should be offered more frequently.

The majority of students and parents additionally agreed that students ate more fruits and vegetables on FFVP days; and fruit and vegetable intake from FFVP snacks, as measured by diary-assisted 24-hour recall interviews, was about a quarter-cup of fruits and vegetables (representing about 42 calories). However, evidence on self-perceived changes in other snacking behavior on FFVP days was more mixed.

FFVP fresh fruit snacks are more popular than FFVP fresh vegetable snacks, with students reporting that they participated more frequently and consumed larger proportions of snacks when fruits were offered than when vegetables were offered. This finding is consistent with greater frequency of fruit offerings as part of FFVP, as previously described in Chapter 4; with student attitudes towards fruits and vegetables more generally, as reported below in Chapter 6; and with results of the prior CDC evaluation of a similar school-based fruit and vegetable snack program (CDC, 2006).

Younger students showed some evidence of greater engagement in the program, with lower grade levels more likely to report that they took the FFVP snacks every time, and more likely to say they ate more fruits and vegetables on FFVP days. However, we did not find evidence of statistically significant differences in fruit and vegetable intake from FFVP snacks by grade level. The most common reason given by students for *not* consuming the FFVP snacks was that they were “not hungry,” suggesting that schools should consider serving FFVP snacks as far as possible from school meals to maximize student participation.

There is some evidence that specific types of fruit and vegetable snacks offered by FFVP are more popular among non-Hispanic white students than among minority students in our sample, particularly FFVP vegetables. Minority students reported that they ate lower proportions of FFVP vegetable snacks as compared to non-Hispanic whites, even though they were less likely than non-Hispanic whites to report not taking or eating FFVP snacks because they do not like fruits and vegetables more generally. In addition, minority students were more likely to agree that they would like to see different types of fruit and vegetable snacks offered by FFVP. These results suggest that culturally appropriate targeting of specific fruit and vegetable offerings might increase FFVP participation and satisfaction among minority students.

Chapter 6: Student Impacts of FFVP

The key objective of the evaluation, as mandated by Congress, is to examine FFVP's impact on students and to determine whether, as a result of participating in the program, they increased their consumption of fruits and vegetables and whether any increase in consumption was in addition to or as a replacement for other foods. In this chapter, we present results of our analyses of the causal impact of FFVP on student-level outcomes.

As discussed in Chapter 2, this analysis uses econometric models that incorporate our regression discontinuity (RD) design. It is plausible to interpret the resulting parameter estimates as the causal effect of FFVP, i.e., the difference in outcomes in FFVP schools relative to what outcomes would have been in those schools without FFVP.

The RD analyses reported in this chapter use data from student surveys and diary-assisted 24-hour recall interviews conducted with students in impact study schools. We scheduled the visits to schools for days on and following the distribution of FFVP snacks. Thus, estimated impacts apply to days on which FFVP snacks were distributed, not to all days or all school days.

The key outcomes for the impact study are student dietary outcomes. The primary and confirmatory outcomes, pre-specified in our Analysis Plan, are:

- Fruit and vegetable consumption, defined as total cup-equivalents of fruits and vegetables consumed per FFVP day.
- Total energy intake, defined as total number of kilocalories consumed per FFVP day.

Secondary outcomes include selected items on knowledge and attitudes about fruits and vegetables from the student survey, and, from the recall interview, estimated information on intake of specific foods and nutrients and adherence to relevant dietary guidelines.

We begin in the next section with a brief overview of the sample used in the student-level impact analyses. Section 6.2 presents impact results for our two primary and confirmatory dietary outcomes, total fruit and vegetable consumption and total energy intake, as well as exploratory analyses to assess heterogeneity in impacts by student demographics and by school nutrition education offerings. Section 6.3 presents exploratory impact analyses to assess differences in knowledge and attitudes about fruits and vegetables, as well as for detailed secondary dietary outcomes by food group and nutrient. We conclude in Section 6.4 with a brief discussion and summary of key findings and limitations.

6.1 Student Sample

As discussed in Chapter 2, our preferred analytic specification includes only students in the subsample of FFVP schools within two and a half percentage points of the appropriate State-specific free and reduced-price lunch (FRPSL) percentage cutoff. This restricted near-cutoff subsample includes 4,696 individual students in 214 schools with FRPSL-eligible percentages ranging from 59 to 98 percent: 115 “treatment” schools that participated in FFVP, and 99 “comparison” schools that did not offer the program.

Exhibit 6.1 presents descriptive statistics for students in schools within two and a half percentage points of the appropriate State-specific FRPSL percentage cutoff. To test for differences in student characteristics across the treatment and comparison groups, we computed chi-square statistics adjusted to account for the complex sampling design. P-values for each comparison are reported in the table; p-values less than 0.05 indicate statistically significant differences.

Exhibit 6.1: Student Characteristics, Treatment vs. Comparison Group, Restricted Near-Cutoff Subsample (N=4,696)

Characteristic	Treatment group	Comparison group	P-value for t-c difference
Gender			
Male	43.9%	43.0%	(0.589)
Female	56.1%	57.0%	
Grade level			
4th grade	44.5%	42.5%	(0.804)
5th grade	44.5%	45.3%	
6th grade	11.0%	12.2%	
Race/ethnicity			
Hispanic	45.2%	38.6%	(0.111)
Non-Hispanic black	25.7%	22.7%	
Non-Hispanic white	21.0%	29.8%	
Other race/ ethnicity	8.0%	8.9%	
FRPSL status			
Eligible for free lunch	74.7%	69.7%	(0.236)
Eligible for reduced-price lunch	7.9%	8.9%	
Not FRPSL eligible	17.4%	21.4%	
Sample size	2,471	2,225	

Source: Student diary-assisted recall interview.

Note: There were no statistically significant differences in characteristics across treatment and comparison groups at the 95% confidence level. (Chi-square test, adjusting for clustering of students within schools.)

The treatment and comparison group students in our analytic sample were similar in gender composition, with a substantially higher proportion of female than male students represented. The treatment and comparison groups were also similar in terms of distribution across grade levels, race/ethnicity, and FRPSL eligibility status.

6.2 Primary Outcomes

In this section, we report impact results for our two primary outcomes: total fruit and vegetable consumption and total energy intake. We begin by presenting main FFVP impacts on those two outcomes. We then report the results of a series of exploratory analyses to assess differences in impacts across student demographic subgroups defined by gender, grade level, race/ethnicity, and

FRPSL status. We conclude the section with another exploratory analysis to assess potential differences in FFVP impacts by school nutrition education offerings.⁵⁰

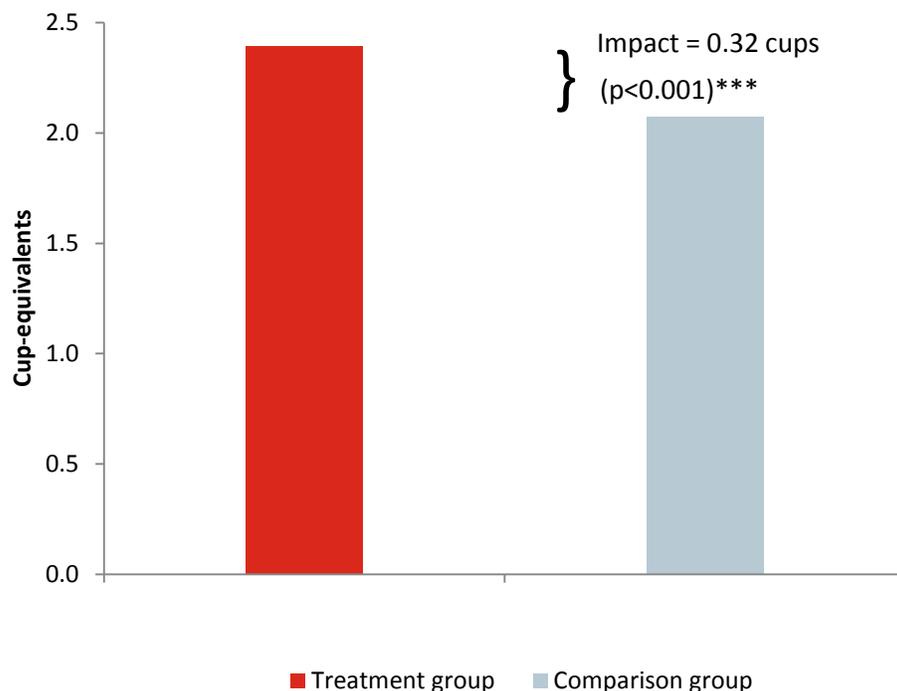
Main Impacts. Exhibits 6.2, 6.3, and 6.4 show our main impact results: regression discontinuity (RD) estimates of the impact of FFVP on total fruit and vegetable consumption and total energy intake on FFVP days using our preferred specification.⁵¹

⁵⁰ As noted above, we designated total fruit and vegetable intake and total energy intake as our two primary outcomes. Main impact analyses for these two outcomes will be considered confirmatory, in separate domains. We therefore treat estimates associated with p-values below 0.05 as statistically significant. We indicate p-values above 0.05 but below 0.10 in tables, but do not characterize these findings as statistically significant in the body text. All p-values are adjusted appropriately to account for the complex sampling design.

Analyses of all other outcomes are considered exploratory. We therefore do not directly adjust significance tests for multiple comparisons. With the large number of secondary outcomes, we would expect to find that about 1 in 20 hypothesis tests suggest statistically significant impacts, even when no true impacts exist. Tests for differences in impacts by student demographic group and by school nutrition education offerings are similarly treated as exploratory. The reader should keep this lack of control for multiple comparisons in mind when interpreting results, due to the resulting likelihood of some spuriously significant outcomes accompanying so many (uncorrected) statistical tests.

⁵¹ Appendix D presents sensitivity analyses that vary (i) whether we include schools that are relatively far from the cutoff, (ii) whether we include schools in the state of California, where late changes to FFVP participation lists may pose some threat to the validity of the RD design, and (iii) which regression covariates we include. The results of these sensitivity analyses are qualitatively similar to the main results presented in the body of the report. We therefore do not explicitly discuss any of the sensitivity results in the body of the report.

Exhibit 6.2: Impact of FFVP on Consumption of Fruits and Vegetables, Mean Cup-Equivalents Consumed Daily, Restricted Near-Cutoff Subsample (N=4,696)



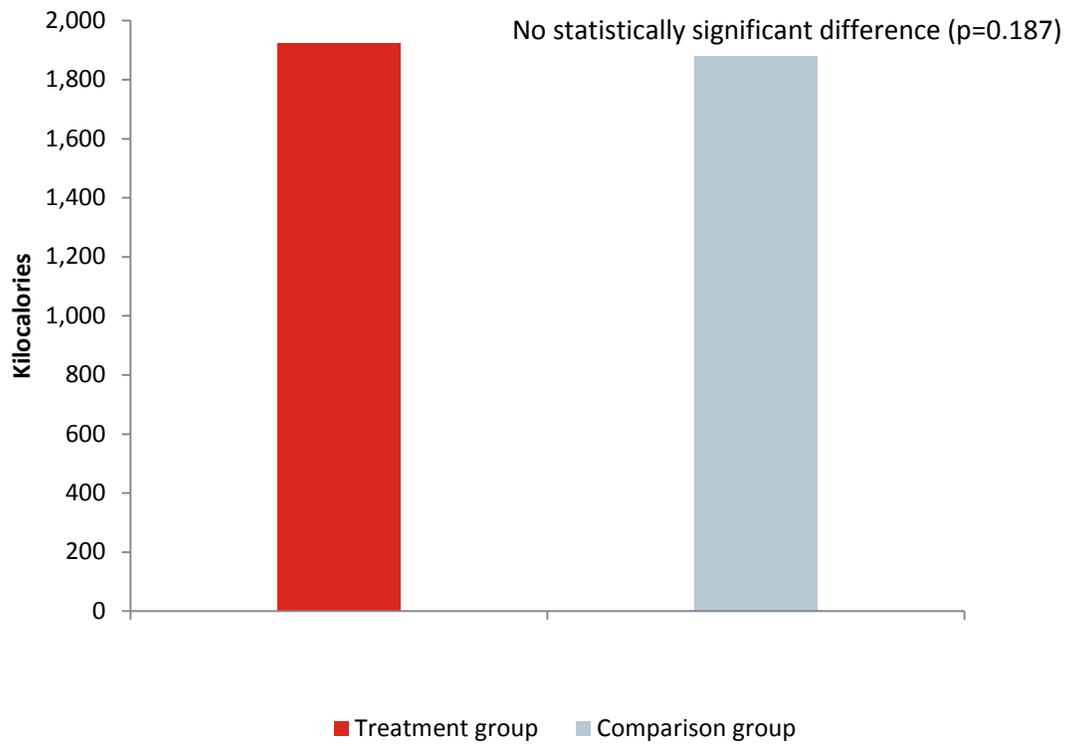
Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (One-sided test for greater fruit and vegetable consumption)

We find that students in FFVP schools consumed on average approximately one-third (0.32) of a cup more fruits and vegetables per day on FFVP days than students in comparable non-FFVP schools (Exhibit 6.2, Exhibit 6.4). This represents 15.5 percent higher fruit and vegetable consumption levels than levels in the absence of FFVP (2.07 cups per school day). Furthermore, we can decisively reject the null hypothesis of no impact ($p < 0.001$; much smaller than the conventional 0.05 cutoff).

With respect to total energy intake, we do not find a statistically significant difference across FFVP and non-FFVP students (Exhibit 6.3, Exhibit 6.4). If we had found statistically significantly higher total energy intake, we might have been concerned that FFVP participation could contribute to weight gain. If we had found statistically significantly lower total energy intake, we would have concluded that greater fruit and vegetable consumption displaced consumption of other, more calorie-dense foods. In the absence of a statistically significant finding in either direction, we cannot definitively accept or reject either hypothesis.^{52, 53}

⁵² Note that as reported in Chapter 5, total energy intake from FFVP snacks was approximately 42 kilocalories; our statistical power is insufficient to detect an impact of this magnitude.

Exhibit 6.3: Impact of FFVP on Total Daily Energy Intake (kcal), Restricted Near-Cutoff Subsample (N=4,696)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (Two-sided test for difference in total energy intake.)

⁵³ We did not collect data on physical activity or body mass index as part of this study, and cannot therefore assess differences in energy *expenditure* in the study population that would allow us to directly compare intake to expenditure at the individual level and assess likely impacts on body weight.

Exhibit 6.4: Impact of FFVP on Consumption of Fruits and Vegetables and Total Energy Intake, Restricted Near-Cutoff Subsample (N=4,696)

	Fruits and vegetables, cup-equivalents ¹ per day	Total energy per day (kcal)
Regression-adjusted mean, treatment group [S.E.]	2.39 [0.06]	1925 [25]
Regression-adjusted mean, comparison group [S.E.]	2.07 [0.05]	1878 [23]
Estimated impact (T-C)	0.32	47
Percent difference (T-C)/C [standard error]	15.5% [0.08]	2.5% [35]
{t-statistic}	{3.98}	{1.32}
(P-value)	(<0.001)***	(0.187)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test for greater fruit and vegetable consumption; two-sided test for total energy intake.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹ MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Subgroup Impacts. For each of our two primary outcomes, we assessed whether impacts differed by student demographics (gender, grade level, race/ethnicity, and FRPSL status; Exhibits 6.5 and 6.6).

We found only one statistically significant difference in impacts, for total energy intake between non-Hispanic white students and students of “other” (i.e., non-black, non-Hispanic) race/ethnicity. The within-subgroup estimates indicate no statistically significant difference in total energy intake for non-Hispanic whites (12 kcal); in contrast, students of “other” race/ethnicity in FFVP schools had total energy intake 219 kcal higher than their peers in non-FFVP schools, for a net statistically significant difference in impacts of 202 kcal.

These exploratory findings should be interpreted with caution for two reasons. First, because we are performing multiple comparisons across subgroups (16 tests in all across the two focal outcomes), there is a relatively high likelihood of finding at least one estimated difference with a p-value less than 0.05, regardless of true underlying differences in outcomes. Second, the “other” race/ethnicity subgroup is relatively small in size (comprising about 8 percent of the sample) and quite heterogeneous in composition, making differences in outcomes difficult to interpret.

Contextual Impacts of Nutrition Education. We compared impacts on primary outcomes in schools offering nutrition education at least one day during the reference week (about 46 percent of schools) with impacts in schools not offering nutrition education (Exhibit 6.7). We did not find evidence of statistically significant differences in impacts across nutrition education subgroups.

Exhibit 6.5: Differences in Impacts on Total Fruit and Vegetable Consumption by Demographic Subgroup, Mean Cup-Equivalents Consumed,¹ Restricted Near-Cutoff Subsample (N=4,696)

Characteristic	Treatment (T)		Comparison (C)		Impacts (T-C)		Difference between subgroups	
	Mean	(SE)	Mean	(SE)	Impact	P-value	Difference in impacts	P value
Gender								
Girls	2.48	(0.08)	2.14	(0.04)	0.34	(<0.001)***		
Boys	2.46	(0.08)	2.17	(0.04)	0.29	(0.001)***		
Impact: Girls - Boys							0.05	(0.544)
Grade level								
4th	2.53	(0.10)	2.15	(0.04)	0.38	(<0.001)***		
5th	2.48	(0.09)	2.17	(0.04)	0.31	(0.001)***		
6th	2.39	(0.17)	2.23	(0.04)	0.15	(0.194)		
Impact: 4th graders - 5th graders							0.07	(0.561)
Impact : 4th graders - 6th graders							0.22	(0.261)
Race/ethnicity								
Non-Hispanic White	2.51	(0.11)	2.21	(0.04)	0.30	(0.008)***		
Hispanic	2.54	(0.09)	2.15	(0.04)	0.39	(<0.001)***		
Non-Hispanic Black	2.44	(0.18)	2.21	(0.04)	0.23	(0.114)		
Non-Hispanic Other Race	2.53	(0.18)	2.23	(0.04)	0.30	(0.046)**		
Impact: White - Hispanic							-0.08	(0.608)
Impact: White - Non-Hispanic Black							0.07	(0.737)
Impact: White - Non-Hispanic Other Race							<0.01	(0.987)
FRPSL status								
Non-FRPSL eligible	2.50	(0.11)	2.21	(0.04)	0.29	(0.006)***		
Reduced-price lunch eligible	2.69	(0.17)	2.22	(0.04)	0.47	(0.003)***		
Free lunch eligible	2.43	(0.08)	2.12	(0.05)	0.31	(0.001)***		
Impact: Non-FRPSL - reduced-price							-0.18	(0.313)
Impact: Non-FRPSL - free lunch							-0.03	(0.837)

Source: Student diary-assisted recall interview.

Asterisks indicate statistically significant impacts within subgroups, or (final column) statistically significant differences in impacts between subgroups: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹ MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit 6.6: Differences in Impacts on Total Energy by Demographic Subgroup, Mean Kilocalories Consumed, Restricted Near-Cutoff Subsample (N=4,696)

Characteristic	Treatment (T)		Comparison (C)		Impacts (T-C)		Difference between subgroups	
	Mean	(SE)	Mean	(SE)	Impact	P-value	Difference in impacts	P value
Gender								
Girls	1932	(36)	1891	(18)	42	(0.302)		
Boys	1944	(38)	1891	(19)	53	(0.225)		
Impact: Girls - Boys							-12	(0.797)
Grade level								
4th	1969	(39)	1883	(19)	86	(0.052)*		
5th	1923	(40)	1897	(18)	26	(0.566)		
6th	1889	(83)	1904	(17)	-15	(0.858)		
Impact: 4th graders - 5th graders							60	(0.229)
Impact : 4th graders - 6th graders							101	(0.261)
Race/ethnicity								
Non-Hispanic White	1913	(46)	1902	(18)	12	(0.817)		
Hispanic	1941	(40)	1891	(19)	50	(0.288)		
Non-Hispanic Black	1917	(80)	1901	(18)	17	(0.850)		
Non-Hispanic Other Race	2113	(80)	1894	(16)	219	(0.006)***		
Impact: White - Hispanic							-38	(0.567)
Impact: White - Non-Hispanic Black							-5	(0.959)
Impact: White - Non-Hispanic Other Race							-207	(0.021)**
FRPSL status								
Non-FRPSL eligible	1882	(54)	1905	(18)	-24	(0.687)		
Reduced-price lunch eligible	2048	(75)	1897	(17)	151	(0.055)*		
Free lunch eligible	1935	(34)	1882	(20)	53	(0.206)		
Impact: Non-FRPSL - reduced-price							-175	(0.057)*
Impact: Non-FRPSL - free lunch							-77	(0.257)

Source: Student diary-assisted recall interview.

Asterisks indicate statistically significant impacts within subgroups, or (final column) statistically significant differences in impacts between subgroups: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.7: Differences in Impacts on Primary Outcomes by School Nutrition Education Offerings, Restricted Near-Cutoff Subsample (N=4,696)

Focal outcome	Regression-adjusted means (SEs)								Impacts (P-values)				Difference (P-value)	
	Schools offering nutrition education at least one day per week				Schools not offering nutrition education				Schools with nutrition education		Schools without nutrition education		[Impact in nutrition education schools minus impact in non-nutrition education schools]	
	Treatment (T)		Comparison (C)		Treatment (T)		Comparison (C)		T – C		T – C			
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	p-value	Mean	p-value	Mean	p-value
Total fruit and vegetables (cup-equivalents ¹)	2.44	(0.07)	2.12	(0.05)	2.46	(0.13)	2.22	(0.05)	0.32	(<0.001)***	0.24	(0.044)**	0.07	(0.604)
Total energy (kcal)	1944	(31)	1895	(22)	1967	(65)	1908	(18)	49	(0.209)	59	(0.384)	-11	(0.878)

Source: Student diary-assisted recall interview.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹ MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

6.3 Secondary Outcomes

In addition to the primary outcomes specified above, we analyzed a wide array of secondary outcomes, including measures of knowledge, attitudes, and perceptions of fruits and vegetables, as well as detailed dietary outcomes. Although these results are considered exploratory, they provide useful contextual evidence supporting and assisting with interpretation of our confirmatory findings.

Our earlier caveat about multiple comparisons applies here to an even greater extent. We report a very large number of tests on secondary outcomes, none of which was pre-specified in our analysis plan as being of special importance. Our strategy for reporting statistical significance in the exhibits is to use asterisks to indicate statistical significance: $*p < .10$; $**p < .05$; and $***p < .01$. In the discussion we consider p-values lower than 0.05 as statistically significant and discuss those results. We consider p-values of 0.05 or higher as indicating a lack of relationship and thus we do not discuss these results in the text. We note that with large numbers of outcomes one would expect to find statistically significant differences across the treatment and comparison group for some outcomes due to chance alone (Schochet, 2009). These results must therefore be considered exploratory in nature. Additionally, we note that some impact estimates, while statistically significant, are relatively small in magnitude, and may not therefore be considered “meaningful” from a nutrition or health perspective.

In order to guard against over-interpretation of our exploratory findings, we developed a conceptual model (see Chapter 1, Exhibit 1.1) to guide our analysis and presentation of results. The model depicts the hypothesized relationships between program activities, anticipated short-, medium-, and long-term impacts on students and the school environment, and contextual factors that may moderate anticipated impacts. The remainder of this chapter discusses secondary outcomes in a sequence guided by the conceptual model.

We begin by describing impacts on knowledge, attitudes, and perceptions about fruits and vegetables, which might be affected directly by FFVP components such as nutrition education and promotion activities, as well as indirectly by exposure to a greater amount and variety of fresh fruits and vegetables offered by the program. In turn, improved knowledge, attitudes, and perceptions about fruits and vegetables could potentially increase consumption of fruits and vegetables, and decrease consumption of other, less healthful foods. Our secondary analysis of these attitudinal items thus generates additional insights about the probable mechanism for the observed increase in fruits and vegetables in our confirmatory analysis.

Next, we discuss impacts on disaggregated fruit and vegetable subgroups. As noted in the previous section, our confirmatory analysis found higher total fruit and vegetable consumption of approximately one-third of a cup attributable to FFVP. However, as reported in Chapter 5, mean intake from FFVP snacks was only about one-quarter of a cup. This suggests that, in addition to the direct impacts on fruit and vegetable intake due to consumption of FFVP snacks, the program may have indirectly influenced fruit and vegetable intake outside of FFVP. Although the impact estimate does not statistically significantly differ from the point estimate for mean FFVP fruit and vegetable intake, our study design was not powered to detect differences of this magnitude, so one cannot draw firm conclusions from this finding. However, by disaggregating intake in and out of school and by time of day (before, during, and after lunch), we are able to generate further exploratory evidence on possible indirect program impacts.

In addition, to better characterize broad patterns of differences in fruit and vegetable consumption associated with participation in FFVP, in the same section we provide disaggregated estimates of impacts

on intake by fruit and vegetable subtype (fresh vs. canned, dried, frozen) and by MyPyramid subgroup (e.g., fruit subgroups such as citrus, melons, and berries, and vegetable subgroups such as dark-green vegetables, orange vegetables).

Third, we turn to an analysis of foods other than fruits and vegetables. A key research question of this study is the extent to which the observed greater consumption of fruits and vegetables displaced the consumption of other foods, if at all. Particularly since our findings on total energy intake were inconclusive, an analysis of impacts on foods besides fruits and vegetables (e.g., MyPyramid subgroups such as grains, legumes, and meat, fish, poultry, and eggs; fluid milk by fat content; and discretionary foods such as sugar-sweetened beverages, dessert foods, and sweet and salty snacks) provides additional suggestive evidence on this question.

Finally, secondary analyses in the last two sections are intended to characterize program impacts on overall dietary status. We assess impacts on selected micronutrients (e.g., vitamin C, calcium, vitamin A) and macronutrients (e.g., percent of energy intake from total and saturated fat, carbohydrates, protein); the Healthy Eating Index-2005 (HEI); and the proportion of students adhering to dietary guidelines such as school meal guidelines, selected 2005 Dietary Guidelines for Americans (DGAs), MyPyramid recommendations, dietary reference intakes (DRIs), and acceptable macronutrient distribution ranges (AMDRs).

Knowledge, Attitudes, and Perceptions of Fruits and Vegetables

We begin our secondary outcome analyses by analyzing FFVP impacts on student knowledge, attitudes, and perceptions of fruits and vegetables.

Knowledge. To assess general nutrition knowledge about fruits and vegetables, students were asked, “How many servings of fruits and vegetables do you think are healthy to eat each day?” where possible responses were “At least 1 serving,” “1–2 servings,” “3–4 servings,” “5 servings or more,” or “Don’t know.” Five servings or more per day is the response most consistent with federal nutrition guidelines; students were not given guidelines on the size of a serving when filling out the survey.

Based on student responses to this item, we constructed and analyzed a binary indicator⁵⁴ equal to one if the student selected five servings or more per day and zero otherwise. Our RD analyses did not find a statistically significant impact on this outcome (Exhibit 6.8).

⁵⁴ We estimate impacts on binary outcomes via linear probability models; resulting impact estimates are unbiased under an assumption of asymptotic normality.

Exhibit 6.8: Impact of FFVP on Nutrition Knowledge: Answers to Question, "How many servings of fruits and vegetables do you think are healthy to eat each day?" Restricted Near-Cutoff Subsample (N=4,586)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t- statistic}	(P- value)
Selected 5+ servings	0.151 (0.008)	0.165 (0.010)	-0.015	{-1.11}	(0.269)

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

General Attitudes towards Fruits and Vegetables. To assess general attitudes towards fruits and vegetables, we asked students how much they agreed or disagreed with two statements about fruits and two analogous statements about vegetables: "I like most [FRUITS/VEGETABLES]" and "I like to try new kinds of [FRUITS/VEGETABLES]." The four response options ("I agree very much," "I agree a little," "I disagree a little," and "I disagree a lot") were coded into 4-point scales, with higher values indicating greater levels of agreement.

On average, students in both FFVP and non-FFVP schools were more likely to agree that they like most fruits than that they like most vegetables, and to agree that they like to try new kinds of fruits more than new kinds of vegetables (p<0.001 for both statements; tests not reported in table).

Exhibit 6.9 presents RD impact estimates for these four general attitude items. There was evidence that FFVP caused differences in attitudes for both fruits and vegetables. For fruits, students in FFVP schools were more likely than students in non-FFVP schools to agree that they like most fruits and they like to try new fruits. There was also greater FFVP student agreement that they liked to try new kinds of vegetables. (It is unclear, however, whether the *magnitude* of these statistically significant differences can be considered meaningful from a nutritional perspective.) Of the four general attitude items, the only item which was not statistically significantly higher among FFVP students was student agreement that they liked most vegetables. These findings offer broad support for the hypothesis that FFVP increased students' willingness to try unfamiliar fruits and vegetables, and that FFVP increased students' taste for fruits overall, but FFVP participation had no effect on students' taste for vegetables.

Exhibit 6.9: Impact of FFVP on General Student Attitudes about Fruits and Vegetables,¹ Restricted Near-Cutoff Subsample

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	{P-value}
Like most fruits (N=4,554)	3.73 (0.01)	3.68 (0.01)	0.04	{2.21}	(0.028)**
Like to try new fruits (N=4,502)	3.54 (0.02)	3.29 (0.02)	0.25	{9.52}	(<0.001)***
Like most vegetables (N=4,484)	2.90 (0.02)	2.94 (0.02)	-0.04	{-1.39}	(0.166)
Like to try new vegetables (N=4,486)	2.94 (0.02)	2.70 (0.02)	0.24	{7.44}	(<0.001)***

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹Scale coding: 1="I disagree a lot"; 2="I disagree a little"; 3="I agree a little"; 4="I agree very much"

Familiarity with and Liking for Specific Fruits and Vegetables. For a list of 14 fresh fruits and 10 fresh vegetables, students were asked to assess how much they liked each fruit or vegetable on a 3-point scale ("like it a lot," "like it a little," or "don't like it"). If the student was unfamiliar with the fruit or vegetable, they were able to check a fourth response option, "don't know or never tasted it." We used this survey item to construct two sets of outcome measures for each specific fresh fruit or vegetable listed. First, we created a familiarity measure: a binary outcome equal to 1 if the student rated how much they liked the item, and 0 if they marked "don't know or never tasted it." Second, we constructed a 4-point variable equal to 1 if the student was unfamiliar with the fruit or vegetable, 2 if they said they did not like it, 3 if they liked it a little, and 4 if they liked it a lot.

With a few exceptions, students were generally familiar with most fruits or vegetables listed, with approximately 80 percent or more of students familiar enough with each item able to identify whether they liked or disliked it. The exceptions were nectarines, which were familiar to only 74 percent of the treatment group and 70 percent of the comparison group; zucchini, familiar to only 68 percent of the treatment group and 65 percent of the comparison group; and snow peas, familiar to only 62 percent of the treatment group and 65 percent of the comparison group.

We found some evidence that student familiarity with a number of specific fruit and vegetable items was higher among students in FFVP schools (Exhibits 6.10 and 6.11). For fruits, students were more familiar with kiwi fruits, pears, and plums in FFVP schools compared to non-FFVP schools, by amounts ranging from 2 to 6 percentage points. For vegetables, students were more familiar with cauliflower and snow peas in FFVP schools, by 3 to 6 percentage points. For several nearly universally familiar items, namely grapes, watermelon, and lettuce, familiarity was actually statistically significantly greater in non-FFVP schools than in FFVP schools, though these differences were quite small in magnitude.

Exhibit 6.10: Impact of FFVP on Student Familiarity with Specific Fruits, Proportion Who Ever Tasted, Restricted Near-Cutoff Subsample (N=4,574)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Apples	0.995 (0.001)	0.998 (0.001)	-0.002	{-1.20}	(0.233)
Bananas	0.994 (0.002)	0.994 (0.002)	>-0.001	{-0.13}	(0.893)
Strawberries	0.981 (0.004)	0.984 (0.003)	-0.003	{-0.60}	(0.546)
Kiwi fruits	0.901 (0.008)	0.845 (0.009)	0.056	{4.58}	(<0.001)***
Oranges	0.994 (0.002)	0.994 (0.002)	0.001	{0.27}	(0.789)
Pears	0.966 (0.004)	0.944 (0.005)	0.021	{3.45}	(0.001)***
Grapes	0.992 (0.002)	0.998 (0.001)	-0.006	{-2.88}	(0.004)***
Cantaloupe	0.832 (0.011)	0.809 (0.010)	0.023	{1.56}	(0.121)
Peaches	0.964 (0.004)	0.956 (0.004)	0.008	{1.35}	(0.178)
Pineapple	0.960 (0.004)	0.962 (0.004)	-0.001	{-0.22}	(0.830)
Plums	0.876 (0.008)	0.836 (0.009)	0.040	{3.13}	(0.002)***
Watermelons	0.982 (0.003)	0.991 (0.002)	-0.009	{-2.66}	(0.008)***
Nectarines	0.738 (0.013)	0.703 (0.013)	0.035	{1.88}	(0.061)*
Blueberries	0.896 (0.007)	0.889 (0.007)	0.007	{0.72}	(0.469)

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Estimates from linear probability models. >-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Exhibit 6.11: Impact of FFVP on Student Familiarity with Specific Vegetables, Proportion Who Ever Tasted, Restricted Near-Cutoff Subsample (N=4,574)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Tomatoes	0.956 (0.005)	0.961 (0.004)	-0.005	{-0.79}	(0.430)
Carrots	0.983 (0.003)	0.979 (0.003)	0.004	{0.83}	(0.405)
Bell peppers	0.810 (0.010)	0.794 (0.008)	0.017	{1.30}	(0.196)
Zucchini	0.678 (0.012)	0.650 (0.011)	0.028	{1.68}	(0.095)*
Celery	0.890 (0.008)	0.884 (0.008)	0.006	{0.48}	(0.629)
Broccoli	0.952 (0.004)	0.952 (0.005)	<0.001	{0.02}	(0.988)
Cauliflower	0.804 (0.010)	0.773 (0.009)	0.030	{2.21}	(0.028)**
Cucumbers	0.919 (0.006)	0.917 (0.006)	0.002	{0.25}	(0.805)
Lettuce	0.960 (0.004)	0.972 (0.004)	-0.011	{-1.98}	(0.049)**
Snow peas	0.624 (0.012)	0.566 (0.012)	0.058	{3.43}	(0.001)***

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Estimates from linear probability models.

We also observed greater student liking for specific fruits (Exhibit 6.12) in FFVP schools. FFVP students liked apples, bananas, kiwi fruits, pears, peaches, pineapples, plums, and nectarines more than students not participating in FFVP did. For vegetables, however, impacts were mixed (Exhibit 6.13). FFVP students liked carrots and snow peas more than did students in non-FFVP schools, but liked broccoli less; for the majority of fresh vegetable items, we did not detect a statistically significant difference in FFVP schools. Also, as above, it is unclear whether the magnitude of statistically significant differences in these measures can be considered meaningful from a nutritional perspective.

Exhibit 6.12: Impact of FFVP on Student Liking for Specific Fruits¹, Restricted Near-Cutoff Subsample (N=4,508)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Apples	3.79 (0.01)	3.74 (0.01)	0.05	{2.98}	(0.003) ^{***}
Bananas	3.64 (0.01)	3.58 (0.02)	0.06	{2.78}	(0.006) ^{***}
Strawberries	3.73 (0.02)	3.72 (0.02)	0.01	{0.59}	(0.553)
Kiwi fruits	3.18 (0.03)	3.00 (0.03)	0.19	{4.92}	(<0.001) ^{***}
Oranges	3.75 (0.01)	3.73 (0.01)	0.03	{1.51}	(0.132)
Pears	3.34 (0.02)	3.21 (0.02)	0.12	{4.00}	(<0.001) ^{***}
Grapes	3.85 (0.01)	3.85 (0.01)	<0.01	{0.10}	(0.917)
Cantaloupe	2.94 (0.03)	2.86 (0.03)	0.08	{1.83}	(0.068) [*]
Peaches	3.55 (0.02)	3.48 (0.02)	0.07	{2.53}	(0.012) ^{**}
Pineapple	3.53 (0.02)	3.45 (0.02)	0.08	{3.11}	(0.002) ^{***}
Plums	3.13 (0.03)	2.96 (0.03)	0.17	{4.11}	(<0.001) ^{***}
Watermelons	3.78 (0.01)	3.76 (0.01)	0.02	{1.10}	(0.272)
Nectarines	2.82 (0.04)	2.70 (0.04)	0.12	{2.26}	(0.025) ^{**}
Blueberries	3.02 (0.02)	2.97 (0.02)	0.06	{1.62}	(0.106)

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹Scale coding: 1="don't know or never tasted it"; 2="don't like it"; 3="like it a little"; 4="like it a lot"

Exhibit 6.13: Impact of FFVP on Student Liking for Specific Vegetables¹, Restricted Near-Cutoff Subsample (N=4,508)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Tomatoes	2.82 (0.02)	2.88 (0.02)	-0.06	{-1.93}	(0.055)*
Carrots	3.34 (0.02)	3.28 (0.02)	0.07	{2.43}	(0.016)**
Bell peppers	2.38 (0.02)	2.39 (0.02)	-0.01	{-0.37}	(0.710)
Zucchini	2.17 (0.03)	2.16 (0.02)	0.01	{0.26}	(0.796)
Celery	2.78 (0.02)	2.77 (0.02)	0.01	{0.14}	(0.888)
Broccoli	3.15 (0.02)	3.21 (0.02)	-0.07	{-2.26}	(0.025)**
Cauliflower	2.54 (0.03)	2.51 (0.03)	0.03	{0.72}	(0.472)
Cucumbers	3.22 (0.02)	3.22 (0.02)	0.01	{0.19}	(0.849)
Lettuce	3.41 (0.02)	3.46 (0.02)	-0.05	{-1.89}	(0.060)*
Snow peas	2.16 (0.03)	2.07 (0.03)	0.09	{2.21}	(0.028)**

Source: Student survey.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹Scale coding: 1="don't know or never tasted it"; 2="don't like it"; 3="like it a little"; 4="like it a lot"

Fruit and Vegetable Subgroups

To help provide further insight into our finding of greater fruit and vegetable intake in FFVP schools, we performed detailed exploratory analyses of fruit and vegetable intake by type (fresh and other fruits and vegetables, and fresh fruit and vegetable subtypes including whole raw, cooked from fresh, and 100% juice) and by MyPyramid fruit and vegetable subgroup. In addition to estimating main impacts for the full FFVP day, for fresh and other fruits and vegetables we also analyzed intake in and out of school and by time of day.

Main Impacts on Fresh and Other Fruits and Vegetables. Impact estimates for total and fresh fruit and vegetable intake on FFVP days are reported in Exhibit 6.14.

Higher levels of total fruit and vegetable intake among students in FFVP schools were almost entirely driven by higher fresh fruit and vegetable intake. Both total and fresh fruit and vegetable intakes were 0.32 cups higher in FFVP schools relative to non-FFVP schools. There was no corresponding difference in intake of frozen, canned, or dried fruits and vegetables.

Of the 0.32-cups difference in total fruit and vegetable intake in FFVP schools, 0.26 cups (approximately 81 percent) were attributable to greater total fruit intake, and the remaining 0.06 cups (19 percent) to a borderline-significant higher level of total vegetable intake. These represent percentage differences of 22.2 percent and 6.4 percent, respectively, in FFVP schools relative to non-FFVP schools.

Exhibit 6.14: Impact of FFVP on Total and Fresh Fruit and Vegetable Intake by Type, On FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	2.39 (0.06)	2.07 (0.05)	0.32	15.5%	{3.98}	(<0.001)***
Fresh fruits and vegetables	1.52 (0.05)	1.21 (0.04)	0.32	26.3%	{4.92}	(<0.001)***
Other fruits and vegetables (frozen, canned, dried, etc.)	0.87 (0.03)	0.87 (0.03)	<0.01	0.4%	{0.10}	(0.460)
Total fruits	1.45 (0.04)	1.19 (0.04)	0.26	22.2%	{4.48}	(<0.001)***
Fresh fruits	1.24 (0.04)	0.99 (0.04)	0.25	25.1%	{4.20}	(<0.001)***
Raw fresh fruits	0.75 (0.03)	0.51 (0.03)	0.23	45.4%	{5.22}	(<0.001)***
Fruits cooked from fresh	<0.01 (<0.01)	<0.01 (<0.01)	N/A	N/A	N/A	N/A
100% fruit juice	0.49 (0.02)	0.48 (0.02)	0.01	2.7%	{0.39}	(0.349)
Other fruits (frozen, canned, dried, etc.)	0.21 (0.01)	0.20 (0.01)	0.02	8.0%	{1.04}	(0.149)
Total vegetables	0.94 (0.03)	0.89 (0.03)	0.06	6.4%	{1.42}	(0.078)*
Fresh vegetables	0.29 (0.02)	0.22 (0.01)	0.07	31.7%	{3.33}	(0.001)***
Raw fresh vegetables	0.19 (0.01)	0.12 (0.01)	0.07	59.4%	{4.20}	(<0.001)***
Vegetables cooked from fresh	0.09 (0.01)	0.09 (0.01)	<0.01	-3.5%	{0.30}	(0.618)
100% vegetable juice	<0.01 (<0.01)	<0.01 (0.01)	<0.01	11.5%	{0.13}	(0.446)
Other vegetables (frozen, canned, etc.)	0.66 (0.02)	0.67 (0.02)	-0.01	-1.8%	{0.35}	(0.636)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

N/A: Impact estimates for this outcome are unreliable because intake was near zero in both groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

While total cup-equivalent impacts were similar to the corresponding impacts for fresh fruits and vegetables (0.25 cups for fresh fruits; 0.07 cups for fresh vegetables), because mean levels of fresh vegetable consumption are so low, the difference in percentage terms in FFVP schools was actually higher for fresh vegetables (32 percent) than for fresh fruits (25 percent).

Finally, for both fresh fruits and vegetables, the bulk of the difference in intake was attributable to greater intake of raw (uncooked) fresh items (0.23 cups for raw fresh fruits; 0.07 cups for raw fresh vegetables), the focus of FFVP.

Main Impacts on MyPyramid Fruit and Vegetable Subgroups. Impact estimates for total fruit and vegetable intake by MyPyramid subgroup on FFVP days are reported in Exhibit 6.15. The MyPyramid food groups and subgroups were developed in conjunction with the 2005 Dietary Guidelines for Americans (DHHS & USDA, 2005), and include all canned, fresh, frozen, cooked, and raw fruits and vegetables. The two major MyPyramid fruit subgroups are citrus, melon, and berries; and other fruits. The four major MyPyramid vegetable subgroups are dark-green (broccoli, spinach, most greens); orange (carrots, sweet potatoes, winter squash, pumpkin); starchy (corn, white potatoes, green peas); and other (tomatoes, cabbage, celery, cucumber, lettuce, onions, peppers, green beans, cauliflower, mushrooms, summer squash).

Both subgroup components of the total fruit food group were statistically significantly higher in FFVP schools, with citrus fruit, melon, and berry intake increasing by 0.08 cups and other fruit intake by 0.18 cups.

For vegetables, two of the four major subgroups were statistically significantly higher in FFVP schools, with 0.03 cups more of orange vegetables and 0.05 cups more of other vegetables consumed in FFVP schools. We did not find a statistically significant difference in either of the other two vegetable subgroups (dark-green vegetables and starchy vegetables) or their subgroups. (We did not expect FFVP to be associated with greater consumption of starchy vegetables because these are not typically served raw, as is required for FFVP offerings.)

Exhibit 6.15: Impact of FFVP on MyPyramid Fruit and Vegetable Group Intake, On FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Total fruits	1.45 (0.04)	1.19 (0.04)	0.26	{4.48}	(<0.001)***
Citrus fruits, melons, and berries	0.52 (0.02)	0.44 (0.02)	0.08	{2.67}	(0.004)***
Other fruits	0.93 (0.04)	0.75 (0.03)	0.18	{3.81}	(<0.001)***
Total vegetables	0.94 (0.03)	0.89 (0.03)	0.06	{1.42}	(0.078)*
Dark-green vegetables	0.05 (0.01)	0.04 (<0.01)	0.01	{0.77}	(0.220)
Orange vegetables	0.07 (0.01)	0.05 (<0.01)	0.03	{2.90}	(0.002)***
Starchy vegetables	0.30 (0.01)	0.33 (0.02)	-0.03	{1.23}	(0.891)
White potatoes	0.23 (0.01)	0.25 (0.02)	-0.02	{0.84}	(0.798)
Other starchy vegetables	0.07 (0.01)	0.08 (0.01)	-0.01	{1.21}	(0.886)
Other vegetables	0.52 (0.02)	0.47 (0.02)	0.05	{1.69}	(0.046)**
Tomatoes	0.28 (0.01)	0.26 (0.01)	0.02	{1.18}	(0.119)
Other	0.24 (0.01)	0.22 (0.01)	0.03	{1.69}	(0.093)*

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Consumption In and Out of School. Impact estimates for total and fresh fruit and vegetable intake in school are reported in Exhibit 6.16, and consumption out of school in Exhibit 6.17.

Because FFVP snacks are served during the school day, we would expect *direct* impacts of the program on fruit and vegetable intake due to consumption of the FFVP snacks to occur in school. However, we showed in the previous section that FFVP improved student knowledge, attitudes, and perceptions towards fruits and vegetables; this suggests a possible *indirect* mechanism through which FFVP could increase student consumption of fruits and vegetables outside of FFVP. Alternatively, student consumption of fruits and vegetables outside of FFVP could decline if FFVP snacks substitute in whole or in part for other foods consumed. Higher observed levels of consumption outside of school would offer support for the hypothesis that the improvement in knowledge, attitudes, and perceptions towards fruits and vegetables among FFVP students increased fruit and vegetable consumption outside of FFVP more generally.

The impact of FFVP on *total* fruit and vegetable consumption in school was 0.26 cups, and the impact on *fresh* fruit and vegetable consumption in school was 0.25 cups; in both cases, this represents about 80 percent of the total 0.32–cup difference observed on FFVP days.

The remainder of the 0.32 cup difference came from a small (0.06 cups) but statistically significant difference in fresh fruit and vegetable consumption *out of school* among FFVP students. This includes a 0.02 cup difference in raw fresh vegetables consumed out of school.

Exhibits 6.18 and 6.19, respectively, show impacts on total fruit and vegetable consumption in and out of school, disaggregated by MyPyramid fruit and vegetable subgroup. Note that, in schools, estimated impacts by subgroup line up almost exactly with total fruit and vegetable intake from FFVP snacks as reported in Chapter 5 (Exhibit 5.7), with no statistically significant differences between estimated in-school impacts and the FFVP intake point estimates (Exhibit 6.20). This finding lends strong credence to the notion that in-school impacts are almost entirely comprised of direct increases in fruit and vegetable intake from consumption of FFVP snacks.

Exhibit 6.20 also shows total estimated energy intake from FFVP snacks (42 kcal) compared to an estimated in-school impact on total daily energy intake (4 kcal). Although this difference is only borderline statistically significant, it is weakly suggestive that FFVP consumption replaced other types of consumption in school.

Exhibit 6.16: Impact of FFVP on Total and Fresh Fruits and Vegetable Intake, At School on FFVP Days in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	1.09 (0.04)	0.83 (0.03)	0.26	31.6%	{4.85}	(<0.001)***
Fresh fruits and vegetables	0.77 (0.04)	0.52 (0.03)	0.25	47.5%	{5.31}	(<0.001)***
Other fruits and vegetables (frozen, canned, dried, etc.)	0.32 (0.02)	0.31 (0.02)	0.01	4.2%	{0.50}	(0.308)
Total fruits	0.76 (0.03)	0.56 (0.03)	0.20	36.5%	{4.60}	(<0.001)***
Fresh fruits	0.65 (0.03)	0.45 (0.03)	0.20	43.5%	{4.32}	(<0.001)***
Raw fresh fruits	0.43 (0.03)	0.23 (0.02)	0.20	85.8%	{5.44}	(<0.001)***
Fruits cooked from fresh	<0.01 (<0.01)	<0.01 (<0.01)	N/A	N/A	N/A	N/A
100% fruit juice	0.22 (0.02)	0.22 (0.02)	<0.01	-1.5%	{0.14}	(0.554)
Other fruits (frozen, canned, dried, etc.)	0.11 (0.01)	0.10 (0.01)	0.01	5.6%	{0.48}	(0.317)
Total vegetables	0.33 (0.02)	0.27 (0.02)	0.06	21.5%	{2.17}	(0.015)**
Fresh vegetables	0.12 (0.01)	0.07 (0.01)	0.05	73.1%	{3.35}	(<0.001)***
Raw fresh vegetables	0.11 (0.01)	0.05 (0.01)	0.05	104.9%	{4.03}	(<0.001)***
Vegetables cooked from fresh	0.02 (<0.01)	0.02 (0.01)	<0.01	-12.0%	{0.39}	(0.651)
100% vegetable juice	<0.01 (<0.01)	<0.01 (<0.01)	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.21 (0.02)	0.20 (0.02)	0.01	3.4%	{0.31}	(0.377)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

N/A: Impact estimates for this outcome are unreliable because intake was near zero in both groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit 6.17: Impact of FFVP on Total and Fresh Fruit and Vegetable Intake, Outside of School on FFVP Days in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	1.29 (0.03)	1.23 (0.03)	0.05	4.3%	{1.15}	(0.125)
Fresh fruits and vegetables	0.74 (0.03)	0.68 (0.02)	0.06	9.5%	{1.72}	(0.043)**
Other fruits and vegetables (frozen, canned, dried, etc.)	0.55 (0.01)	0.56 (0.02)	-0.01	-1.9%	{0.48}	(0.683)
Total fruits	0.68 (0.03)	0.62 (0.02)	0.06	9.0%	{1.55}	(0.061)*
Fresh fruits	0.58 (0.03)	0.53 (0.02)	0.05	9.0%	{1.40}	(0.081)*
Raw fresh fruits	0.31 (0.02)	0.28 (0.02)	0.03	10.7%	{1.25}	(0.106)
Fruits cooked from fresh	<0.01 (<0.01)	<0.01 (<0.01)	N/A	N/A	N/A	N/A
100% fruit juice	0.27 (0.01)	0.25 (0.01)	0.02	6.4%	{0.83}	(0.204)
Other fruits (frozen, canned, dried, etc.)	0.10 (0.01)	0.09 (0.01)	0.01	9.1%	{1.07}	(0.142)
Total vegetables	0.61 (0.02)	0.61 (0.02)	<0.01	-0.4%	{0.11}	(0.545)
Fresh vegetables	0.16 (0.01)	0.15 (0.01)	0.02	11.2%	{1.46}	(0.073)*
Raw fresh vegetables	0.09 (0.01)	0.07 (0.01)	0.02	24.8%	{2.09}	(0.019)**
Vegetables cooked from fresh	0.07 (0.01)	0.07 (0.01)	<0.01	-1.3%	{0.12}	(0.547)
100% vegetable juice	<0.01 (<0.01)	<0.01 (<0.01)	<0.01	11.5%	{0.13}	(0.446)
Other vegetables (frozen, canned, etc.)	0.45 (0.01)	0.47 (0.02)	-0.02	-4.1%	{0.90}	(0.815)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

N/A: Impact estimates for this outcome are unreliable because intake was near zero in both groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit 6.18: Impact of FFVP on MyPyramid Fruit and Vegetable Group Intake, At School on FFVP Days in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Total fruits	0.76 (0.03)	0.56 (0.03)	0.20	{4.60}	(<0.001)***
Citrus fruits, melons, and berries	0.23 (0.02)	0.16 (0.01)	0.06	{2.81}	(0.005)***
Other fruits	0.53 (0.03)	0.39 (0.02)	0.14	{3.70}	(<0.001)***
Total vegetables	0.33 (0.02)	0.27 (0.02)	0.06	{2.17}	(0.031)**
Dark-green vegetables	0.02 (<0.01)	0.01 (<0.01)	0.01	{1.12}	(0.266)
Orange vegetables	0.04 (0.01)	0.02 (<0.01)	0.02	{2.70}	(0.007)***
Starchy vegetables	0.10 (0.01)	0.10 (0.01)	-0.01	{-0.38}	(0.703)
White potatoes	0.07 (0.01)	0.08 (0.01)	-0.01	{-0.41}	(0.683)
Other starchy vegetables	0.03 (<0.01)	0.03 (0.01)	<0.01	{-0.03}	(0.974)
Other vegetables	0.18 (0.02)	0.14 (0.01)	0.04	{1.82}	(0.071)*
Tomatoes	0.09 (0.01)	0.08 (0.01)	0.02	{1.10}	(0.272)
Other	0.08 (0.01)	0.06 (0.01)	0.02	{1.98}	(0.049)**

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables)

Exhibit 6.19: Impact of FFVP on MyPyramid Fruit and Vegetable Group Intake, Outside of School on FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Total fruits	0.68 (0.03)	0.62 (0.02)	0.06	{1.55}	(0.122)*
Citrus fruits, melons, and berries	0.29 (0.01)	0.27 (0.01)	0.02	{0.89}	(0.377)
Other fruits	0.39 (0.02)	0.36 (0.02)	0.04	{1.48}	(0.141)*
Total vegetables	0.61 (0.02)	0.61 (0.02)	<0.01	{-0.11}	(0.911)
Dark-green vegetables	0.03 (<0.01)	0.03 (<0.01)	<0.01	{-0.03}	(0.977)
Orange vegetables	0.03 (<0.01)	0.03 (<0.01)	<0.01	{1.19}	(0.234)
Starchy vegetables	0.20 (0.01)	0.22 (0.01)	-0.02	{-1.51}	(0.131)
White potatoes	0.16 (0.01)	0.17 (0.01)	-0.01	{-0.83}	(0.409)
Other starchy vegetables	0.04 (<0.01)	0.05 (<0.01)	-0.01	{-2.13}	(0.034)**
Other vegetables	0.35 (0.01)	0.33 (0.01)	0.01	{0.77}	(0.441)
Tomatoes	0.19 (0.01)	0.18 (0.01)	0.01	{0.65}	(0.513)
Other	0.16 (0.01)	0.15 (0.01)	0.01	{0.51}	(0.608)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

Exhibit 6.20: Impact of FFVP on MyPyramid Fruit and Vegetable Group and Total Energy Intake, In School, Compared to Total FFVP Intake, Restricted Near-Cutoff Subsample (N=4,696)

	Impact on in-school intake	Total FFVP intake	(P-value)
Total fruits (cup-equivalents¹)	0.20	0.22	(0.766)
Citrus fruits, melons, & berries	0.06	0.07	(0.869)
Other fruits	0.14	0.15	(0.804)
Total vegetables (cup-equivalents¹)	0.06	0.04	(0.590)
Dark-green vegetables	0.01	0.01	(0.788)
Orange vegetables	0.02	0.01	(0.361)
Starchy vegetables	-0.01	<0.01	(0.562)
White potatoes	-0.01	<0.01	(0.683)
Other starchy vegetables	>-0.01	<0.01	(0.647)
Other vegetables	0.04	0.02	(0.387)
Tomatoes	0.02	<0.01	(0.396)
Other	0.02	0.02	(0.606)
Total energy intake from FFVP (kcal)	3.83	42.21	(0.069)*

Source: Student diary-assisted recall interview.

Asterisks indicate statistically significant differences between in-school impacts and total FFVP intake: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (One-sided test.) > -0.01 indicates a difference that is larger (closer to 0) than -0.01 .

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

School Consumption by Time of Day. Exhibits 6.21, 6.22, and 6.23 show total and fresh fruit and vegetable consumption on school days, by time of day (morning, during lunch, or after lunch).

Recall that USDA requirements designated that FFVP snacks must be served outside of normal school meal times. Consistent with this regulation, there were no statistically significant differences in fruits and vegetables consumed during lunch between FFVP and non-FFVP schools. However, there were statistically significant positive impacts on total and fresh fruit and vegetables subgroups both before and after lunch, with about three-fifths of the total in-school impact coming from greater total fruit and vegetable consumption before lunch⁵⁵ (0.15 cups), and two-fifths coming from greater total fruit and vegetable consumption after lunch (0.11 cups).

⁵⁵ For before-lunch consumption, note that our data do not allow us to distinguish consumption during school breakfast from other morning consumption; we cannot therefore ascertain whether or not there were impacts on fruit and vegetables consumed as part of school breakfast.

Exhibit 6.21: Impact of FFVP on Total and Fresh Fruit and Vegetable Intake, At School in the Morning on FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	0.30 (0.02)	0.15 (0.01)	0.15	99.7%	{6.02}	(<0.001)***
Fresh fruits and vegetables	0.28 (0.02)	0.13 (0.01)	0.15	118.8%	{6.41}	(<0.001)***
Other fruits and vegetables (frozen, canned, dried, etc.)	0.02 (<0.01)	0.02 (<0.01)	<0.01	-5.9%	{0.30}	(0.618)
Total fruits	0.27 (0.02)	0.14 (0.01)	0.12	87.1%	{5.05}	(<0.001)***
Fresh fruits	0.25 (0.02)	0.13 (0.01)	0.13	98.4%	{5.34}	(<0.001)***
Raw fresh fruits	0.15 (0.02)	0.03 (0.01)	0.12	448.4%	{5.69}	(<0.001)***
Fruits cooked from fresh	N/A	N/A	N/A	N/A	N/A	N/A
100% fruit juice	0.10 (0.01)	0.10 (0.01)	<0.01	2.9%	{0.22}	(0.412)
Other fruits (frozen, canned, dried, etc.)	0.01 (<0.01)	0.02 (<0.01)	<0.01	-7.8%	{0.33}	(0.630)
Total vegetables	0.04 (0.01)	0.01 (<0.01)	0.03	302.6%	{3.22}	(0.001)***
Fresh vegetables	0.03 (0.01)	<0.01 (<0.01)	0.03	3198.4%	{3.38}	(<0.001)***
Raw fresh vegetables	0.03 (0.01)	<0.01 (<0.01)	0.03	3713.8%	{3.36}	(<0.001)***
Vegetables cooked from fresh	<0.01 (<0.01)	<0.01 (<0.01)	<0.01	193.1%	{0.84}	(0.200)
100% vegetable juice	N/A	N/A	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.01 (<0.01)	0.01 (<0.01)	<0.01	-2.3%	{0.07}	(0.526)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

N/A indicates impacts were inestimable due to near-zero intake amounts.

Exhibit 6.22: Impact of FFVP on Total and Fresh Fruit and Vegetable Intake, During School Lunch, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	0.59 (0.02)	0.59 (0.03)	<0.01	-0.1%	{0.02}	(0.508)
Fresh fruits and vegetables	0.31 (0.02)	0.33 (0.02)	-0.02	-5.2%	{0.59}	(0.723)
Other fruits and vegetables (frozen, canned, dried, etc.)	0.28 (0.02)	0.27 (0.02)	0.02	6.2%	{0.67}	(0.251)
Total fruits	0.33 (0.02)	0.34 (0.02)	-0.01	-4.2%	{0.58}	(0.719)
Fresh fruits	0.24 (0.02)	0.26 (0.02)	-0.02	-7.6%	{0.78}	(0.781)
Raw fresh fruits	0.15 (0.01)	0.17 (0.01)	-0.02	-12.5%	{1.17}	(0.879)
Fruits cooked from fresh	N/A	N/A	N/A	N/A	N/A	N/A
100% fruit juice	0.09 (0.01)	0.09 (0.01)	<0.01	2.1%	{0.10}	(0.459)
Other fruits (frozen, canned, dried, etc.)	0.09 (0.01)	0.08 (0.01)	0.01	6.5%	{0.48}	(0.315)
Total vegetables	0.27 (0.02)	0.25 (0.02)	0.01	5.4%	{0.59}	(0.278)
Fresh vegetables	0.07 (0.01)	0.07 (0.01)	<0.01	3.8%	{0.24}	(0.406)
Raw fresh vegetables	0.06 (0.01)	0.05 (0.01)	0.01	10.3%	{0.63}	(0.264)
Vegetables cooked from fresh	0.02 (<0.01)	0.02 (0.01)	<0.01	-14.4%	{0.46}	(0.676)
100% vegetable juice	N/A	N/A	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.19 (0.02)	0.18 (0.02)	0.01	6.0%	{0.51}	(0.304)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

N/A indicates impacts were inestimable due to near-zero intake amounts.

Exhibit 6.23: Impact of FFVP on Total and Fresh Fruit and Vegetable Intake, At School in the Afternoon on FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	Percent difference (T-C)/C	{t-statistic}	(P-value)
Total fruits and vegetables	0.19 (0.02)	0.08 (0.01)	0.11	130.1%	{4.01}	(<0.001)***
Fresh fruits and vegetables	0.18 (0.02)	0.07 (0.01)	0.11	167.3%	{4.29}	(<0.001)***
Other fruits and vegetables (frozen, canned, dried, etc.)	0.01 (<0.01)	0.02 (<0.01)	<0.01	-14.1%	{0.63}	(0.736)
Total fruits	0.16 (0.02)	0.07 (0.01)	0.09	128.6%	{3.54}	(<0.001)***
Fresh fruits	0.16 (0.02)	0.07 (0.01)	0.09	136.3%	{3.50}	(<0.001)***
Raw fresh fruits	0.13 (0.02)	0.03 (0.01)	0.10	286.5%	{4.07}	(<0.001)***
Fruits cooked from fresh	N/A	N/A	N/A	N/A	N/A	N/A
100% fruit juice	0.03 (0.01)	0.03 (0.01)	-0.01	-22.8%	{0.80}	(0.788)
Other fruits (frozen, canned, dried, etc.)	0.01 (<0.01)	0.01 (<0.01)	<0.01	27.6%	{0.83}	(0.203)
Total vegetables	0.03 (0.01)	0.01 (<0.01)	0.02	138.3%	{2.59}	(0.005)***
Fresh vegetables	0.02 (0.01)	<0.01 (<0.01)	0.02	3982.3%	{3.55}	(<0.001)***
Raw fresh vegetables	0.02 (0.01)	>-0.01 (<0.01)	0.02	-8260.6%	{3.58}	(<0.001)***
Vegetables cooked from fresh	<0.01 (<0.01)	<0.01 (<0.01)	<0.01	12.6%	{0.14}	(0.444)
100% vegetable juice	N/A	N/A	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.01 (<0.01)	0.01 (<0.01)	<0.01	-31.2%	{1.17}	(0.879)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

N/A indicates impacts were inestimable due to near-zero intake amounts. >-0.01 indicates a difference that is larger (closer to 0) than -0.01.

Other Foods

In this section, we describe impact estimates for foods other than fresh fruit or vegetables, including MyPyramid food groups other than fruits and vegetables (Exhibit 6.24), discretionary foods such as sugar-sweetened beverages, fried potatoes, desserts, and sweet and salty snacks (Exhibit 6.25), and energy from fluid milk consumption (Exhibit 6.26). Although FFVP is not expected to directly influence intake of these items, it could indirectly influence intake levels if greater fresh fruit and vegetable consumption replaces consumption of other foods.

Of the 29 other foods and food groups examined, we found only two statistically significant impacts of FFVP, both related to milk. Students in FFVP schools consumed 11 kcal more of total fluid milk than students in non-FFVP schools. Disaggregating fluid milk intake by type (flavored vs. unflavored, and by fat content), the only statistically significant difference in fluid milk subcategories was a 6kcal difference in flavored reduced-fat milk intake among students in FFVP schools.

Exhibit 6.24: Impact of FFVP on MyPyramid Food Group Intake, Foods Other than Fruits and Vegetables, On FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	{P-value}
Total grains (ounce-equivalents)	6.74 (0.11)	6.55 (0.11)	0.19	{1.17}	(0.244)
Whole grains (ounce-equivalents)	0.53 (0.03)	0.48 (0.03)	0.05	{1.43}	(0.153)
Other grains (ounce-equivalents)	6.21 (0.11)	6.07 (0.11)	0.13	{0.85}	(0.395)
Total milk, yogurt, cheese (cup-equivalents)	2.24 (0.04)	2.15 (0.05)	0.09	{1.38}	(0.169)
Meat, poultry, fish, and eggs (ounce-equivalents)	3.64 (0.08)	3.78 (0.09)	-0.14	{-1.21}	(0.229)
Legumes (cooked dry beans and peas, soybean products, nuts and seeds) (ounce-equivalents)	0.40 (0.02)	0.45 (0.03)	-0.06	{-1.49}	(0.138)
Discretionary oils (grams)	14.14 (0.47)	13.99 (0.50)	0.15	{0.21}	(0.831)
Discretionary solid fats (grams)	43.46 (0.75)	42.46 (0.76)	1.00	{0.92}	(0.357)
Added sugars (teaspoons)	16.58 (0.34)	16.51 (0.36)	0.07	{0.14}	(0.889)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables

Exhibit 6.25: Impact of FFVP on Selected Discretionary Foods, On FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Sugar-sweetened beverages	101.39 (3.26)	102.10 (3.37)	-0.70	{-0.15}	(0.884)
Fried potatoes/similar potato products	34.89 (2.87)	32.13 (3.08)	2.76	{0.64}	(0.524)
Cookies, cakes, brownies	83.20 (4.51)	88.57 (5.40)	-5.37	{-0.77}	(0.444)
Candy	43.77 (4.31)	38.17 (4.94)	5.60	{0.84}	(0.405)
Dairy-based desserts (ice cream, pudding)	30.16 (2.28)	27.51 (2.23)	2.65	{0.81}	(0.420)
Gelatin (non-fruited), ice pops	6.29 (0.80)	6.92 (1.07)	-0.63	{-0.46}	(0.648)
Snack chips (popcorn, potato chips)	4.85 (0.43)	4.44 (0.39)	0.41	{0.70}	(0.486)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.26: Impact of FFVP on Energy from Fluid Milk Intake, On FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact	
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Total fluid milk	190.27 (3.56)	178.60 (4.31)	11.67	{2.03}	(0.044)**
Unflavored	103.77 (2.84)	97.17 (3.54)	6.60	{1.43}	(0.153)
Whole	15.93 (1.54)	15.52 (1.76)	0.41	{0.18}	(0.860)
Reduced-fat	27.57 (1.69)	25.46 (1.96)	2.11	{0.81}	(0.417)
Lowfat	37.85 (2.12)	36.69 (2.12)	1.16	{0.39}	(0.700)
Nonfat	3.40 (0.46)	3.75 (0.54)	-0.34	{-0.48}	(0.634)
Type not specified	19.02 (1.58)	15.76 (1.70)	3.26	{1.38}	(0.170)
Flavored	86.49 (3.53)	81.42 (3.84)	5.07	{0.94}	(0.350)
Whole	2.54 (0.79)	1.67 (0.50)	0.86	{0.92}	(0.356)
Reduced-fat	7.55 (1.87)	1.95 (1.31)	5.60	{2.38}	(0.018)**
Lowfat	43.79 (4.06)	48.82 (3.85)	-5.03	{-0.88}	(0.382)
Nonfat	24.08 (3.03)	21.36 (2.83)	2.72	{0.63}	(0.532)
Type not specified	8.54 (1.50)	7.62 (1.58)	0.92	{0.40}	(0.686)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Micro- and Macronutrients

Impacts on the overall micro- and macronutrient profile (Exhibits 6.27 and 6.28, respectively), were broadly consistent with what one would expect based on observed impacts on fruit and vegetable intake.

- There was a statistically significant higher energy intake from carbohydrate (41 kcal) among students in FFVP schools; in general, fruits and vegetables consist mainly of carbohydrate. In contrast, energy intake from fat, saturated fat, and protein, for which fruit and vegetables are not major sources, were not significantly different.
- Similarly, fiber intake among students in FFVP schools was higher by 1 gram; again, fresh fruits and vegetables are good sources of fiber.
- Finally, there was higher intake among students in FFVP schools of beta carotene (397 mcg) and vitamin A (46 mcg), for which orange, yellow, and leafy green vegetables and many fruits are good sources; and vitamin C (10 mg), for which a wide array of fruits and vegetables are excellent sources.

Exhibit 6.27: Impact of FFVP on Macronutrient Intake, On FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Total energy	1925.22 (25.43)	1878.45 (22.66)	46.77	{1.32}	(0.187)
Energy from fat	630.26 (9.40)	623.21 (8.79)	7.05	{0.53}	(0.595)
Energy from saturated fat	215.33 (3.55)	213.12 (3.46)	2.20	{0.43}	(0.666)
Energy from carbohydrate	1039.40 (14.76)	998.18 (13.05)	41.23	{2.02}	(0.044)**
Energy from protein	279.50 (3.57)	278.64 (3.85)	0.86	{0.16}	(0.873)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.28: Impact of FFVP on Fiber and Micronutrient Intake, On FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Difference (T-C)	Estimated impact	
	Treatment (T)	Comparison (C)		{t-statistic}	(P-value)
Calcium (mg)	962.39 (14.29)	930.15 (16.59)	32.24	{1.43}	(0.154)
Iron (mg)	15.22 (0.23)	14.85 (0.25)	0.36	{1.03}	(0.306)
Zinc (mg)	10.70 (0.17)	10.84 (0.19)	-0.14	{-0.55}	(0.586)
Magnesium (mg)	232.28 (3.16)	225.20 (3.30)	7.08	{1.50}	(0.136)
Beta carotene (mcg)	1504.70 (103.66)	1108.02 (57.16)	396.68	{3.32}	(0.001)***
Vitamin A, RAE (mcg)	659.20 (13.95)	612.79 (13.64)	46.41	{2.33}	(0.021)**
Vitamin C (mg)	95.77 (2.58)	85.78 (2.56)	10.00	{2.71}	(0.007)***
Folate (mcg)	553.47 (9.65)	548.98 (13.12)	4.49	{0.27}	(0.791)
Sodium (mg)	3074.46 (42.29)	3038.30 (40.40)	36.16	{0.61}	(0.545)
Fiber (g)	14.32 (0.27)	13.31 (0.27)	1.01	{2.54}	(0.012)**

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Dietary Status and Diet Quality

In the first part of this chapter, we assessed impacts of FFVP on mean intake of individual foods and nutrients. However, we may also be interested in impacts on overall student dietary status, i.e., whether or not intake levels meet applicable federal guidelines and standards.

To assess the impacts of FFVP on overall student dietary status, we examined differences in student adherence to an array of federal guidelines for intakes of foods and nutrients, including:

- 2005 Dietary Guidelines for Americans (DGAs) and associated MyPyramid guidelines.⁵⁶
- School meal guidelines.
- Estimated energy requirements (EERs) and Acceptable Macronutrient Distribution Ranges (AMDRs).
- Dietary Reference Intakes (DRIs) including Estimated Average Requirements (EARs) or Adequate Intake (AI) levels, and, where applicable, tolerable upper intake levels (ULs).

Additionally, to assess effects on student diet quality, we estimated FFVP impacts on the Healthy Eating Index (HEI).

Our previously reported RD analyses assessed differences between treatment and comparison students in terms of mean intake *levels* for various foods and nutrients; for these outcomes, one day of dietary recall data is sufficient to produce unbiased estimates. However, in assessing impacts on adherence to guidelines, we wish to compare *proportions* of students meeting (or failing to meet) guidelines in treatment schools with proportions meeting (or failing to meet) those guidelines in comparison schools. To accurately estimate those proportions requires estimation of the *usual intake distribution* for the foods or nutrients in question. As described in Section 2.3, estimation of usual intake requires a second day of dietary recall data for at least a subset of respondents to facilitate estimation of within-student variation (Nusser et al., 1996; IOM, 2000a); we therefore collected a second nonconsecutive day of diary-assisted dietary recall data for a 10 percent subsample of students.

We applied a two-step process to obtain RD estimates of proportions adhering to dietary guidelines. First, we used the NCI method (Tooze et al. 2006; see Appendix E), to produce estimates of the proportion of students with intake at or above the specified guideline cutoff (e.g., intake of at least 1.5 cups of fruits per day, intake of 1500 mg of sodium per day) for each school in our RD sample. To do so, we estimated student-level models with covariates for gender, grade level, race/ethnicity, and FRPSL status, plus indicator variables for the State in which the school was located. As a result, the final estimated school-level proportions are adjusted for differences in these factors across schools.

Second, we used the resulting school-level proportion estimates as the outcome variables in a set of school-level RD regression models. These models use an FFVP status indicator (equal to 1 for FFVP schools and 0 for schools not participating in FFVP) as the explanatory covariate. To account for

⁵⁶ Note that the Dietary Guidelines for Americans were updated in 2010, and MyPyramid recommendations were correspondingly replaced with newer MyPlate guidelines. We use older versions of guidelines here to reflect those recommendations in place at the time our data were collected.

differences in the number of students sampled in each school, results were weighted by the proportion of students interviewed in each school. As in the other secondary analyses, we report results for our preferred specification, which excludes the FRPSL eligibility status ranking variable and includes only those schools within 2.5 percentage points of the relevant state-specific eligibility cutoff; estimates for the full sample and/or including the ranking variable did not substantively differ from our preferred model.

We performed t-tests on regression coefficients from the linear probability models, i.e., linear regression applied to proportion outcomes, whose values must lie between 0 and 1, inclusive.⁵⁷ The use of a t-test is justified by a standard asymptotic approximation, such that the distribution of the mean of a binary outcome converges to a normal distribution relatively quickly. Our sample sizes are in the thousands, making the asymptotic normal approximation plausible. The use of the linear probability model (rather than a logit or probit model) is justified by the best linear predictor property of linear regression. We use robust standard errors to adjust for the heteroscedasticity induced by the binary outcome.

Additionally, we note that for many guideline outcomes, overall impacts were relatively small in magnitude, even when statistically significant; the reader should thus consider the magnitude of estimated differences in addition to statistical significance when assessing overall importance of the findings.

Fruit and Vegetable Guidelines. We begin by examining FFVP impacts on dietary guidelines related to consumption of fruits and vegetables, including both DGAs and MyPyramid guidelines. The 2005 DGAs recommend consumption of a “variety of fruits and vegetables each day.” To assess impacts on fruit and vegetable variety, we accordingly examined treatment-comparison differences in the number of MyPyramid fruit and vegetable subgroups consumed on FFVP days. In addition, the DGAs recommend consumption from “all five vegetable subgroups several times a week.” Because we do not observe a full week of intake, we have operationalized this guideline by examining treatment-comparison differences in the number of MyPyramid vegetable subgroups (*not* including fruit subgroups) consumed on FFVP days.⁵⁸ Exhibit 6.29 provides impact estimates for number of fruit and vegetable subgroups consumed as well as for number of vegetable subgroups only. In addition, to provide contextual information on which fruit and vegetable subgroups in particular may be contributing to impacts, we report impacts on the proportion of students who consumed a non-zero amount of each subgroup.

⁵⁷ For further guidance on econometric methods for limited dependent variables including binary and proportion outcomes, see Maddala (1982) and Angrist and Pischke (2009).

⁵⁸ Note that the number of vegetable subgroups consumed is a subset of the total number of fruit and vegetable subgroups consumed; since the DGAs do not include specific recommendations about variety of fruit alone, we do not separately examine the number of fruit subgroups consumed.

Exhibit 6.29: Impact of FFVP on Variety of Fruits and Vegetables Consumed by Students, On FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Number of MyPyramid fruit & vegetable subgroups consumed	4.015 (0.046)	3.875 (0.048)	0.140	{2.06}	(0.020)**
Proportion consuming any citrus fruits, melons, or berries	0.716 (0.015)	0.669 (0.013)	0.047	{2.29}	(0.012)**
Proportion consuming any other fruits	0.830 (0.011)	0.782 (0.013)	0.048	{2.86}	(0.002)***
Number of MyPyramid vegetable subgroups consumed	2.470 (0.039)	2.425 (0.038)	0.045	{0.83}	(0.205)
Proportion consuming any dark-green vegetables	0.171 (0.016)	0.159 (0.014)	0.011	{0.51}	(0.305)
Proportion consuming any orange vegetables	0.274 (0.017)	0.212 (0.012)	0.062	{2.86}	(0.002)***
Proportion consuming any legumes	0.644 (0.016)	0.667 (0.015)	-0.023	{1.02}	(0.846)
Proportion consuming any starchy vegetables	0.497 (0.018)	0.531 (0.018)	-0.034	{1.30}	(0.903)
Proportion consuming any other vegetables	0.884 (0.008)	0.855 (0.010)	0.030	{2.19}	(0.015)**

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (One-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

In general, impacts on fruit and vegetable guideline adherence were consistent with what one would expect based on previously reported impacts on mean fruit and vegetable intake levels in the prior part of this chapter. On average, students in FFVP schools consumed fruits and vegetables from a greater number of MyPyramid subgroups per day than students in non-FFVP schools. Impacts on the number of MyPyramid vegetable subgroups alone were positive but not statistically significant. For specific MyPyramid subgroups, the proportions of students consuming non-zero amounts of citrus, melons, or berries, other fruits, orange vegetables, and “other” vegetables were higher in FFVP than non-FFVP schools. There were no statistically significant differences in the proportion of students consuming dark-green vegetables, legumes, or starchy vegetables, similar to patterns for impacts on mean intake as presented above in Exhibit 6.15.

We additionally assess impacts on 2005 MyPyramid guidelines for fruit and vegetable consumption, which recommend intake of at least 1.5 cup-equivalents of fruits and 2.5 cup-equivalents of vegetables per day for a child with an 1,800-calorie diet (Exhibit 6.30).⁵⁹

Students in FFVP schools were also more likely to meet MyPyramid guidelines for fruit intake than students in non-FFVP schools. However, there were no statistically significant differences in proportions meeting MyPyramid guidelines for vegetable intake; in fact, the proportion of students meeting the MyPyramid guidelines for vegetable intake was near zero in both treatment and comparison schools, consistent with mean intake estimates of only about 0.9 cup-equivalents per day as presented in Exhibit 6.14 above.

⁵⁹ Note that a 1,800-calorie diet may not accurately represent the diets of all children in the study; in fact, usual energy intake in our study sample (unadjusted) was 1,764 kcal for the treatment group and 1,949 kcal for the comparison group (Appendix D, Exhibit D6.11).

Exhibit 6.30: Impact of FFVP on Proportion of Students Meeting MyPyramid Guidelines for Fruit and Vegetable Consumption, Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Proportion consuming >2.5 cup-equivalents of vegetables/day	<0.001 (<0.001)	<0.001 (<0.001)	>-0.001	{0.89}	(0.813)
Proportion consuming >1.5 cup-equivalents of fruit/day	0.295 (0.006)	0.265 (0.007)	0.030	{3.30}	(0.001)***

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test.) >-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

DGAs for Other Foods and Nutrients. In addition to the DGAs for fruits and vegetables, we additionally considered DGAs for dairy and fat intake.

The DGAs recommend intake of 3 cup-equivalents per day from lowfat/nonfat dairy. In practice, our interviewers found that students were rarely able to reliably identify fat content in dairy foods such as yogurt and cheese; in contrast, they could generally report fat content for fluid milk. In our sample, approximately two-thirds of all dairy consumption is from fluid milk. We therefore operationalized this DGA by reporting impacts on the proportion of students consuming at least 2 cup-equivalents of lowfat, reduced-fat, or nonfat fluid milk (flavored or unflavored) per day. While this is an imperfect proxy for total lowfat/nonfat dairy consumption as targeted by the DGA, it has the advantage of being accurately measurable with our sample data.

The 2005 DGA recommendation for fat intake for children aged 4–18 recommends total fat intake between 25 and 35 percent of calories (most from poly- and monounsaturated fats). Because it is unclear how to operationalize the second part of the guideline related to poly- and monounsaturated fats intake, we instead separately focus our analysis on the first part of the requirement, and assess the impact of FFVP on the proportion of students with total fat intake between 25 and 35 percent of total energy intake. Separately, for saturated fat, we assess the proportion of students meeting the DGA recommendation to consume less than 10 percent of calories from saturated fat.

Estimates of impacts on proportion of students meeting DGA recommendations for fat and dairy intake appear in Exhibit 6.31. Consistent with observed differences in fluid milk intake as reported above, we find greater adherence to the DGA lowfat/nonfat dairy guideline among students in FFVP schools as compared to non-FFVP schools. There was no statistically significant difference in adherence to the DGA recommendation for saturated fat, but the proportion of students in FFVP schools adhering to the DGA recommendation for total fat was higher than in non-FFVP schools.

Other MyPyramid Recommendations. We assessed impacts on proportions of students adhering to MyPyramid guidelines for grains, dairy, and meat/beans (Exhibit 6.32).

For grains, as for the fat DGA recommendations described above, the MyPyramid recommendation is comprised of two separate components, which we separately assess: (1) grain intake of at least 6 ounces per day, with (2) at least 50 percent of intake from whole grains. The MyPyramid recommendation for dairy intake is identical to the DGA we described above, and we operationalize it identically, as proportion of students consuming at least 2 cups of lowfat, reduced-fat, or nonfat fluid milk (flavored or unflavored). Finally, we report impacts on proportion of students meeting the MyPyramid recommendation to consume at least 5 ounce-equivalents per day from meats and beans.

For grains, we find that the proportion of students consuming at least 6 ounces per day was slightly lower in FFVP schools than in non-FFVP schools; in both groups, the number of students meeting the whole grain intake requirement was near zero, with no statistically significant difference in adherence. For dairy, as above, we find that lowfat/nonfat fluid milk intake was higher in FFVP schools than non-FFVP schools.

Exhibit 6.31: Impact of FFVP on Student Adherence to Dietary Guidelines for Americans (DGAs) for Foods and Nutrients other than Fruits and Vegetables, Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Dairy: Proportion consuming >2 cups lowfat/nonfat milk per day	0.125 (0.001)	0.120 (0.001)	0.004	{2.17}	(0.031)**
Fat and saturated fat:					
Proportion consuming 25–35% of energy from fat	0.785 (0.003)	0.774 (0.003)	0.011	{2.21}	(0.029)**
Proportion consuming <10% of energy from saturated fat	0.484 (0.004)	0.476 (0.004)	0.008	{1.52}	(0.129)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.32: Impact of FFVP on Student Adherence to MyPyramid Guidelines for Foods other than Fruits and Vegetables, Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	{P-value}
Grains					
Proportion consuming >6 oz. of grains per day	0.525 (0.005)	0.540 (0.005)	-0.015	{2.07}	(0.039)**
Proportion consuming >50% of grains as whole grains	<0.001 (<0.001)	<0.001 (<0.001)	>0-.001	{0.08}	(0.934)
Dairy: Proportion consuming >2 cups lowfat/nonfat milk per day	0.125 (0.001)	0.120 (0.001)	0.004	{2.17}	(0.031)**
Meat & beans: Proportion consuming >5 oz. meat & beans per day	0.231 (0.003)	0.236 (0.003)	-0.005	{1.13}	(0.262)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

School Meals Guidelines. Using foods consumed in school only, we estimated impacts on adherence of student in-school intake to standard federal guidelines for school meals (Exhibit 6.33). Since FFVP snacks are served during school hours, it is appropriate to assess whether the program is associated with greater overall adherence to guidelines in combination with school meals. In particular, we assessed adherence guidelines for total and saturated fat (less than or equal to 30% of calories from fat and less than 10% of calories from saturated fat in school foods), and for protein, vitamin A, vitamin C, calcium, and iron (one quarter of Recommended Daily Allowance from school foods consumed in the morning, and one third of Recommended Daily Allowance from school foods consumed during lunch and/or in the afternoon). We found no statistically significant FFVP impacts on adherence to school meals guidelines.

Exhibit 6.33: Impact of FFVP on Student Adherence to School Meals Guidelines, School Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	{P-value}
Fat					
Proportion consuming ≤30% of energy from fat in school	0.362 (0.005)	0.350 (0.005)	0.012	{1.75}	(0.081)*
Proportion consuming <10% of energy from saturated fat in school	0.484 (0.004)	0.476 (0.004)	0.008	{1.52}	(0.129)
Protein					
Proportion consuming >1/4 RDA in school in the morning	0.436 (0.004)	0.432 (0.004)	0.004	{0.80}	(0.425)
Proportion consuming >1/3 RDA in school lunch/afternoon	0.955 (0.001)	0.955 (0.001)	>-0.001	{-0.31}	(0.761)
Vitamin A					
Proportion consuming >1/4 RDA in school in the morning	0.254 (0.002)	0.252 (0.003)	0.001	{0.34}	(0.732)
Proportion consuming >1/3 RDA in school lunch/afternoon	0.312 (0.003)	0.312 (0.003)	>-0.001	{-0.02}	(0.980)
Vitamin C					
Proportion consuming >1/4 RDA in school in the morning	0.313 (0.003)	0.312 (0.003)	0.001	{0.25}	(0.800)
Proportion consuming >1/3 RDA in school lunch/afternoon	0.667 (0.004)	0.664 (0.004)	0.003	{0.43}	(0.668)
Calcium					
Proportion consuming >1/4 RDA in school in the morning	0.196 (0.002)	0.193 (0.002)	0.002	{0.79}	(0.432)
Proportion consuming >1/3 RDA in school lunch/afternoon	0.195 (0.003)	0.197 (0.003)	-0.002	{-0.50}	(0.614)
Iron					
Proportion consuming >1/4 RDA in school in the morning	0.292 (0.005)	0.288 (0.005)	0.004	{0.62}	(0.536)
Proportion consuming >1/3 RDA in school lunch/afternoon	0.711 (0.016)	0.694 (0.017)	0.017	{0.76}	(0.449)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

>-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Estimated Energy Requirements and AMDRs. We assessed impacts on proportions of students meeting estimated energy requirements (EERs), defined as the average dietary energy intake that is predicted to maintain energy balance in healthy, normal weight individuals. EERs depend on age, gender, and activity level. We assume sedentary activity levels in setting EER cut-points for assessment. FFVP impacts on proportion of students meeting EERs are reported in Exhibit 6.34. We do not detect any statistically significant FFVP impacts on proportion of students meeting EERs.

Exhibit 6.34 additionally reports on impacts on AMDRs, defined as ranges of intake for particular energy sources (protein, fat, or carbohydrate), expressed as a percentage of total energy, that are associated with reduced risk of chronic disease while providing adequate intakes of essential nutrients. We find small but statistically significant FFVP impacts on AMDRs for total fat and protein, with more students within the recommended ranges in FFVP schools than in non-FFVP schools.

Estimated Average Requirements and Adequate Intake Levels. To assess contributions to adequacy of intake for various macro- and micronutrients, we estimated impacts on proportions of students failing to attain estimated average requirement (EAR) intake levels, or, where EARs are not available, on proportions of students with intake at or above adequate intake (AI) levels. The EAR level is the daily intake level deemed to be sufficient to meet the needs of approximately half of individuals. When scientific evidence is insufficient to establish an EAR, an AI is instead provided; the AI is a level of intake assumed to be adequate for most individuals. We assessed impacts on adherence to EARs for protein, calcium, iron, zinc, magnesium, vitamin A, vitamin C and folate, and impacts on adherence to AIs for sodium and fiber (IOM, 2000a). See Appendix E for further detail on EAR and AI estimation.

Impacts for EARs and AIs, respectively, are reported in Exhibit 6.35 and Exhibit 6.36. We find a small but statistically significant favorable impact on the proportion of students meeting the EAR for vitamin C (fewer students in FFVP schools failing to meet the EAR than in non-FFVP schools). There were no other statistically significant impacts on adherence to EARs and AIs.

Exhibit 6.34: Impact of FFVP on Students Meeting Estimated Energy Requirements (EERs) and Acceptable Macronutrient Distribution Ranges (AMDRs), Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Proportion consuming >estimated energy requirement (EER)	0.589 (0.005)	0.599 (0.005)	-0.009	{-1.25}	(0.212)
AMDRs:					
Proportion consuming 25–35% of energy from fat	0.785 (0.003)	0.774 (0.003)	0.011	{2.21}	(0.029)**
Proportion consuming 45–65% of energy from carbohydrates	0.973 (<0.001)	0.973 (<0.001)	0.001	{1.46}	(0.145)
Proportion consuming 10–30% of energy from protein	0.998 (<0.001)	0.997 (<0.001)	<0.001	{2.29}	(0.023)**

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.35: Impact of FFVP on Student Adherence to Estimated Average Requirements (EARs), Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact	
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	{P-value}
Proportion below EAR for protein	0.002 (0.000)	0.002 (0.000)	>-0.001	{-1.07}	(0.285)
Proportion below EAR for calcium	0.723 (0.002)	0.725 (0.002)	-0.001	{-0.51}	(0.609)
Proportion below EAR for iron	0.002 (<0.001)	0.002 (<0.001)	>-0.001	{-1.55}	(0.124)
Proportion below EAR for zinc	0.127 (0.002)	0.126 (0.002)	<0.001	{0.08}	(0.938)
Proportion below EAR for magnesium	0.359 (0.002)	0.357 (0.002)	0.002	{0.71}	(0.480)
Proportion below EAR for vitamin A	0.195 (0.002)	0.197 (0.002)	-0.002	{-0.94}	(0.351)
Proportion below EAR for vitamin C	0.062 (0.001)	0.065 (0.001)	-0.004	{-2.05}	(0.042)**
Proportion below EAR for folate	0.029 (<0.001)	0.029 (<0.001)	>-0.001	{-0.42}	(0.677)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.) >-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.36: Impact of FFVP on Proportion of Students At or Above Adequate Intake Levels, Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)			Estimated impact	
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Proportion at or above AI for sodium	0.993 (<0.001)	0.993 (<0.001)	>-0.001	{-0.89}	(0.375)
Proportion at or above AI for fiber	0.002 (0.001)	0.002 (<0.001)	<0.001	{0.62}	(0.539)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.) >-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Tolerable Upper Intake Levels. The Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects for almost all of the individuals in the general population. We assessed impacts of FFVP on the proportion of students with intake at or above the UL for calcium, iron, zinc, magnesium, vitamin A, vitamin C, folate, and sodium (Exhibit 6.37). We find no statistically significant impacts of FFVP on proportions of students at or above the UL for any of these nutrients. For sodium, regression-adjusted means indicate that the majority of students (88 percent) had intake at or above the UL.

Healthy Eating Index. The Healthy Eating Index-2005 (HEI) is a measure of overall dietary quality that assesses general adherence to federal dietary guidance (Guenther et al., 2006). It incorporates conformance with recommendations on total and whole fruits, vegetables, grains, milk, meat and beans, oils, saturated fat, sodium, and discretionary calories to create a single 100-point index score.

We assessed impacts of FFVP on the mean HEI score⁶⁰ (Exhibit 6.38), and found higher HEI scores among students in FFVP schools than among students in non-FFVP schools. Impacts on individual scale components indicate that this increase was primarily driven by a higher scores for the total fruit and whole fruit components of HEI among FFVP participants; FFVP participants also scored *lower* on the meat and beans score component, but this difference was not sufficiently large to outweigh the higher scores for total and whole fruits in the composite total. However, note that the estimate of the regression-adjusted mean HEI score (~55 points) among students in FFVP schools, though higher than that for those in non-FFVP schools overall, is still in the “needs improvement” range by HEI standards.

⁶⁰ Note that unlike most other outcomes in this subsection; here we assess impacts on the mean HEI score rather than on proportions of students above or below some threshold HEI score.

Exhibit 6.37: Impact of FFVP on Proportion of Students at or above Tolerable Upper Intake Level (UL), Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Proportion at or above UL for calcium	<0.001 (<0.001)	<0.001 (<0.001)	>-0.001	{-0.62}	(0.538)
Proportion at or above UL for iron	<0.001 (<0.001)	<0.001 (<0.001)	<0.001	{0.18}	(0.856)
Proportion at or above UL for zinc	0.029 (<0.001)	0.029 (<0.001)	>-0.001	{-0.42}	(0.677)
Proportion at or above UL for magnesium	0.028 (<0.001)	0.028 (<0.001)	>-0.001	{-0.43}	(0.665)
Proportion at or above UL for vitamin A	<0.001 (<0.001)	<0.001 (<0.001)	<0.001	{1.58}	(0.116)
Proportion at or above UL for vitamin C	0.029 (<0.001)	0.029 (<0.001)	>-0.001	{-0.42}	(0.677)
Proportion at or above UL for folate	0.317 (0.002)	0.316 (0.002)	<0.001	{0.34}	(0.734)
Proportion at or above UL for sodium	0.877 (0.003)	0.883 (0.003)	-0.006	{-1.59}	(0.113)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.) >-0.001 indicates a difference that is larger (closer to 0) than -0.001.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit 6.38: Impact of FFVP on Healthy Eating Index-2005 (HEI) Score, Usual Intake on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Regression-adjusted means (SEs)		Estimated impact		
	Treatment (T)	Comparison (C)	Difference (T-C)	{t-statistic}	(P-value)
Healthy Eating Index-2005 (HEI) Score	55.08 (0.36)	53.71 (0.45)	1.37	{2.35}	(0.019)**
Components:					
Total Fruit	3.331 (0.055)	2.904 (0.064)	0.427	{4.927}	(<0.001)***
Whole Fruit	3.085 (0.071)	2.460 (0.074)	0.625	{5.986}	(<0.001)***
Total Vegetables	2.173 (0.052)	2.148 (0.053)	0.025	{0.335}	(0.738)
Dark Green & Orange Vegetables & Legumes	0.905 (0.056)	0.796 (0.047)	0.109	{1.445}	(0.150)
Total Grains	4.527 (0.025)	4.514 (0.028)	0.014	{0.354}	(0.724)
Whole Grains	0.901 (0.044)	0.834 (0.044)	0.066	{1.071}	(0.285)
Milk	7.346 (0.080)	7.256 (0.088)	0.090	{0.755}	(0.451)
Meat & Beans	7.078 (0.099)	7.432 (0.099)	-0.354	{-2.481}	(0.014)**
Oils	4.947 (0.131)	5.015 (0.138)	-0.068	{-0.354}	(0.724)
Saturated Fat	5.981 (0.085)	5.773 (0.110)	0.209	{1.484}	(0.139)
Sodium	3.875 (0.081)	3.741 (0.077)	0.134	{1.174}	(0.242)
Calories from Solid Fat, Alcohol, & Added Sugar	10.935 (0.170)	10.840 (0.193)	0.095	{0.363}	(0.717)

Source: Student diary-assisted recall interview.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (Two-sided test.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

6.4 Discussion

In our primary and confirmatory analysis, we find strong evidence of greater fruit and vegetable consumption among students in FFVP schools, but have insufficient power in our analysis of total energy intake to determine whether this replaced consumption of other foods. Our analysis of secondary outcomes, though exploratory in nature, provides rich contextual evidence confirming and augmenting our primary findings.

We hypothesized two general mechanisms by which FFVP might increase fruit and vegetable intake: directly, through student consumption of the FFVP fresh fruit and vegetable snacks provided, and indirectly, by influencing student knowledge, attitudes, and positive perceptions about fruits and vegetables. The close degree of similarity between impacts on FFVP snack consumption during the school day and total estimated intake of students in FFVP schools suggests that currently the largest portion of FFVP impacts are attributable to direct effects on intake due to consumption of FFVP snacks. Observed improvements in knowledge, attitude, and perception measures, paired with evidence of greater fresh fruit and vegetable consumption outside of school among FFVP participants, lends plausibility to the hypothesis that indirect mechanisms play an additional (though smaller) role.

Additionally, although our findings are not definitive, on balance our analyses provide weak evidence that FFVP fruit and vegetable consumption was in addition to, rather than in place of, other foods. We find no evidence in our secondary analyses that FFVP displaced consumption of other foods; observed intake was not statistically significant lower among students in FFVP schools for any of the 29 foods and food groups we examined. Further study of FFVP impacts on total energy consumption with a larger sample size may be warranted to further investigate this question.

While both fresh fruit and fresh vegetable intakes were higher among students in FFVP schools, the magnitude of the difference in fresh fruit intake was larger, reinforcing the findings reported in Chapter 5 indicating greater popularity of fruits overall. Interventions specifically targeting vegetable consumption in this population may be warranted.

Finally, we note broad differences in dietary profiles between FFVP and nonparticipating students consistent with the observed impacts on fruit and vegetable consumption, with higher intake of micro- and macronutrients for which fruits and vegetables are good sources, and improved adherence to dietary guidelines to which fruit and vegetable intake contribute. Nonetheless, overall diet quality even among FFVP students remains quite poor, with the average HEI score still in the “needs improvement” range. Additionally, the magnitude of differences in proportions of students in FFVP schools meeting dietary guidelines was generally relatively small, so it is unclear how these differences would translate into substantive differences in health or other nutrition-related outcomes.

Chapter 7: Impacts of FFVP on the School Environment

This chapter presents results of our analyses on the causal impact of FFVP on the school environment, including nutrition education and promotion activities, school meals, and foods served outside of school meals. Like the analyses testing the impact of FFVP on students reported in the previous chapter, these analyses use regression discontinuity (RD); however, these RD analyses are conducted at the school level rather than the student level. A general overview of RD appears in Chapter 2, and further details are in Appendix C.

The RD analyses reported in this chapter use outcome data from the principal survey and the SFA surveys (comprised of two components, a school-specific survey and district-level survey). SFA directors were asked about school meals served as part of the School Breakfast Program (SBP) and the National School Lunch Program (NSLP), and foods served outside of school meals in SFA-operated venues. Principals were asked about nutrition education and promotion activities, and food served outside of school meals in school venues not operated by the SFA.

As in the student-level analyses, these analyses use our preferred analytic sample specification, which includes only FFVP schools within two and a half percentage points of the State-specific FRPSL cutoff. Our total sample includes 252 schools, and this subsample of schools near the cutoff includes 214 schools: 115 treatment schools that participated in FFVP, and 99 comparison schools that did not receive funding for the program.

For continuous outcomes, we estimated ordinary least squares (OLS) models; for dichotomous outcomes, we estimated linear probability models.⁶¹ In all models, the key parameter for our purposes is the estimated coefficient on the binary FFVP status variable. We interpret a positive and statistically significant coefficient on this treatment status variable as an indication of causal FFVP impacts on the outcome of interest. In addition, all models also included a set of school-level covariates parallel to those included in the student-level analyses: the percent of students who were non-white, the percent of students who were female, the highest grade in the school, the lowest grade in the school, and State indicator variables.⁶²

⁶¹ We performed t-tests on the regression coefficients from both the OLS and linear probability models. The use of a t-test for binary outcomes is justified by a standard asymptotic approximation, such that the distribution of the mean of a binary outcome converges to a normal distribution relatively quickly. Our sample sizes are in the hundreds, making the asymptotic normal approximation plausible. The use of the linear probability model (rather than a logit or probit model) is justified by the best linear predictor property of linear regression. We use robust standard errors to adjust for the heteroscedasticity induced by the binary outcome.

⁶² As in our student-level RD models, we estimated school-level models with and without the ranking variable, defined as the distance from the FRPSL eligibility cutoff in percentage points. The ranking variable was rarely statistically significant when included, and most of the results were robust to whether or not it was included. As expected, levels of statistical significance are lower (i.e., less statistical precision) in models that include the ranking variable. We therefore report only results for models excluding the ranking variable.

Finally, we note that we analyze a large number of outcomes, without having specified any individual outcome in advance as being of particular importance. All results reported in this chapter must therefore be considered exploratory. Our earlier caveat about multiple comparisons applies here to an even greater extent. Our strategy for reporting statistical significance in the exhibits is to use asterisks to indicate statistical significance: $*p < .10$; $**p < .05$; and $***p < .01$. In the discussion we consider p-values lower than 0.05 as statistically significant and discuss those results. We consider p-values of 0.05 or higher as indicating a lack of relationship and thus we do not discuss these results in the text. We note that with large numbers of outcomes one would expect to find statistically significant differences across the treatment and comparison group for some outcomes due to random chance alone (Schochet, 2009). Additionally, we note that some impact estimates, while statistically significant, are relatively small in magnitude, and may not therefore be considered “meaningful” from a nutritional or health perspective.

7.1 Nutrition Education and Promotion Activities

Our first set of models tested the effects of FFVP on nutrition education and promotion activities. We examined impacts both on the level of these activities and on their content.

We find strong evidence that receipt of FFVP was associated with greater nutrition education and promotion efforts (Exhibit 7.1), as measured in several ways. First, FFVP schools offered more days of nutrition education in the previous week than non-FFVP schools. Second, they were also more likely to have offered any nutrition education in the previous four weeks. While there was no statistically significant impact on nutrition education or promotion displays, such as posters or banners, FFVP schools were more likely to have distributed other media including flyers, brochures, or newsletters conveying nutrition education or promotion messages. These three effects represented large increases relative to the activities in non-FFVP schools.

Exhibit 7.1: Impacts of FFVP on Nutrition Education and Promotion Activities

Outcome	N	Regression adjusted means (SE)		Difference (T-C)	Estimated impact	
		Treatment (T)	Comparison (C)		{t-statistic}	{P-value}
Nutrition education						
Number of days offered in previous week (#)	182	2.40 (0.16)	0.66 (0.17)	1.73	{7.20}	(<0.001)***
Any offered in 4 weeks prior (proportion ¹)	184	0.88 (0.04)	0.59 (0.04)	0.29	{4.65}	(<0.001)***
Displays and other media						
Displays in 4 weeks prior (proportion ¹)	184	0.86 (0.04)	0.84 (0.04)	0.02	{0.45}	(0.654)
Other media (flyers, brochures, newsletters) in 4 weeks prior (proportion ¹)	183	0.53 (0.05)	0.30 (0.05)	0.23	{3.08}	(0.002)***

Source: Principal survey.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Note: Ns varied across models due to missing data and are thus reported in all tables for each model.

¹Proportion reporting “yes” to offering nutrition education/promotion activities.

FFVP additionally appears to have influenced content of messages conveyed as part of nutrition education and promotion activities (Exhibit 7.2). In particular, there was strong evidence that FFVP schools were more likely to convey messages about fruits and vegetables than schools not participating in FFVP. Both as part of nutrition education and promotion activities and via promotional displays and other media, FFVP schools were more likely to have communicated messages about the role of fresh fruits and vegetables in a complete diet, cooking with fresh fruits and vegetables, and where fresh fruits and vegetables come from.

Through nutrition education, FFVP schools were also more likely to have delivered messages about other types of foods (for example, eating high fiber, lower fat, or lower sodium foods, and whole grains). FFVP schools were also more likely to have displays or other media about eating whole grains. There was no statistical evidence that FFVP was associated with differences in displays or other media about eating high fiber or lower fat foods.

Finally, and consistent with the intent of FFVP, there was also a strong impact on the likelihood that messages about trying new foods were conveyed in FFVP schools, both via nutrition education and via displays and other media. Of the other general nutrition education and promotion messages we examined, we also found evidence that FFVP schools were more likely to convey messages about the USDA MyPyramid, healthy weight and overweight, and about physical activity conveyed as part of nutrition education.

Exhibit 7.2: Impacts of FFVP on Nutrition Education or Promotion Messages

Outcome	Nutrition education					Displays & other media				
	Regression adjusted means (SE)				Estimated impact	Regression adjusted means (SE)			Estimated impact	
	N	Treatment (T)	Comparison (C)	Difference (T-C)	(P-value)	N	Treatment (T)	Comparison (C)	Difference (T-C)	(P-value)
		(proportion ¹)	(proportion ¹)				(proportion ¹)			
Messages about fruits and vegetables										
Role of fresh fruits and vegetables in complete diet	182	0.81 (0.04)	0.44 (0.05)	0.38	(<0.001)***	180	0.83 (0.04)	0.55(0.05)	0.28	(<0.001)***
Cooking with fresh fruits and vegetables	182	0.55 (0.05)	0.27 (0.05)	0.27	(<0.001)***	177	0.36 (0.05)	0.17 (0.05)	0.19	(0.005)***
Where fresh fruits and vegetables come from	182	0.61 (0.05)	0.20 (0.05)	0.41	(<0.001)***	178	0.36 (0.05)	0.18 (0.05)	0.19	(0.008)***
Messages about other types of foods										
Eating higher fiber foods	182	0.46 (0.05)	0.22 (0.05)	0.24	(0.001)***	176	0.24 (0.04)	0.18 (0.05)	0.06	(0.353)
Eating lower fat foods	182	0.60 (0.05)	0.34 (0.05)	0.26	(0.001)***	176	0.34 (0.05)	0.27 (0.05)	0.07	(0.325)
Eating lower sodium foods	182	0.41 (0.05)	0.18 (0.05)	0.23	(0.001)***	176	0.21 (0.04)	0.11 (0.04)	0.10	(0.077)*
Eating whole grains	182	0.52 (0.05)	0.30 (0.05)	0.22	(0.003)***	176	0.37 (0.05)	0.23 (0.05)	0.14	(0.049)**
General nutrition education & promotion messages										
Try new foods	182	0.79 (0.05)	0.33 (0.05)	0.46	(<0.001)***	179	0.52 (0.05)	0.31 (0.05)	0.21	(0.006)***
USDA MyPyramid	182	0.52 (0.05)	0.32 (0.05)	0.20	(0.007)***	180	0.68 (0.05)	0.58 (0.05)	0.10	(0.177)
Healthy weight and overweight	182	0.56 (0.05)	0.26 (0.05)	0.30	(<0.001)***	176	0.39 (0.05)	0.26 (0.05)	0.14	0.069
Physical activity	182	0.81 (0.05)	0.46 (0.05)	0.36	(<0.001)***	177	0.68 (0.05)	0.57 (0.05)	0.10	0.173

Source: Principal survey.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Note: Ns varied across models due to missing data and are thus reported in all tables for each model.

¹Proportion reporting “yes” to offering nutrition education/promotion message.

All of the effects reported were quite large relative to activities in non-FFVP schools. On the other hand, because nutrition education and promotion questions relied on self-reports from the principal survey, observed differences across FFVP and non-FFVP schools might be driven wholly or in part by a Hawthorne effect. Principals in FFVP schools may have had a heightened awareness on a day-to-day basis of issues related to FFVP, and might therefore have been more likely to report nutrition education and promotion offerings.

7.2 School Meals

Our next set of models tested FFVP had an impact on school meals. We examined impacts both on the number of meals served per student as part of USDA school meals programs, and on SFA directors' perceptions of changes in the amount of fruits and vegetables taken by students as part of school meals.

There was no evidence that FFVP had an impact on the number of School Breakfast Program meals, National School Lunch Program meals, or total meals served per student (Exhibit 7.3).

Exhibit 7.3: Impacts of FFVP on Number of School Meals Served

Outcome	N	Regression adjusted means (SE)		Estimated impact		
		Treatment (T) (# meals ¹)	Comparison (C) (# meals ¹)	Difference (T-C)	{t- statistic}	{P-value}
Breakfasts per student per month	162	7.58 (0.40)	7.82 (0.44)	-0.23	{-0.38}	(0.706)
Lunches per student per month	160	15.14 (0.40)	14.97 (0.45)	0.18	{0.29}	(0.775)
Total meals per student per month	158	22.75 (0.65)	22.85 (0.72)	-0.10	{-0.10}	(0.922)

Source: SFA district-level survey and CCD.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Note: Ns varied across models due to missing data and are thus reported in all tables for each model.

¹Meals per student variables were calculated by averaging SFA reports on the number of meals served across the 3 previous months and dividing by the school's total enrollment listed in the common core data. Due to some outliers and implausible values at either end of the distribution, 2.5% of the values at each end of the distribution of breakfasts and lunches per student were recoded as missing.

However, we found evidence based on SFA directors' reports that in FFVP schools students took more fresh fruits and vegetables as part of the NSLP (Exhibit 7.4). During the 2010–2011 school year, SFA directors were asked whether the amount of fruits and vegetables by type (fresh, canned, frozen, dried) taken by students as part of the NSLP and SBP was more, less, or about the same than in 2008–2009, before FFVP was introduced in its current form in any schools. For NSLP school lunches, this scale measure was significantly higher in FFVP schools in our RD sample than non-FFVP schools for both fresh fruits and fresh vegetables, indicating that, in the opinion of the SFA director, students were taking more of these food items. We found no evidence of FFVP impacts on

other types of fruits and vegetables (canned, frozen, dried) offered as part of the NSLP, or on any type of fruits and vegetables offered as part of the SBP.

The findings concerning fresh fruits and vegetables are not consistent with the findings on student intake reported in Chapter 6. In the previous chapter, we found that students in FFVP schools did not consume more fresh fruits and vegetables during lunch than the students in non-FFVP schools. While we cannot explain the inconsistency, we note that the findings in this chapter are based on SFA directors' reports of changes over the past two years in what students took as part of school lunches. Their perceptions could be erroneous. On the other hand, intake of fruits and vegetables at lunch is small and the sample sizes in this study may not be large enough to detect a difference in intake at lunch, even if one exists. This is an area where future research would be useful.

Exhibit 7.4: Impacts of FFVP on Fruits and Vegetables Taken by Students in School Meals

Outcome	N	Regression adjusted means (SE)		Estimated impact		
		Treatment (T) (score ¹)	Comparison (C) (score ¹)	Difference (T-C)	{t-statistic}	{P-value}
National School Lunch Program						
Canned fruit	161	2.03 (0.07)	2.13 (0.08)	-0.097	{-0.93}	(0.356)
Canned vegetables	157	1.98 (0.06)	1.92 (0.07)	0.059	{0.58}	(0.565)
Dried fruit	151	1.85 (0.06)	1.87 (0.07)	-0.014	{-0.15}	(0.884)
Fresh fruit	164	2.80 (0.05)	2.64 (0.05)	0.161	{2.16}	(0.033)**
Fresh vegetables	163	2.75 (0.05)	2.52 (0.06)	0.231	{2.72}	(0.007)***
Frozen fruit	160	2.14 (0.06)	2.14 (0.07)	-0.001	{-0.01}	(0.990)
Frozen vegetables	162	2.25 (0.06)	2.23 (0.06)	0.017	{0.19}	(0.851)
School Breakfast Program						
Canned fruit	157	2.07 (0.06)	1.99 (0.07)	0.082	{0.90}	(0.370)
Canned vegetables	151	1.80 (0.06)	1.87 (0.07)	-0.069	{-0.74}	(0.458)
Dried fruit	146	1.83 (0.06)	1.86 (0.07)	-0.032	{-0.33}	(0.745)
Fresh fruit	163	2.70 (0.05)	2.57 (0.06)	0.126	{1.55}	(0.124)
Fresh vegetables	152	2.30 (0.07)	2.30 (0.08)	<0.001	{<0.01}	(0.998)
Frozen fruit	153	2.07 (0.06)	2.11 (0.07)	-0.039	{-0.42}	(0.673)
Frozen vegetables	152	1.98 (0.06)	2.05 (0.06)	-0.070	{-0.79}	(0.430)

Source: SFA school-level survey.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Note: Ns varied across models due to missing data and are thus reported in all tables for each model.

¹The types of fruits and vegetables served were coded as 1=less, 2=same, and 3=more than the 2008–2009 school year.

7.3 Other Foods Served in School

Finally, we analyzed impacts on school foods served outside of USDA school meal programs, including foods from vending machines, a la carte foods, snack bars, and other venues. We examined impacts both for total food sales from school- and SFA-operated venues (excluding SBP and NSLP

meals), and for 22 individual foods frequently offered in these venues, including fruits and vegetables, sweet and salty snacks, desserts, and assorted beverages. For total sales, we created a binary dependent variable equal to 1 if there were any current sales from school- or SFA-operated venues outside of school meals, and 0 if there were no sales. Similarly, for each individual food outcome, we created a dependent variable equal to 1 if the food was currently offered and 0 if the food was not currently offered.

We found no evidence that FFVP caused changes in the food served outside of school meals from school- and SFA-operated venues (Exhibit 7.5), with the exception that FFVP schools were more likely to serve chocolate candy than non-FFVP schools.

Exhibit 7.5: Impacts of FFVP on Whether Particular Foods Are Served Outside of School Meals in School- and SFA-Operated Venues

Outcome	N	Regression adjusted means (SE)		Difference (T-C)	Estimated impact	
		Treatment (T) (proportion ¹)	Comparison (C) (proportion ¹)		{t-statistic}	{P-value}
Any food sales from school and SFA operated venues	165	0.61 (0.05)	0.69 (0.06)	-0.075	{-0.97}	(0.333)
Food items						
100% fruit or vegetable juice	122	1.00 (0.00)	1.00 (0.00)	0.000 [†]	--	--
Soda pop or fruit drinks that are not 100% juice	64	0.62 (0.09)	0.60 (0.09)	0.025	{0.19}	(0.853)
Sports drinks	65	0.59 (0.09)	0.58 (0.08)	0.016	{0.13}	(0.897)
Bottled water	110	0.98 (0.02)	0.98 (0.02)	-0.001	{-0.05}	(0.959)
Whole or 2% fat milk	88	0.86 (0.06)	0.79 (0.06)	0.074	{0.81}	(0.421)
1% or skim milk	110	1.00 (0.00)	1.00 (0.00)	0.000 [†]	--	--
Fruit	124	1.00 (0.01)	0.98 (0.01)	0.015	{0.91}	(0.365)
Bread products	111	0.98 (0.02)	0.98 (0.02)	-0.002	{-0.07}	(0.945)
Lowfat baked goods	115	0.99 (0.01)	0.98 (0.01)	0.013	{0.67}	(0.504)
Baked goods that are not low in fat	101	0.92 (0.04)	0.94 (0.04)	-0.021	{-0.40}	(0.694)
Lowfat or nonfat yogurt	112	1.00 (0.02)	0.96 (0.02)	0.041	{1.75}	(0.084)*
Lettuce, vegetable, or bean salads	115	0.98 (0.02)	0.97 (0.02)	0.011	{0.38}	(0.708)
Vegetables with lowfat dip	103	0.92 (0.03)	0.95 (0.04)	-0.034	{-0.63}	(0.529)
Deep fried French fried potatoes	69	0.69 (0.09)	0.57 (0.11)	0.112	{0.74}	(0.461)
Oven baked French fried potatoes	105	0.94 (0.03)	0.99 (0.03)	-0.048	{-1.17}	(0.247)
Other vegetables	116	0.95 (0.02)	1.00 (0.02)	-0.042	{-1.43}	(0.155)
Chocolate candy	68	0.66 (0.09)	0.36 (0.09)	0.291	{2.21}	(0.032)**
Other candy	69	0.69 (0.09)	0.47 (0.09)	0.213	{1.66}	(0.104)
Lowfat salty snacks	113	0.99 (0.02)	0.96 (0.02)	0.025	{0.90}	(0.371)
Salty snacks that are not low in fat	84	0.82 (0.06)	0.83 (0.06)	-0.009	{-0.09}	(0.928)
Lowfat or fat-free ice cream, frozen yogurt, or sherbet	99	0.95 (0.03)	0.93 (0.03)	0.024	{0.47}	(0.637)
Ice cream or frozen yogurt that are not low in fat	73	0.76 (0.07)	0.77 (0.08)	-0.007	{-0.06}	(0.955)

Source: Principal and SFA school-level surveys.

Asterisks indicate statistically significant differences: *p<0.10, **p<0.05, ***p<0.01.

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Note: Ns varied across models due to missing data and are thus reported in all tables for each model.

¹Proportion reporting “yes” to serving foods.

[†]Difference is a true zero. All schools in these models reported serving 100% fruit or vegetable juice and serving 1% milk or skim milk.

7.4 Discussion

Overall, we find evidence suggesting that in addition to its impact on student food intake, FFVP also has had an impact on the school environment.

In particular, we find strong evidence for an effect of FFVP on nutrition education and promotion activities. FFVP schools were substantially more likely to provide nutrition education and to distribute promotional flyers, brochures, and newsletters, and offered nutrition education more often than non-FFVP schools. Additionally, consistent with the primary objectives of FFVP, nutrition education and promotion messages about fruits and vegetables and about trying new kinds of foods, along with other messages, were conveyed more frequently in FFVP schools.

Although our exploratory analyses in Chapter 6 did not find that student-level impacts on intake varied by nutrition education offerings, these school-level findings nonetheless provide suggestive evidence on possible mechanisms for the observed improvement in attitudes about fresh fruit and vegetables, and for indirect increases in fruit and vegetable consumption not directly attributable to consumption of FFVP snacks.

There is also some evidence, based on reports by SFA directors, that students in FFVP schools took greater amounts of fresh fruits and vegetables as part of the National School Lunch Program—but not other types of fruits and vegetables (canned, frozen, or dried), any type of fruits and vegetables served as part of the School Breakfast Program, or any foods (with the exception of chocolate and potentially lowfat or nonfat yogurt) served in school- or in SFA-operated venues outside of school meals. This finding is broadly consistent with recently reported descriptive analyses by Ohri-Vachaspati et al. (2012), who found a greater likelihood that fresh fruits (but not fresh vegetables) were served as part of school lunches in FFVP schools. However, as reported in the previous chapter, we did not find measurable FFVP impacts on student *intake* of fruits or vegetables as part of school lunches. It is possible that the finding is a Hawthorne effect, with SFA directors in FFVP schools more likely to report higher levels of fruit and vegetables taken by students as part of school meals.

Chapter 8: Conclusions

The evaluation of the Fresh Fruit and Vegetable Program (FFVP) provided a comprehensive examination of program impacts on participating students and schools and a detailed description of how FFVP has been implemented in participating schools.

In the first section of this concluding chapter, we present the key findings from the evaluation and discuss their implications. The second section discusses the potential limitations of the evaluation, based on features of the study design and on the structure of FFVP. The chapter concludes with a consideration of areas for future research to expand and further explore the findings of this evaluation.

8.1 Summary of Key Findings

The primary objective of the FFVP evaluation mandated by Congress was to determine whether FFVP increased consumption of fruits and vegetables, induced other dietary differences, such as lesser consumption of less nutritious foods, and/or influenced other outcomes among children in participating schools.⁶³ Our analysis found strong evidence that fruit and vegetable consumption was higher among students in FFVP schools. Students in FFVP schools consumed approximately one-third of a cup more fruits and vegetables per day on FFVP days than students in comparable schools not participating in the program. FFVP appears to have been especially effective in improving fruit consumption, with approximately a quarter cup of the total impact on fruit and vegetable intake coming from fruits.

This greater level of fruit and vegetable consumption is important because population dietary changes are generally small and incremental. While there is no consensus as to what constitutes a meaningful change in fruit and vegetable intake, it is generally accepted that children with the lowest intakes are at greatest risk of poor health outcomes, and that the greatest benefit would be conferred by increasing intakes of fruits and vegetables among this group (USDA & DHHS, 2010). Further, children from socioeconomically disadvantaged families tend to have the lowest intakes of fruits and vegetables.⁶⁴ By focusing on higher need schools, FFVP specifically targets this at-risk group. Thus, increasing fruit and vegetable intakes by this population even by small amounts may confer a health benefit.

In our conceptual model of FFVP activities and impacts, we hypothesized two general mechanisms by which FFVP might increase fruit and vegetable intake: directly, through student consumption of the FFVP fresh fruit and vegetable snacks provided; and indirectly, by influencing student knowledge, attitudes, and perceptions towards fruits and vegetables. Our analysis suggests that most,

⁶³ In our analysis plan, we specified two primary and confirmatory outcomes: total cup-equivalents of fruits and vegetables consumed per FFVP day; and total energy intake (defined as total kilocalories consumed) per FFVP day, reflecting Congressional objectives. We treated analyses of other outcomes as secondary and exploratory. Findings from the exploratory analyses are consistent with findings from the confirmatory outcomes.

⁶⁴ See, for example, Krebs-Smith et al., 1996; Darmon and Drewnowski, 2008; Dubowitz et al., 2008; Lorson et al., 2009.

but not all, of the observed difference in consumption is attributable to direct effects on intake due to consumption of FFVP snacks. FFVP snacks provided students with approximately one-quarter cup of fresh fruits and vegetables, similar to our estimate of the impact of FFVP on fruit and vegetable consumption in school. This represents 80 percent of the total observed difference in fruit and vegetable consumption.

Students in FFVP schools also consumed a small amount (0.06 cups) more fresh fruits and vegetables outside of school than did students in schools not participating in the program, providing some evidence that FFVP may also indirectly increase fruit and vegetable consumption.

Observed improvements in knowledge, attitude, and perception measures are consistent with the observed higher levels of out-of-school fruit and vegetable consumption among FFVP students. Students in FFVP schools had more positive general attitudes towards fruits and vegetables. Our analysis showed that students participating in FFVP were more likely to agree that they “like most fruits” and that they “like to try new fruits and new vegetables.” In addition, we found that FFVP improved student familiarity with a number of specific fruits and vegetables and improved how much they reported liking some specific fruits and vegetables. FFVP may have influenced these student attitudes directly by increasing students’ familiarity with the specific fruits and vegetables they had been served.

Analysis of the impact of FFVP on nutrition education and promotion activities in schools provides suggestive evidence on how FFVP may indirectly affect student attitudes, leading to increased fruit and vegetable consumption. We found strong evidence that the FFVP schools had greater levels of nutrition education and promotion activities. FFVP schools were more likely to provide nutrition education and to distribute promotional flyers, brochures, and newsletters. FFVP schools also offered nutrition education more often than schools not participating in the program. Additionally, consistent with the primary objectives of FFVP, nutrition education and promotion messages about fruits and vegetables and about trying new kinds of foods were conveyed more frequently in FFVP schools. Some of the nutrition education materials used by schools likely were provided by partners working with schools, districts, and States.

Our analysis did not find, however, any evidence that FFVP led to lesser consumption of less nutritious foods among students participating in the program. There was no statistically significant difference in total energy intake among students in FFVP schools, nor any evidence of lesser intake of foods other than fruits and vegetables. Although our findings are not definitive, on balance our analyses provide weak evidence that FFVP fruit and vegetable consumption was in addition to, rather than in place of, other foods. Further study of FFVP impacts on total energy consumption with a larger sample size may be warranted to further investigate this question.

FFVP implementation appears to be broadly consistent with USDA program guidelines. USDA encourages schools to implement FFVP two or more times per week and nearly all schools (94 percent) reported doing so. In fact, 41 percent of FFVP schools chose to provide the free snacks five days a week and another 41 percent of schools offered FFVP snacks three or four times per week. Consistent with the program goal of exposing students to a variety of fresh fruits and vegetables, schools reported serving, on average, six different fruits or vegetables each week. According to principal reports, approximately two-thirds of FFVP schools provided nutrition education during a one-week period; 82 percent provided nutrition education sometime during the prior month. Schools that reported providing nutrition education in a given week offered an average of three classes per

week. Education messages focused on the role of fruits and vegetables in a healthy diet, understanding where fruits and vegetables come from, and cooking with fresh fruits and vegetables, as well as other general messages concerning the importance of physical activity and maintaining a healthy weight.

FFVP is an extremely popular program among all its constituencies. Program administrators, including SFA directors, principals, school food service staff, and teachers all expressed strong support for FFVP. Nearly all respondents (over 95 percent) in each group agreed that their overall opinion of FFVP was favorable and that they would like FFVP to continue at their schools. Student opinions mirrored those of program administrators. Almost all wanted the program to continue. While the majority of students agreed that the fruit and vegetable snacks “looked and tasted good,” students expressed a decided preference for fruit snacks and also expressed a desire to see different kinds of fruits and vegetables offered through the program.

8.2 Limitations

Some limitations of the impact estimates presented in this report are inherent both in the evaluation design and in features of FFVP, as legislatively mandated and implemented in participating schools. We discuss these considerations below.

Regression Discontinuity Design. Our results rely on the regression discontinuity (RD) method. RD has internal validity comparable to that of random assignment, which is the gold standard, provided that school selection adhered to the free and reduced-price lunch (FRPSL) eligibility cutoff rule. If there are features of school selection of which we are unaware and which deviate from the FRPSL eligibility criterion, the RD estimates might be biased. Differences in student characteristics across treatment and comparison schools would be evidence of such deviation; we found no evidence of such differences.

RD deviates from random assignment when sampled schools are not very close to the cutoff. We were able to choose schools for our full analysis sample relatively close to the cutoff, and we identified a large subsample of schools (approximately 84 percent of the full sample) that were even closer. We take the results in the “near-cutoff sample” as our preferred estimate. Because this restricted subsample is closer to the cutoff than samples in most other RD studies, our study has greater internal validity and there is a stronger argument for interpreting our results as giving the causal impact of FFVP. Appendix D reports results for the unrestricted analytic sample and for other specifications that have been suggested in the RD literature. While there is some variation in the impact estimates, the overall conclusions—statistically significant impacts of about one-third of a cup on fruit and vegetable consumption, and no statistically significant impact on total energy intake—are robust across alternative specifications considered. This gives us additional confidence in the results presented in the body of the report.

Even so, it is conceivable that there is strong variation of food consumption with small differences in school FRPSL eligibility percentage, or that variation is highly nonlinear. Either of these phenomena would pose a threat to the validity of our findings. On a priori grounds, such strong variation seems unlikely and there is no evidence of it in our data. In particular, we note that models that include FRPSL eligibility percentage or include schools farther from the cutoff yield similar results (see Appendix D).

Finally, if the impact of FFVP varies strongly with FRPSL eligibility percentage, our estimates are only applicable at the cutoff. If the policy choice was an incremental expansion (or shrinkage) of the program, estimates near the cutoff would actually be preferred for guiding this decision.⁶⁵ On the other hand, if there was strong variation in impact with FRPSL eligibility percentage, our estimates could not be generalized to predict the likely effects of a large-scale expansion of the program to include schools with very low percentages of FRPSL eligibility. There is no reason to think that such strong variation in the impact of FFVP with FRPSL eligibility percentage is present as a rule.⁶⁶ We therefore believe that it is reasonable to use these estimates for policy decisions about the program as a whole.

Measuring Food Intake. Measuring food intake is challenging in general, and especially so for elementary school age children. Measurement error would decrease the precision of our results. This study has used state-of-the-art methods for measuring child intake. The high precision of our impact estimates suggests that measurement error is not a serious problem with regard to our study conclusions.

Identifying Short-Term versus Long-Term Impacts. Because of the schedule for the congressionally mandated report, this evaluation could only measure short-term outcomes, or those occurring while the program was underway. During that period, fresh fruits and vegetables were distributed to children during the school day. Children received nutrition education messages about fruit and vegetable consumption indirectly as a result of the distribution itself. They also received nutrition education messages directly to the extent that they were incorporated in classroom lessons. Over the longer term, after students leave the program, the effects of both acclimation to fruits and vegetables and nutrition education may remain. The relative size of short-term and long-term impacts is unclear. It is possible that acclimation and nutrition education impacts will grow as children age and gain more control over their food consumption. Alternatively, impacts might shrink, both because of the elimination of any direct impact of fruit and vegetable distribution and because of the attenuation of nutrition education messages. In addition, we would expect that other dietary changes, such as reduced consumption of less nutritious foods and lower energy intake, would be long-term impacts.

Program Maturity and Dosage. The evaluation estimates impacts for the program as currently designed and implemented. FFVP had been operating nationwide for only three years when we collected data, with funding increasing approximately 50 percent each year over the previous two years. Many schools and students participating in the impact evaluation were in their first year of FFVP participation. It is possible that longer exposure would lead to larger student impacts. Also, schools may improve their programs as their experience increases. An additional consideration is that FFVP authorizing legislation mandates per-student fruit and vegetable expenditures of between \$50 and \$75 per year, only \$1–2 per student per week in school; we cannot say how changes in per-student funding amounts might influence program impacts.

Impacts on non-FFVP Days. We restricted data collection in FFVP schools to days on which fruits and vegetables were scheduled to be offered to students. Our analysis cannot therefore be extrapolated to describe impacts on intake on days on which FFVP snacks are not offered.

⁶⁵ See Angrist, Imbens, and Rubin, 1996; Imbens and Angrist, 1994; Imbens and Rubin, 1997.

⁶⁶ See Klerman, 2010.

Understanding the extent to which intake on non-FFVP days is influenced by spillover or substitution effects of the program is an important direction for future research.

Nutrition Education. Our exploratory analysis did not find that nutrition education increased the impact of FFVP, with students in FFVP schools offering nutrition education classes in the reference week experiencing no greater impacts than students in FFVP schools without such classes. However, note that the great majority (82 percent) of FFVP schools offered nutrition education classes in the month prior to the dietary recall interview, so we do not necessarily have a true “no nutrition education” counterfactual group of students. We cannot therefore definitively rule out the possibility that nutrition education and promotion activities influenced the magnitude of program impacts.

Sample Size Limitations. The size of the school/student sample affects the precision with which impacts can be estimated. The sample size was designed to allow us to detect differences in mean fruit and vegetable intake of approximately one quarter cup or larger between FFVP participants and nonparticipants; our prospective assumptions on the likely variance of the fruit and vegetable consumption outcome measure appear to have been relatively conservative, allowing us to detect slightly smaller impacts in our main analyses. However, the study sample size does not allow us to reliably detect smaller differences and is insufficient to detect impacts on total energy consumption corresponding to the higher level of fruit and vegetable intake. In addition, the study sample size only allows us to detect relatively large impacts within and across subgroups of the population; it is important to keep this limitation in mind as context for our findings of essentially no differences in impacts by demographic subgroup and by school nutrition education offerings.

Multiple Comparisons. FNS’s Request for Proposal (RFP) requested analyses of impacts on a very large number of outcomes. As we discuss in Chapters 6 and 7, when we estimate impacts for a large number of outcomes, just due to chance some of them will appear to be significant—even if none of them are. One approach to this “problem of multiple comparisons” is to treat all outcomes as equally important. However, when following that strategy, the required statistical adjustments imply a need for very large samples. In the samples we have, few if any impacts would appear significant.

In this project, we followed an alternative strategy which is standard practice in current impact analyses. Before seeing the results, the Analysis Plan pre-specified two confirmatory outcomes—fruit and vegetable consumption and total energy intake—and stated that they would be treated as separate domains, such that no further multiple comparison adjustment would be needed. The Analysis Plan also stated that all other outcomes would be treated as exploratory.

Our discussion of the results in this document follows that pre-specified Analysis Plan. We report all results with unadjusted standard errors. Our discussion focuses on the two confirmatory outcomes. Results for the other, exploratory, outcomes are treated as secondary and suggestive and are used only to interpret the main results and to suggest directions for future work. Others interpreting these results should keep this pre-specified confirmatory/exploratory distinction in mind and be careful not to choose ex-post (i.e., after looking at the results) which estimates to emphasize.

8.3 Future Research

The results of this evaluation suggest three broad directions for future research: additional FFVP impact analyses, studies of long-term program effects, and program operational issues.

First, this evaluation provided clear evidence that FFVP has succeeded in inducing students to eat the provided snacks, and this has led to a higher total intake of fresh fruits and vegetables and the associated nutrients. One avenue for future impact analyses would be to examine whether variations in program implementation affect impacts. Do differences in implementation characteristics—for example, types of fruits and vegetables offered, number of days per week students receive FFVP snacks, quantity and content of nutrition education, or increases in total funding per student—influence outcomes?

In addition, this evaluation was designed to measure consumption on days FFVP operated in schools. This did not allow us to examine fruit and vegetable consumption on non-FFVP days. An important issue for further research is to understand what students are eating on non-FFVP school days and on non-school days. For non-school days, the observed difference in fruit and vegetable intake outside of school on FFVP days, representing 20 percent of the total observed difference, makes impacts on non-FFVP days plausible.

Our study also found differences in the school environment associated with FFVP. Specifically, we found greater nutrition education activities in FFVP schools. Understanding the mechanisms through which FFVP induced these differences would be a valuable area of research. We also found suggestive evidence that students took more fresh fruits and vegetables in the NSLP. This result was based on SFA director reports and is not consistent with student intake estimates. Further exploration would be beneficial as well as research to examine differences in school meals offerings associated with FFVP.

Second, several types of studies could help to understand the long-term program impacts. Such studies might include students who have had multiple years of exposure to FFVP as well as critical studies of the long-term impact on students once they graduate from elementary school and are no longer participating in the program. While this evaluation showed greater intake of fruits and vegetables in the short term among students in FFVP schools, it did not find any impact on the consumption of less nutritious foods. Presumably these types of dietary changes take longer to occur (if they occur at all).

Third, additional research on the operation of the program is warranted. Such research might involve collection of best practices and sharing of experiences. Collection, review, and dissemination of nutrition education materials with respect to fresh fruits and vegetables seem particularly promising given the observed impact of FFVP on nutrition education provided in schools. This evaluation showed that FFVP was more successful in improving student intake of fruits than vegetables. Research to examine ways to increase vegetable intake would be valuable.

A further area of program research could be within the FFVP school selection process. Research focusing on best practices to ensure that the higher need schools who failed to submit applications or have been rejected, gain the necessary skills and qualifications to successfully participate in FFVP in subsequent years could be valuable.

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Appendix A: Sampling Design

FNS's two objectives for the evaluation—estimating the impact of FFVP on students served and examining how the program has been implemented in participating schools—required a study design that could address both. The design for the evaluation produced two analytic samples, one for the impact study and the second for the implementation study. As was discussed in the body of this report, the sample used to estimate student impacts is specifically drawn from schools as close as possible to the FFVP funding cutoff in order to support our regression discontinuity (RD) design. To examine program implementation, the FFVP evaluation also includes data from a random sample of FFVP schools that are not close to the cutoff.

The impact and implementation samples both required multi-stage sampling. Exhibit A.1 summarizes the sampling strategy graphically. The first-stage sampling involved selecting States to participate in both the impact and evaluation components of the evaluation. The impact sample then required selection of schools, classroom, and students. The implementation sample required drawing an additional sample of schools.

The first section of this appendix describes the selection of study States. In the second section, we discuss selection of the impact sample. The third section describes how the supplemental sample of schools was selected to ensure a nationally representative sample.

A.1 First Stage—Select States

The first stage of sampling drew a random sample of 16 States from the 48 contiguous States and Washington, DC. Sampling was probability proportional to size (PPS) within strata defined by Census region (Northeast, South, Midwest, West) and percent of children who are non-Hispanic white (less than 50 percent, 50–70 percent, greater than 70 percent). The measure of size was the number of public elementary school students in schools where at least 50 percent of students receive free and reduced-price school lunches (FRPSL), as reported in the 2006 Common Core of Data (CCD) (<http://nces.ed.gov/ccd/>).

Two initially selected States were later found to be ineligible to participate in the evaluation because they accepted all or nearly all applicant schools, and therefore had few or no schools to make up the comparison group for our RD design.

Exhibit A.2 shows the final 16 States selected and the reciprocal of the selection probability of the State.

These 16 States served as the first stage sample for both the impact and implementation samples.

Exhibit A.1: Four-Stage Sample Design—Impact Study and Implementation Study

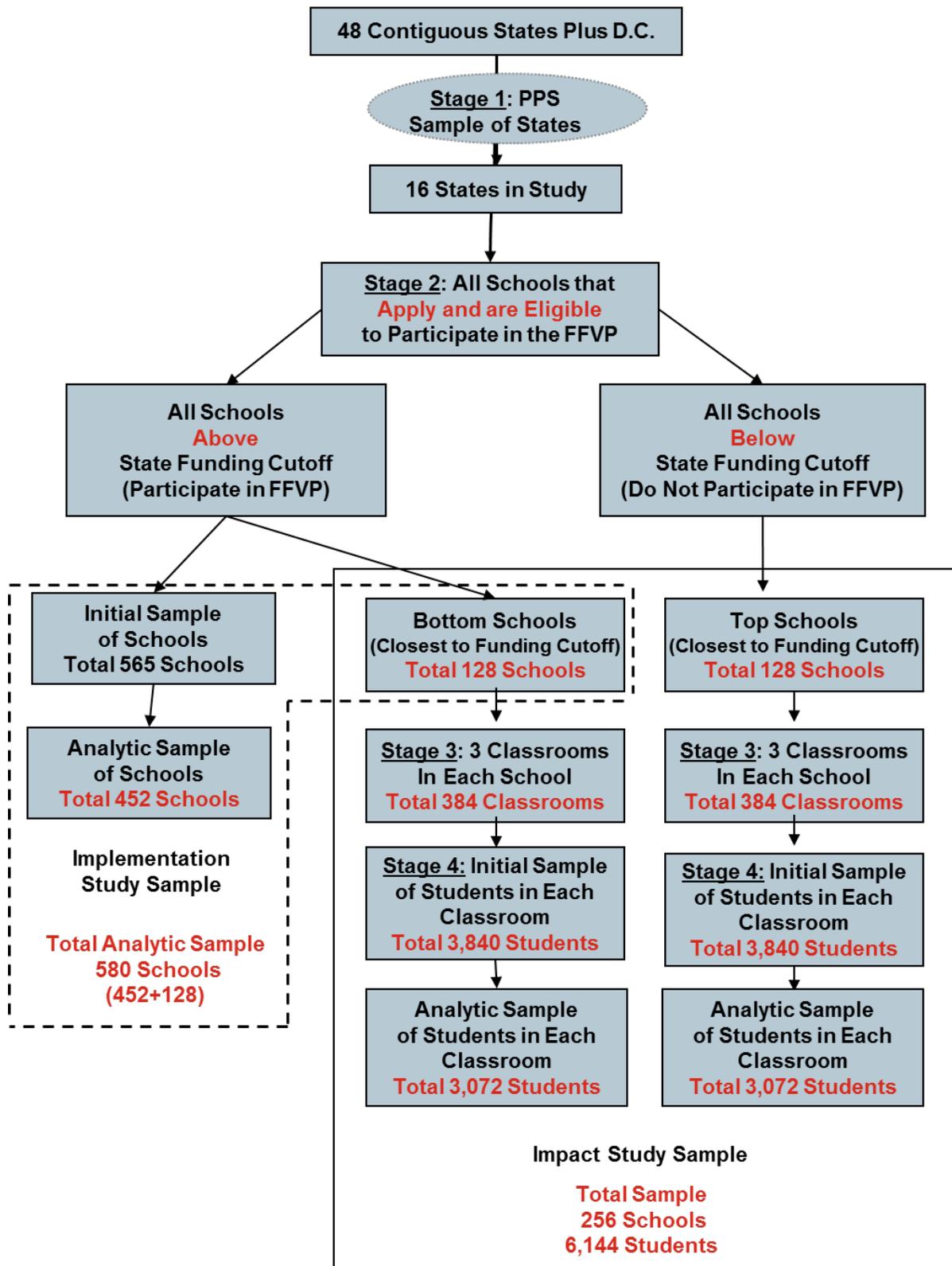


Exhibit A.2: Sampled States

State	State weight
CA	1.00000
CO	4.14693
CT	8.80787
FL	1.00000
GA	1.11637
IL	1.19000
LA	1.78735
MD	3.85383
MI	2.19537
MO	3.33666
MS	2.36326
NM	4.75299
NY	1.08673
OK	2.22896
TX	1.00000
VA	3.01028

A.2 Impact Study Sample

The impact study sample required a four-stage sampling strategy. After selecting States, sampling proceeded through three additional stages, sampling schools, classrooms within schools, and students within classrooms. This section discusses each of these stages in turn. We also discuss several challenges encountered in implementing the plan, and how we addressed those challenges.

Second Stage—Select Schools

Within each of the 16 selected States, the second stage sampled applicant elementary schools eligible for inclusion in the study to obtain a total of 256 eligible schools (128 participating in FFVP and 128 not participating in FFVP). We allocated the sample of schools to the States proportional to the same measure of size used for selecting States, namely, the number of public elementary school students in schools where at least 50 percent of students were certified for free and reduced-price meals.

Elementary schools in the U.S. have different grade ranges (e.g., K–4, K–5, K–6, etc.) The impact study is targeted to older elementary school children in grades 4–6, in order to focus on the fruit and vegetable consumption of children as they transition into higher grade levels, and because some aspects of the data collection are not suited to younger children. Thus, at least one eligible grade must have been present for a school to be eligible for the impact study sample (for example, K–3 elementary schools were not eligible).

In total, we released 316 schools for recruitment. This includes the initial 256 schools and 60 replacement schools. Eighteen schools were ineligible for the evaluation. Reasons for ineligibility included:

- School or district decided not to participate in FFVP after being granted funding.
- School did not include one or more of grades 4–6. In most cases, we were able to exclude these schools prior to drawing the sample, but in some cases, the information on grade range was either unknown or changed from the time of initial sampling.
- School participated in the FFVP pilot.
- School closed.
- Students in one school did not speak English.

Forty-two schools refused to participate. Refusals were of three types:

- SFA director refused for all selected schools in the district (15 schools).
- Superintendent refused for all selected schools in the district (16 schools).
- Principal refused (11 schools).

The final sample included 256 schools. The school-level response rate was 86 percent [256/(316–18)].

Third Stage—Select Classrooms

The third stage of our impact study sampling plan sampled a total of three classrooms from each of the 256 selected schools. For those schools with all three grades present, the study sample included one classroom from each of grades 4, 5, and 6. For K–5 and K–4 schools we sampled from the eligible grades that were present. This yielded a total target sample of 768 classrooms (384 participating and 384 nonparticipating). However, a small number of sampled schools had less than three classrooms in our target grades; in these cases we approached all eligible classrooms in the school. Taking this constraint into consideration, our final target sample size was reduced to 757 classrooms.

To attain this sample, we released 769 classrooms for recruitment. Nine classrooms were ineligible (e.g., special education classrooms), and for three classrooms, the school requested that we select a different classroom. The classroom-level response rate was therefore 99.6 percent [757/(769–9)].

Fourth Stage—Select Students

At the fourth and final stage of sampling for our impact study, we selected a random sample of approximately 10 students per classroom. This resulted in an initial target sample size of 30 students per school, for a total of 7,680 students (3,840 participating and 3,840 nonparticipating) from the 256 schools. We expected that the initial sample of approximately 10 students from each classroom would allow us to obtain completed interviews from approximately 8 students (allowing for student absences, lack of parental consent, school scheduling issues). Thus, the total target sample size for the impact study was approximately 24 students per school, or approximately 6,144 students in all (3,072 participating and 3,072 nonparticipating).

Due to the reduction in the target number of classrooms, the relatively small size of some classrooms, insufficient parental consents, and the late withdrawal of one school from the study, the student sample included 7,518 students. We completed dietary intake interviews with 6,004 students, yielding a participation rate of 80 percent (6,004/7,518).⁶⁷

Final Analytic Sample

In practice, one eligible school that initially agreed to participate in the study ultimately declined to schedule a visit during the data collection period, so only 255 school visits were conducted. Additionally, we learned late in the school year after visits had been scheduled that one treatment group school had never been offered FFVP funds, and that two comparison group schools belonged to a district that ultimately declined to participate in the program; though we completed scheduled visits for those schools, we exclude these student interviews from our analysis. Our analytic sample therefore includes data for students in 252 schools. We completed 5,890 student interviews in these 252 schools.

Our analytic sample additionally excludes 330 students for whom data on gender, grade level, race/ethnicity, or FRPSL eligibility were not reported.⁶⁸ The final full analytic sample size was therefore 5,560 students in 252 schools.

Changes in Treatment Status for California Schools

After the initial sample was selected and school visits had been scheduled, we were informed of some late changes in FFVP participation among California schools that affected their treatment in our final analytic sample. After initially applying to participate in the program earlier in the year, several schools ultimately refused the FFVP funds. This left California with unexpended funds to be reallocated. California therefore offered those funds to the schools immediately below the original FRPSL eligibility cutoff for FFVP funding, i.e., those school originally comprising the comparison group for our study. Of our initially selected comparison group schools in California, most (14 schools) accepted the FFVP funding, but some of them (5 schools) rejected it, likely because it was already late in the school year.

This reallocation of funds occurred after site recruitment for this evaluation was mostly completed. In seven cases, we were able to visit the schools before they implemented FFVP; in the other seven schools accepting reallocated FFVP funds, we could only visit the schools after they had already implemented FFVP.

The results in the body of this report include the California schools, according to their FFVP status as of our visit; in other words, schools that had implemented FFVP at the time of our visit are treated as

⁶⁷ The 80 percent participation rate is a conservative estimate as it does not exclude ineligible students from the denominator. The ineligible students were primarily sampled students that we did not attempt to interview as we had already completed 24 interviews in the school.

⁶⁸ As a sensitivity test, we estimated an alternative specification retaining the students with one or more missing covariates, including “missing” status indicators for gender, grade, race/ethnicity, and FRPSL eligibility when covariates were not reported. We found no material difference in the magnitude or statistical significance of our impact estimates in these alternative specifications.

treatment group schools in our analysis, while schools that had not yet implemented FFVP are treated as comparison group schools.

One could argue that this approach potentially threatens the treatment/comparison balance that underlies the RD design: presumably, some of the initially selected treatment schools would also have refused funding if it had been offered late in the school year, but we cannot identify those schools—so there is no appropriate comparison group for those schools below the original funding cutoff who refused late funding when offered. Additionally, those schools accepting the late funds began implementing the program in March, just weeks prior to our scheduled visit, unlike other sampled FFVP schools that implemented the program at the start of the school year.

If one accepted this argument, then one approach would be to drop all of the California schools from the sample. However, anecdotal evidence suggests that schools' decisions to accept late school-year funding were largely a function of logistical issues, plausibly unrelated to program outcomes. Taking this anecdotal evidence into consideration, we have chosen not to drop these schools from the analyses presented in the main text. As a sensitivity check, we presented analyses excluding California schools in our Interim Evaluation Report. We found no substantive differences between results that excluded and included California schools and therefore have not incorporated these analyses in this final evaluation report.

A.3 Implementation Study Sample

Second Stage—Select Schools

The regression discontinuity sample originally consisted of 128 schools drawn from a first-stage sample of 16 States of which 3 are certainty States (CA, FL, and TX). All schools in the regression discontinuity sample were included in the implementation sample.

All remaining FFVP schools in the 16 States were considered eligible for the implementation sample of FFVP schools. The sample size for the supplemental sample was around 560 FFVP schools. The total sample size of FFVP schools was therefore expected to be around 688.

The primary purpose of the implementation sample is to make school-based inferences regarding all FFVP schools in the U.S. A secondary objective is to make student-weighted school-based inferences. In this situation one can draw a self-weighting sample of FFVP schools in order to make school-based inferences. One can also use the sample of schools and information on the number of students in each school to calculate student-weighted school-based estimates. If external information is available on the total number of students in FFVP schools in the U.S., this can also be used in estimation.

At the time the supplemental sample was drawn, the best estimate was that there were roughly 5,000 FFVP schools in the U.S. Because the three certainty States are primary strata in the sample design, we calculated the sample size of FFVP schools that should be allocated to these three States in order to have a self-weighting national sample of FFVP schools (e.g., CA: $209/5,000 = .0418 \times 688 = 28.8$). The results are given in Exhibit A.3.

Exhibit A.3: Total Sample Size of Schools in the Certainty States

State	Total number of FFVP schools	Proportion of FFVP schools in the U.S.	FFVP school sample allocation
CA	209	0.0418	28.8
FL	137	0.0274	18.9
TX	207	0.0414	28.5
U.S. Total	5000		

Exhibit A.4 shows the number of schools in the regression discontinuity sample in each certainty State and the number that would need to be selected into the supplemental sample.

Exhibit A.4: Supplemental Sample of Schools in the Certainty States

Certainty state	FFVP school sample allocation	Number of FFVP schools in regression discontinuity sample	Number of FFVP schools to select from supplemental sample
CA	28.8	21	7.8
FL	18.9	8	10.9
TX	28.5	15	13.5
Total ¹	76.1		

¹ Components do not sum to total due to rounding.

In order to have a self-weighting sample of FFVP schools, the total sample size of 688 FFVP schools should include 76.1 FFVP schools from the three certainty States. Therefore, the remaining 13 *noncertainty* States, selected with PPS sampling, should each be allocated $611.9/13 = 47.1$ FFVP schools (see Exhibit A.5).⁶⁹

⁶⁹ At the end of the calculations, fractional sample sizes are converted to integers using stochastic rounding.

Exhibit A.5: Allocation of Schools to Noncertainty States

State	Noncertainty State sample allocation	Number of FFVP schools in regression discontinuity sample	Number of FFVP schools to select into the supplemental sample
CO	47.1	3	44.1
CT	47.1	2	45.1
GA	47.1	12	35.1
IL	47.1	12	35.1
LA	47.1	7	40.1
MD	47.1	4	43.1
MI	47.1	7	40.1
MO	47.1	4	43.1
MS	47.1	6	41.1
NM	47.1	3	44.1
NY	47.1	13	34.1
OK	47.1	6	41.1
VA	47.1	5	42.1

Given that we were going to select a simple random sample of FFVP schools for the supplemental sample within each State, we next calculated the overall selection probability of a FFVP school in the supplemental sample for each of the 16 States (e.g., CA: $7.8/(209-21)$). This is shown in Exhibit A.6.

Exhibit A.6: Overall Selection Probability of Schools by State

State	School selection probability
CA	0.041
CO	0.142
CT	0.072
FL	0.084
GA	0.483
IL	0.167
LA	0.393
MD	0.126
MI	0.145
MO	0.107
MS	0.235
NM	0.109
NY	0.204
OK	0.236
TX	0.070
VA	0.166

We can see that the allocation of FFVP schools to the 16 States does not result in a self-weighting sample of FFVP schools (i.e., the overall school selection probabilities are not equal). One would expect each school in the supplementary sample to have a selection probability of $0.114943 = 560 / (5000 - 128)$. The cause of the departure from a self-weighting sample is that average school size varies among States, so that the number of FFVP schools in each State is not perfectly correlated with the total number of students in schools where 50 percent or more of the students receive free and reduced-price meals.

In order to have a self-weighting sample of FFVP schools in the supplemental sample, we adjusted the sample size of schools in the supplemental sample in each State so that each school has an overall selection probability of 0.114943. The results are given in Exhibit A.7 (e.g., CA: Step 1— $(.114943 / .041) \times 7.8 = 21.6$; Step 2— $21.6 \times (560 / 462.7091) = 26.2$, where 462.7091 is the sum of the 16 sample sizes from Step 1).⁷⁰

Exhibit A.7: Supplemental School Sample Size for each State

State	Number of FFVP schools to select into the supplemental sample
CA	26.2
CO	43.3
CT	87.0
FL	17.9
GA	10.1
IL	29.1
LA	14.2
MD	47.7
MI	38.5
MO	56.2
MS	24.3
NM	56.2
NY	23.3
OK	24.2
TX	26.7
VA	35.2
	560.1

There are only 71 FFVP schools eligible for selection in CT. We therefore adjusted the sample allocation to take all 71 into the supplemental sample and allocate the 16 schools to the other States in a manner that maintains a self-weighting sample of schools. The results are given in Exhibit A.8.

⁷⁰ Calculations carried more decimal places than shown in example.

(e.g., CA: Step 1— $560/(560-16)=1.0294$. Step 2— $26.2 \times 1.0294=26.9$; Step 3— $26.9 \times (560/557.9)=27.0$, where 557.9 is the sum of the 16 sample sizes from Step 2).⁷¹

Exhibit A.8: Final Supplemental School Sample Size for each State

State	Number of FFVP schools to select into the supplemental sample
CA	27.0
CO	44.7
CT	71.0
FL	18.5
GA	10.4
IL	30.1
LA	14.6
MD	49.3
MI	39.8
MO	58.0
MS	25.1
NM	58.1
NY	24.1
OK	25.0
TX	27.6
VA	36.3
	559.6

The sample sizes given above were converted to integer sample sizes using stochastic rounding, and a simple random sample of FFVP schools was drawn from each of the 16 States. We used SAS SURVEYSELECT to draw a simple random sample of schools (without replacement) from each State.

In Exhibit A.9 we show that for the supplemental sample we were very close to a self-weighting sample of FFVP schools (CT causes the slight departure). For reference we also show the selection probability of the regression discontinuity FFVP schools. State-by-State the selection probability of the latter group of schools is higher than for the former group of schools. The regression discontinuity schools therefore have smaller weights relative to the supplemental sample when they are combined.

⁷¹ Calculations carried more decimal places than shown in example.

Exhibit A.9: School Section Probabilities by Sample Source and State

State	Selection probability of school in supplemental sample	Selection probability of school in regression discontinuity sample
CA	0.14374	1.000
CO	0.14374	0.241
CT	0.11353	0.114
FL	0.14374	1.000
GA	0.14374	0.896
IL	0.14374	0.840
LA	0.14374	0.559
MD	0.14374	0.259
MI	0.14374	0.456
MO	0.14374	0.300
MS	0.14374	0.423
NM	0.14374	0.210
NY	0.14374	0.920
OK	0.14374	0.449
TX	0.14374	1.000
VA	0.14374	0.332

Exhibit A.10 shows the actual final implementation sample. The regression discontinuity sample actually had 133 FFVP schools (due to the changes in California schools discussed above) and the supplemental sample of schools was modified by adding five schools to the sample in cases where States informed us that sampled schools either had closed or were not operating FFVP. In addition, one NY treatment school did not implement FFVP and is thus not included in the implementation sample.

Exhibit A.10: Final Selected Sample of Schools

State	Total sample size of schools	Regression discontinuity sample of schools	Supplemental sample of schools
CA	56	27	29
CO	48	3	45
CT	73	2	71
FL	28	8	20
GA	22	12	10
IL	42	12	30
LA	22	7	15
MD	54	4	50
MI	47	7	40
MO	62	4	58
MS	31	6	25
NM	61	3	58
NY	36	12	24
OK	32	6	26
TX	43	15	28
VA	41	5	36
Total	698	133	565

Appendix B: Weighting Methodology for the Implementation Sample of FFVP Schools

Weights were developed for the principal survey and the school-level data collected in the SFA survey; we refer to the latter as the SFA school survey. There were three steps in the weight calculation process. In the first step base sampling weights were calculated. The base sampling weight for the regression discontinuity (RD) schools equals the inverse of the selection probability of the State the school is located in, because these schools were selected with certainty within that State. The base sampling weight for the supplemental schools equals the product of the inverse of the selection probability of the State where the school is located and the inverse of the selection probability of the school within that State.⁷² In the second step, an adjustment was made for unit nonresponse. School characteristics available for all sample schools were used in an iterative raking procedure to calculate nonresponse adjusted weights. In the third and final step enrollment-based school weights were also developed.

B.1 Base Sampling Weights

The base sampling weight for each regression discontinuity school equals the State weight shown in Exhibit B.1. The state weights equal the inverse of the selection probability of the State.

Exhibit B.1: State Weights

State	State Weight
FL	1.00000
TX	1.00000
CA	1.00000
NY	1.08673
CT	8.80787
IL	1.19000
MI	2.19537
MO	3.33666
MD	3.85383
GA	1.11637
LA	1.78735
OK	2.22896
VA	3.01028
NM	4.75299
CO	4.14693
MS	2.36326

⁷² Recall that the frame for the supplemental sample was all FFVP schools in a State excluding those whose FRPSL percentage was sufficiently low for them to be included in the RD sample.

The base sampling weight for the supplemental schools equals the product of the inverse of the selection probability of the State the school is located and the inverse of the selection probability of the school within that State (see Exhibit B.2).

Exhibit B.2: Base Sampling Weight for Supplemental Sample of Schools

State	State weight	Within-state school weight	Base sampling weight
CA	1.00000	6.48276	6.48276
CO	4.14693	1.66667	6.91155
CT	8.80787	1.00000	8.80787
FL	1.00000	6.45000	6.45000
GA	1.11637	6.50000	7.25639
IL	1.19000	5.86667	6.98134
LA	1.78735	3.80000	6.79192
MD	3.85383	1.78000	6.85982
MI	2.19537	3.15000	6.91543
MO	3.33666	2.08621	6.96097
MS	2.36326	2.96000	6.99526
NM	4.75299	1.46552	6.96559
NY	1.08673	6.41667	6.97321
OK	2.22896	3.00000	6.68688
TX	1.00000	6.85714	6.85714
VA	3.01028	2.33333	7.02399

B.2 Adjustment for Unit Nonresponse

The school survey was conducted using two questionnaires: the principal survey and the SFA school survey. Some schools failed to respond to one or both of these two surveys: 137 principal survey nonrespondents (see Exhibit B.3) and 92 SFA school survey nonrespondents (see Exhibit B.8). Adjustments for nonresponse are described below.

For each survey the respondent and nonrespondent schools were categorized by State and five NCES Common Core Data (CCD) variables that were available for use in the nonresponse adjustment:

1. State (STATE: 16 States).
2. Degree of urbanicity (ULOCAL09_R: Divided into 5 categories from highest to lowest degree of urbanicity, namely 11; 12; 13; 21–23; 31–43).
3. Percent black non-Hispanic school enrollment (PCT_BLACK09_CAT: 1 = less than 25th percentile; 2 = 25th percentile to less than 50th percentile; 3 = 50th percentile to less than 75th percentile; 4 = 75th percentile and higher).

4. Percent Hispanic school enrollment (PCT_HISP09_CAT: 1 = less than 25th percentile; 2 = 25th percentile to less than 50th percentile; 3 = 50th percentile to less than 75th percentile; 4 = 75th percentile and higher).
5. Percent free and reduced-price lunch eligible students (PCT_TOTFRL09_CAT: 1 = less than 25th percentile; 2 = 25th percentile to less than 50th percentile; 3 = 50th percentile to less than 75th percentile; 4 = 75th percentile and higher).
6. Total student enrollment in the school (MEMBER09_CAT: 1 = less than 25th percentile; 2 = 25th percentile to less than 50th percentile; 3 = 50th percentile to less than 75th percentile; 4 = 75th percentile and higher).

The CCD data come from SC091A.SAS7BDAT (public schools) and PSS0910_PU.SAS7BDAT (private schools) which are both 2009–2010 files.

Principal Survey

Exhibit B.3: Principal Survey Respondents and Nonrespondents by State

State	Total Sample	Respondents	Nonrespondents
CA	56	38	16
CO	48	40	8
CT	73	57	16
FL	28	25	2
GA	22	20	2
IL	42	35	7
LA	22	17	5
MD	54	50	4
MI	47	39	7
MO	62	47	15
MS	31	23	8
NM	61	41	20
NY	36	29	7
OK	32	22	9
TX	43	32	9
VA	41	39	2
Total	698	554	137

Note: 7 schools were classified as ineligible for the survey because, while selected, they did not operate FFVP.

For each category of these six variables, the sum of the base sampling weights of the respondent and nonrespondent schools in the principal survey was calculated to form an estimated total of 4,260 schools. The ineligible schools are excluded from all remaining calculations. A survey sample such as this may cover segments of the target population in proportions that do not match the proportions of those segments in the population itself. The differences may arise, for example, from sampling fluctuations, from nonresponse, or because the sample design was not able to cover the entire target population. In such situations, one can often improve the relation between the sample and the

population by adjusting the sampling weights of the cases in the sample so that the marginal totals of the adjusted weights on specified characteristics, referred to as control variables, agree with the corresponding totals for the population.

The adjustment to control totals is sometimes achieved by creating a cross-classification of the categorical control variables (e.g., age categories \times gender \times race \times household-income categories) and then matching the total of the weights in each cell to the control total. This approach, however, can spread the sample thinly over a large number of adjustment cells. It also requires control totals for all cells of the cross-classification. Often this is not feasible (e.g., control totals may be available for age \times gender \times race but not when those cells are subdivided by household income). The use of the procedure known as raking ratio estimation, raking, or sample-balancing often avoids many of these difficulties (Battaglia et al., 2009).

The term “raking” suggests an analogy with the process of smoothing the soil in a garden plot by alternately working it back and forth with a rake in two perpendicular directions. In a simple two-variable example the marginal totals in various categories for the two control variables are known from the entire population, but the joint distribution of the two variables is known only from a sample. In the cross-classification of the sample, arranged in rows and columns, one might begin with the rows, taking each row in turn and multiplying each entry in the row by the ratio of the population total to the weighted sample total for that category, so that the row totals of the adjusted data agree with the population totals for that variable. The weighted column totals of the adjusted data, however, may not yet agree with the population totals for the column variable. Thus the next step, taking each column in turn, multiplies each entry in the column by the ratio of the population total to the current total for that category. Now the weighted column totals of the adjusted data agree with the population totals for that variable, but the new weighted row totals may no longer match the corresponding population totals.

This process continues, alternating between the rows and the columns, and close agreement on both rows and columns is usually achieved after a small number of iterations. The result is a tabulation for the population that reflects the relation of the two control variables in the sample. Raking can also adjust a set of data to control totals on three or more variables. In such situations the control totals often involve single variables, but they may involve two or more variables.

When multiple characteristics are to be taken into account, raking usually proceeds one variable at a time, applying a proportional adjustment to the weights of the cases that belong to the same category of the control variable. The initial design weights in the raking process are often equal to the inverse of the selection probabilities and may have undergone some adjustments for unit nonresponse and noncoverage.

The raking for this study sample was implemented using a SAS raking macro (Izrael et al., 2009) and the results are shown in Exhibits B.4 through B.7.

Exhibit B.4: Principal Survey Raking Results: Weighted Distribution Prior To Raking (Iteration 0)

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
State						
CA	181.81	215	-33.19	4.268	5.047	-0.779
CO	342.93	323	19.47	8.050	7.593	0.457
CT	642.01	643	-0.96	15.071	15.094	-0.023
FL	157.42	137	20.42	3.695	3.216	0.479
GA	91.37	86	5.41	2.145	2.018	0.127
IL	231.00	224	7.28	5.423	5.252	0.171
LA	115.65	114	1.26	2.715	2.685	0.030
MD	423.23	358	64.83	9.935	8.414	1.522
MI	314.71	292	22.72	7.388	6.854	0.533
MO	399.83	417	-17.25	9.386	9.791	-0.405
MS	170.20	189	-18.86	3.996	4.438	-0.443
NM	359.55	418	-58.72	8.440	9.819	-1.378
NY	183.32	180	2.93	4.304	4.235	0.069
OK	153.92	187	-33.31	3.613	4.395	-0.782
TX	168.25	207	-38.75	3.950	4.859	-0.910
VA	324.64	268	56.73	7.621	6.289	1.332
School enrollment						
1	1067.38	1149	-81.57	25.057	26.972	-1.915
2	1105.77	1078	27.79	25.958	25.306	0.652
3	1076.92	1059	18.28	25.281	24.852	0.429
4	1009.78	974	35.50	23.705	22.871	0.833
Percent black						
1	954.84	1030	-75.65	22.415	24.191	-1.776
2	1010.59	1011	-0.68	23.724	23.740	-0.016
3	1204.00	1112	91.74	28.264	26.110	2.154
4	1090.42	1106	-15.40	25.598	25.959	-0.362
Percent Hispanic						
1	1086.15	1053	33.43	25.497	24.713	0.785
2	1057.39	1049	8.66	24.822	24.619	0.203
3	1214.56	1150	64.98	28.512	26.986	1.525
4	901.75	1009	-107.07	21.169	23.682	-2.513
Percent eligible for FRPSL						
1	985.04	956	28.60	23.124	22.452	0.671
2	1165.96	1160	6.12	27.371	27.227	0.144
3	1045.01	1009	36.37	24.532	23.678	0.854
4	1063.84	1135	-71.09	24.974	26.642	-1.669

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
Urbanicity						
11	1012.61	1054	-41.84	23.771	24.753	-0.982
12	539.93	613	-73.15	12.675	14.392	-1.717
13	439.21	414	25.08	10.310	9.722	0.589
21	1144.80	1021	123.95	26.874	23.964	2.910
31	1123.30	1157	-34.04	26.369	27.169	-0.799

Note: Program terminated at iteration 7 because all current percents differ from target percents by less than 0.1.

Exhibit B.5: Principal Survey Raking Results: Weighted Distribution After Raking

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
State						
CA	214.57	215	-0.43	5.037	5.047	-0.010
CO	323.44	323	-0.02	7.593	7.593	-0.001
CT	643.61	643	0.64	15.109	15.094	0.015
FL	137.06	137	0.06	3.217	3.216	0.001
GA	86.02	86	0.06	2.019	2.018	0.001
IL	223.88	224	0.16	5.256	5.252	0.004
LA	114.41	114	0.02	2.686	2.685	0.000
MD	358.44	358	0.03	8.414	8.414	0.001
MI	291.79	292	-0.20	6.850	6.854	-0.005
MO	416.56	417	-0.52	9.779	9.791	-0.012
MS	189.51	189	0.45	4.449	4.438	0.011
NM	418.27	418	0.01	9.819	9.819	0.000
NY	180.41	180	0.01	4.235	4.235	0.000
OK	186.91	187	-0.33	4.388	4.395	-0.008
TX	206.99	207	-0.01	4.859	4.859	-0.000
VA	268.00	268	0.08	6.291	6.289	0.002
School enrollment						
1	1148.17	1149	-0.78	26.953	26.972	-0.018
2	1077.98	1078	-0.00	25.305	25.306	-0.000
3	1058.97	1059	0.33	24.859	24.852	0.008
4	974.74	974	0.46	22.882	22.871	0.011
Percent black						
1	1033.32	1030	2.83	24.257	24.191	0.066
2	1012.36	1011	1.09	23.765	23.740	0.025
3	1111.60	1112	-0.66	26.095	26.110	-0.016
4	1102.57	1106	-3.25	25.883	25.959	-0.076

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
Percent Hispanic						
1	1053.19	1053	0.47	24.724	24.713	0.011
2	1048.83	1049	0.10	24.621	24.619	0.002
3	1149.40	1150	-0.18	26.982	26.986	-0.004
4	1008.43	1009	-0.39	23.673	23.682	-0.009
Percent eligible for FRPSL						
1	956.94	956	0.50	22.464	22.452	0.012
2	1159.85	1160	0.01	27.227	27.227	0.000
3	1008.18	1009	-0.46	23.667	23.678	-0.011
4	1134.87	1135	-0.06	26.641	26.642	-0.001
Urbanicity						
11	1054.45	1054	-0.00	24.753	24.753	-0.000
12	613.08	613	-0.00	14.392	14.392	0.000
13	414.13	414	-0.00	9.722	9.722	0.000
21	1020.85	1021	-0.00	23.964	23.964	0.000
31	1157.34	1157	-0.00	27.169	27.169	0.000

Exhibit B.6: Principal Survey Raking Results: Raking Convergence Statistics

Iteration number	Maximum absolute value of difference in sum of weights	Maximum absolute value of difference in %	Coefficient of variation of weights at the completion of the iteration
1	35.3267	0.8293	0.41548
2	11.2760	0.2648	0.41374
3	11.2212	0.2635	0.41575
4	8.8712	0.2083	0.41696
5	6.5377	0.1535	0.41757
6	4.6591	0.1094	0.41790
7	3.2505	0.0764	0.41808

Exhibit B.7: Principal Survey Raking Results: Summary Statistics for Raking Input Weight and Final Raked Weight

Weight	Mean	Min	Max	CV
Base sampling weight	7.69	1.28	11.26	0.387
Raked weight	7.69	0.92	15.26	0.418

The nonresponse-adjusted weights sum to 4,260 FFVP schools. Our best estimate for the State survey, after adjustments for States that did not report, is that there are 4,950 FFVP schools in the U.S. We therefore ratio-adjusted the principal survey weights to sum to 4,950 FFVP schools. The weight variable is named PRINCIPAL_SCHOOL_WT_ADJ.

SFA School Survey**Exhibit B.8: SFA School Survey Respondents and Nonrespondents by State**

State	Total Sample	Respondents	Nonrespondents
CA	56	49	5
CO	48	44	4
CT	73	72	1
FL	28	27	0
GA	22	18	4
IL	42	30	12
LA	22	22	0
MD	54	44	10
MI	47	42	4
MO	62	56	6
MS	31	23	8
NM	61	49	12
NY	36	33	3
OK	32	30	1
TX	43	20	21
VA	41	40	1
Total	698	599	92

Note: 7 schools were classified as ineligible for the survey.

Raking to the estimated totals for the six variables was also used to calculate the nonresponse-adjusted weights for the SFA school survey. The raking results are shown in Exhibits B.9 through B.12.

Exhibit B.9: SFA School Survey Raking Results: Weighted Distribution Prior To Raking (Iteration 0)

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
State						
CA	208.35	215	-6.65	4.891	5.047	-0.156
CO	344.48	323	21.02	8.087	7.593	0.493
CT	731.66	643	88.69	17.176	15.094	2.082
FL	150.62	137	13.62	3.536	3.216	0.320
GA	72.77	86	-13.19	1.708	2.018	-0.310
IL	181.50	224	-42.22	4.261	5.252	-0.991
LA	131.98	114	17.59	3.098	2.685	0.413
MD	341.30	358	-17.11	8.012	8.414	-0.402
MI	296.98	292	5.00	6.972	6.854	0.117

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
MO	433.02	417	15.93	10.165	9.791	0.374
MS	164.25	189	-24.81	3.856	4.438	-0.582
NM	386.13	418	-32.13	9.064	9.819	-0.754
NY	190.79	180	10.39	4.479	4.235	0.244
OK	200.59	187	13.35	4.709	4.395	0.313
TX	124.44	207	-82.56	2.921	4.859	-1.938
VA	301.00	268	33.08	7.066	6.289	0.777
School enrollment						
1	1129.27	1149	-19.68	26.510	26.972	-0.462
2	1102.36	1078	24.38	25.878	25.306	0.572
3	1084.63	1059	25.99	25.462	24.852	0.610
4	943.60	974	-30.68	22.151	22.871	-0.720
Percent black						
1	986.24	1030	-44.25	23.152	24.191	-1.039
2	1009.11	1011	-2.16	23.689	23.740	-0.051
3	1159.78	1112	47.52	27.226	26.110	1.115
4	1104.72	1106	-1.10	25.933	25.959	-0.026
Percent Hispanic						
1	1060.47	1053	7.75	24.894	24.713	0.182
2	1030.86	1049	-17.87	24.199	24.619	-0.420
3	1226.91	1150	77.33	28.802	26.986	1.815
4	941.62	1009	-67.20	22.105	23.682	-1.578
Percent eligible for FRPSL						
1	916.88	956	-39.56	21.524	22.452	-0.929
2	1210.83	1160	50.99	28.424	27.227	1.197
3	1061.71	1009	53.07	24.924	23.678	1.246
4	1070.43	1135	-64.50	25.128	26.642	-1.514
Urbanicity						
11	1039.05	1054	-15.40	24.392	24.753	-0.361
12	633.66	613	20.58	14.875	14.392	0.483
13	368.99	414	-45.14	8.662	9.722	-1.060
21	1052.93	1021	32.08	24.718	23.964	0.753
31	1165.21	1157	7.87	27.353	27.169	0.185

Note: Program terminated at iteration 7 because all current percents differ from target percents by less than 0.1.

Exhibit B.10: SFA School Survey Raking Results: Weighted Distribution After Raking

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
State						
CA	215.42	215	0.42	5.057	5.047	0.010
CO	323.43	323	-0.03	7.593	7.593	-0.001
CT	642.46	643	-0.51	15.082	15.094	-0.012
FL	136.82	137	-0.18	3.212	3.216	-0.004
GA	85.92	86	-0.04	2.017	2.018	-0.001
IL	223.82	224	0.10	5.254	5.252	0.002
LA	114.37	114	-0.02	2.685	2.685	-0.000
MD	358.51	358	0.11	8.416	8.414	0.003
MI	292.19	292	0.20	6.859	6.854	0.005
MO	417.96	417	0.87	9.812	9.791	0.021
MS	188.34	189	-0.72	4.421	4.438	-0.017
NM	417.69	418	-0.57	9.805	9.819	-0.013
NY	180.37	180	-0.02	4.234	4.235	-0.001
OK	187.51	187	0.28	4.402	4.395	0.006
TX	206.93	207	-0.07	4.858	4.859	-0.002
VA	268.10	268	0.18	6.294	6.289	0.004
School enrollment						
1	1149.68	1149	0.73	26.989	26.972	0.017
2	1077.97	1078	-0.01	25.305	25.306	-0.000
3	1058.16	1059	-0.48	24.840	24.852	-0.011
4	974.04	974	-0.24	22.866	22.871	-0.006
Percent black						
1	1027.01	1030	-3.48	24.109	24.191	-0.082
2	1010.09	1011	-1.18	23.712	23.740	-0.028
3	1113.02	1112	0.76	26.128	26.110	0.018
4	1109.73	1106	3.91	26.051	25.959	0.092
Percent Hispanic						
1	1051.64	1053	-1.08	24.687	24.713	-0.025
2	1049.02	1049	0.29	24.626	24.619	0.007
3	1150.14	1150	0.56	27.000	26.986	0.013
4	1009.05	1009	0.23	23.687	23.682	0.005
Percent eligible for FRPSL						
1	955.59	956	-0.85	22.433	22.452	-0.020
2	1160.07	1160	0.23	27.233	27.227	0.005
3	1009.39	1009	0.75	23.696	23.678	0.018
4	1134.79	1135	-0.14	26.639	26.642	-0.003

Variable	Input weight sum of weights	Estimated total	Sum of weights difference	% of input weights	Estimated %	Difference in %
Urbanicity						
11	1054.45	1054	0.00	24.753	24.753	0.000
12	613.08	613	-0.00	14.392	14.392	-0.000
13	414.13	414	-0.00	9.722	9.722	-0.000
21	1020.85	1021	-0.00	23.964	23.964	-0.000
31	1157.34	1157	0.00	27.169	27.169	0.000

Exhibit B.11: SFA School Survey Raking Results: Raking Convergence Statistics

Iteration number	Maximum absolute value of difference in sum of weights	Maximum absolute value of difference in %	Coefficient of variation of weights at the completion of the iteration
1	18.2906	0.4294	0.38593
2	12.3528	0.2900	0.38700
3	9.4673	0.2223	0.38792
4	7.4718	0.1753	0.38832
5	5.5072	0.1292	0.38859
6	3.9111	0.0918	0.38878

Exhibit B.12: SFA School Survey Raking Results: Summary Statistics for Raking Input Weight and Final Raked Weight

Weight	Mean	Min	Max	CV
Base sampling weight	7.11	1.15	10.16	0.365
Raked weight	7.11	0.94	16.00	0.389

The nonresponse-adjusted weights sum to 4,260 FFVP schools. Our best estimate from the State survey, after adjustments for States that did not report the total number of FFVP schools in their State, is that there are 4,950 FFVP schools in the U.S. We therefore ratio-adjusted the SFA school survey raked weights to sum to 4,950 FFVP schools. The weight variable is named SFA_SCHOOL_WT_ADJ.

B.3 Enrollment-Based School Weights

The raked school weights allow for inferences to be drawn from the sample to all FFVP schools in the U.S. There is also interest in making student school-based inferences. To accomplish this, the raked weight of each principal survey respondent school was multiplied by the best estimate of the student enrollment of the school. We refer to this weight as the initial enrollment school-based weight. For the principal survey, this weight sums to 1,771,378 students in FFVP schools in the U.S. We again turned to the State survey and other data to develop a “best estimate” of 1,908,153 students in FFVP schools in the U.S. The initial enrollment school-based weight was ratio-adjusted to sum to 1,908,153 students. This weight is named PRINCIPAL_STU_WT_ADJ. The same approach was followed for the SFA school survey. The weight is named SFA_STU_WT_ADJ. These weights allows for inferences to be drawn about students attending FFVP schools in the U.S.

Appendix C: Estimation Using Regression Discontinuity

Chapter 2 provided general motivation for the Regression Discontinuity (RD) approach.⁷³ There, we noted that to improve precision and to address some technical issues, we estimate impacts via multivariate regression. This appendix provides a formal discussion of our estimation approach.

C.1 Overview

We begin with a standard regression expression:

$$(1) Y_{s,i} = \alpha + d_s \pi + \varepsilon_{s,i}$$

where s indexes schools, i indexes students within schools, Y is some nutritional outcome, d is a dummy variable (=1 if treatment school; =0 if control school), ε is a random error term, and α and π are parameters to be estimated—the latter being the impact of FFVP.

As with random assignment studies, power is increased and standard errors decreased by modeling how the outcome varies with observed covariates at the school level, Z , and at the student level, X :

$$(2) Y_{s,i} = \alpha + d_s \pi + X_{s,i} \beta + Z_s \gamma + \varepsilon_{s,i}$$

The covariates included in the student-level RD models are student gender, grade, race/ethnicity, and school meals eligibility status, and a series of State indicators.

C.2 Weighting

Because our sampling plan (see Appendix A for further details) yields a roughly self-weighting sample of students, we present unweighted results for the RD analysis. Impacts would be approximately homogeneous within the narrow band of FRPSL eligibility status represented in our sample, so that introduction of sampling weights would not materially alter results.

C.3 Ranking Variable

Our preferred estimates differ from the standard approach in the RD literature in that they exclude the ranking variable, percent of students in the school eligible for free and reduced-price school lunch (FRPSL), from the regression models. The literature has much wider ranges of the ranking variable such that it is plausible that over that range there is large variation in an outcome merely due to the ranking variable itself. This concern is typically addressed by including two linear (and sometimes quadratic) terms in the ranking variable—one from the left (labeled with a “+”) and the other from the right (labeled with a “-”).

$$(3) Y_{s,i} = \alpha + d_s \pi + \bar{R}_s^- \rho_- + \bar{R}_s^+ \rho_+ + X_{s,i} \beta + Z_s \gamma + \varepsilon_{s,i}$$

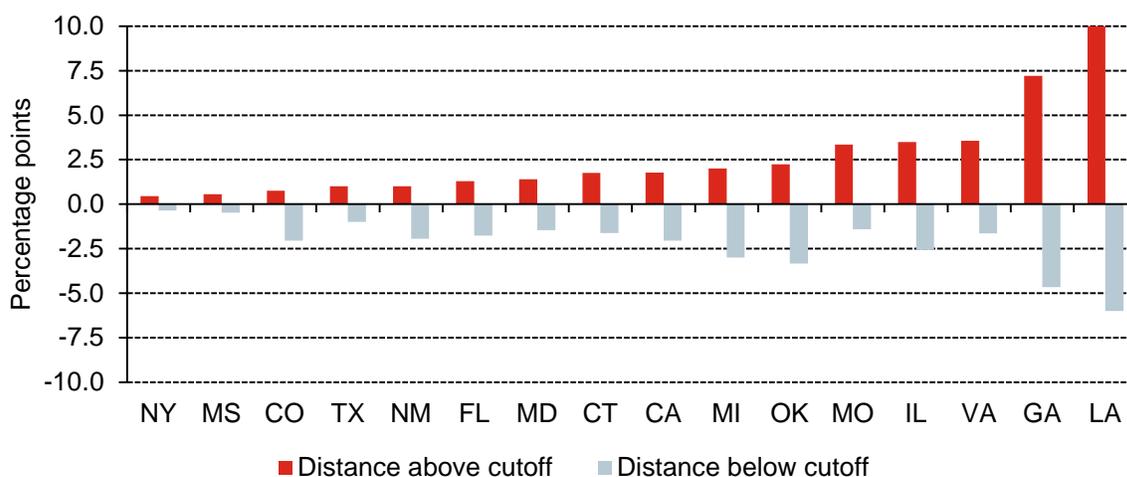
⁷³ On the history of RD, see Thistlethwaite and Campbell (1960) and the survey in Cook (2008). The basic theoretical reference is Hahn, Todd and van der Klaauw (2001). On current thinking of best practices in implementing RD, see Imbens and Lemieux (2008), Lee and Lemieux (2010), and DiNardo and Lee (2010).

Often, the coefficients of the two linear terms are assumed identical.

In our situation, we would need to parameterize R as values of the ranking variable relative to the State-specific cutoff (see Black et al., 2007, for a similar approach). In our models with a ranking variable, we do so as percentage points from the cutoff. However, including the ranking variable as a regressor typically imposes a large cost in statistical power: such RD designs require sample sizes 2.75 to 4.00 times that of conventional random assignment designs (Goldberger, 1972; Cook, 2008).

It is our conjecture, however, that given the way we have selected the schools, it is not necessary to include R at all. Because we drew our samples from entire States, most selected schools are within a few percentage points FRPSL from the corresponding State cutoff. Only 38 of 256 initially selected schools for which we collected dietary recall data were more than two and a half percentage points away from the cutoff. Exhibit C.1 below shows the maximum distance to the cutoff from above and below for schools within each State.

Exhibit C.1: Maximum Distance to the Percentage FRPSL Cutoff by State



When schools are very close to the cutoff, it is not necessary to include the ranking variable as a regressor. This is because, over a small enough range of the ranking variable, the change in the outcome with the ranking variable is not likely to be anywhere near as large as any impact of interest.

More formally, our argument is as follows. For simplicity, consider the case when $\beta=0$, $\gamma=0$, and R is scaled such that it is equal to zero at the discontinuity. Finally, assume that the treatment is to the “right”; i.e., higher values of the ranking value. This is the case for FFVP, where schools with higher FRPSL fractions receive the treatment.

Then the expected value of the outcome to the left (“-”) and right (“+”) of the cutoff are respectively:

$$(4) \quad E[Y_-] = \alpha \quad \text{and} \quad E[Y_+] = \alpha + \pi$$

Thus, the difference of those two expected values gives the impact of FFVP:

$$(5) \quad E[Y_+] - E[Y_-] = (\alpha + \pi) - \alpha = \pi$$

Now, add the assumption that near the cutoff the observations are uniformly distributed with respect to R . Denote the range of the observations on the left (“-”) and right (“+”) of the cutoff as w_- and w_+ , respectively. Then, the expected values of the outcome on the left and right of the cutoff are, respectively,

$$(6) \quad E[-] = \alpha - \frac{1}{2} w_- \rho_- \quad \text{and} \quad E[+] = \alpha + \pi + \frac{1}{2} w_+ \rho_+$$

We propose to estimate the impact of FFVP as the difference between these two:

$$(7) \quad \begin{aligned} E[+] - E[-] &= (\alpha + \pi + \frac{1}{2} w_+ \rho_+) - (\alpha - \frac{1}{2} w_- \rho_-) \\ &= \pi + \frac{1}{2} (w_+ \rho_+ + w_- \rho_-) \end{aligned}$$

The first term, π , is the true, unbiased impact of FFVP, our key parameter of interest. The second term, in parentheses, is undesired bias. Omitting the two ρ terms from our model will thus clearly increase the bias of our estimate of the impact term π . The question, however, is whether the magnitude of this omission bias is sufficiently small so as to be outweighed by the associated gain in the precision of our impact estimate.

The answer to that question will depend on the (true) magnitude of the w and ρ terms, and the precision with which we can estimate the two ρ terms. We have no reason to believe that ρ is large, i.e., that the relation of child fresh fruit and vegetable consumption to school FRPSL is strong near the cutoff. Furthermore, we have intentionally chosen the schools in our impact study sample to be “close to” the cutoff (in practice, usually two to three percentage points of FRPSL on either side), so that w is small. Finally, given the narrow range of FRPSL values (i.e., w) and our relatively small sample sizes, it seems unlikely that we will be able to estimate the ρ parameters with any precision.

For these reasons, we conjectured that inclusion of the ranking variable in our model would ultimately decrease the accuracy of our impact estimates. We test this conjecture following Lee and Lemieux (2010) by estimating Equation (3) (constraining ρ_- to be equal to ρ_+) and performing a significance test for the resulting slope parameter ρ . This test fails to reject at the 95 percent confidence level the null hypothesis that this parameter is equal to zero, both in our full analytic sample and in our restricted subsample of schools within two and a half percentage points of the cutoff (see Appendix D, Exhibit D6.4).

Our preferred specification therefore includes only schools within two and a half percentage points from the cutoff, and excludes the ranking variable as a covariate. Only the results from this preferred specification are presented in the body of this report. However, in Appendix D we present results both including and excluding the ranking variable, and both for the full analytic sample and the restricted near-cutoff subsample.

Appendix D: Supplementary Exhibits

D.1 Exhibits to Accompany Chapter 3

Exhibit D3.1: Distribution of FFVP Schools by Percent of Students Eligible for Free and Reduced-Price School Lunch, by State

State	2010–2011						2011–2012					
	Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL		Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL	
	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b
Alaska	12	8.45	40	28.17	90	63.38	52	28.11	38	20.54	95	51.35
Alabama	2	3.23	36	58.07	24	38.71	40	43.48	34	36.96	18	19.57
Arkansas	10	12.66	32	40.51	37	46.84	18	15.65	48	41.74	49	42.61
Arizona	0	0.00	0	0.00	75	100.00	N/A	N/A	N/A	N/A	N/A	N/A
California	0	0.00	0	0.00	209	100.00	0	0.00	0	0.00	315	100.00
Colorado	0	0.00	0	0.00	78	100.00	0	0.00	0	0.00	106	100.00
Connecticut	0	0.00	8	10.96	65	89.04	0	0.00	14	14.74	81	85.26
District of Columbia	0	0.00	8	15.09	45	84.91	0	0.00	9	11.69	68	88.31
Delaware	8	16.33	24	48.98	17	34.69	16	22.86	33	47.14	21	30.00
Florida	0	0.00	0	0.00	133	100.00	0	0.00	2	0.92	216	99.08
Georgia	0	0.00	21	27.27	56	72.73	0	0.00	53	36.30	93	63.70
Hawaii	13	31.71	16	39.02	12	29.27	17	25.76	24	36.36	25	37.88
Iowa	8	11.77	14	20.59	46	67.65	10	9.35	38	35.51	59	55.14
Idaho	0	0.00	43	55.13	35	44.87	0	0.00	72	60.50	47	39.50
Illinois	N/A	N/A	N/A	N/A	N/A	N/A	0	0.00	54	25.12	161	74.88
Indiana	0	0.00	6	7.79	71	92.21	0	0.00	14	13.21	92	86.79
Kansas	54	46.55	45	38.79	17	14.66	69	40.59	67	39.41	34	20.00
Kentucky	0	0.00	0	0.00	90	100.00	N/A	N/A	0	N/A	128	N/A
Louisiana	3	4.69	13	20.31	48	75.00	11	12.64	17	19.54	59	67.82
Maryland	0	0.00	42	45.65	50	54.35	0	0.00	0	0.00	138	100.00
Massachusetts	N/A	N/A	N/A	N/A	N/A	N/A	10	9.71	21	20.39	72	69.90

State	2010–2011						2011–2012					
	Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL		Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL	
	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b
Michigan	0	0.00	14	10.37	121	89.63	0	0.00	29	15.03	164	84.97
Minnesota	1	1.33	34	45.33	40	53.33	40	36.36	28	25.46	42	38.18
Missouri	44	34.38	5	3.91	79	61.72	0	0.00	68	39.77	103	60.23
Montana	14	12.73	45	40.91	51	46.36	47	30.52	52	33.77	55	35.71
North Carolina	21	19.81	40	37.74	45	42.45	10	5.92	44	26.04	115	68.05
North Dakota	76	68.47	13	11.71	22	19.82	76	68.47	14	12.61	21	18.92
Nebraska	33	36.67	28	31.11	29	32.22	44	37.93	0	0.00	72	62.07
New Hampshire	64	70.33	17	18.68	10	10.99	105	78.95	19	14.29	9	6.77
New Jersey	0	0.00	24	23.76	77	76.24	0	0.00	11	7.69	132	92.31
New Mexico	0	0.00	0	0.00	87	100.00	0	0.00	0	0.00	125	100.00
Nevada	12	20.69	13	22.41	33	56.90	20	27.40	18	24.66	35	47.95
New York	0	0.00	0	0.00	166	100.00	0	0.00	0	0.00	200	100.00
Ohio	0	0.00	0	0.00	111	100.00	48	19.43	7	2.83	192	77.73
Oklahoma	0	0.00	0	0.00	84	100.00	0	0.00	0	0.00	125	100.00
Oregon	0	0.00	36	46.15	42	53.85	0	0.00	57	47.11	64	52.89
Pennsylvania	34	28.81	45	38.14	39	33.05	29	17.26	57	33.93	82	48.81
Puerto Rico	1	1.70	1	1.70	57	96.61	N/A	N/A	N/A	N/A	N/A	N/A
Rhode Island	8	12.50	18	28.13	38	59.38	7	10.94	19	29.69	38	59.38
South Carolina	0	0.00	0	0.00	86	100.00	0	0.00	10	7.75	119	92.25
South Dakota	28	35.00	13	16.25	39	48.75	38	37.62	18	17.82	45	44.55
Tennessee	0	0.00	0	0.00	120	100.00	0	0.00	0	0.00	156	100.00
Texas	0	0.00	0	0.00	207	100.00	0	0.00	0	0.00	292	100.00
Utah	16	33.33	9	18.75	23	47.92	13	16.67	31	39.74	34	43.59

State	2010–2011						2011–2012					
	Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL		Less than 60% FRPSL		60–75% FRPSL		Greater than 75% FRPSL	
	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b	Number of schools ^a	% of schools ^b
Virginia	0	0.00	53	59.55	36	40.45	0	0.00	61	48.03	66	51.97
Vermont	63	74.12	21	24.71	1	1.18	77	68.14	29	25.66	7	6.20
Washington	0	0.00	0	0.00	82	100.00	0	0.00	0	0.00	121	100.00
Wisconsin	0	0.00	44	42.72	59	57.28	N/A	N/A	N/A	N/A	N/A	N/A
West Virginia	0	0.00	43	39.82	65	60.19	0	0.00	100	66.67	50	33.33
Wyoming	66	73.33	17	18.89	7	7.78	95	75.40	19	15.08	12	9.52

^a N=number of schools in the state.

^b Percent of schools in the state.

N/A = data not available.

D.2 Exhibits to Accompany Chapter 4

FFVP Costs by Component

The fall 2011 follow-up State survey asked Child Nutrition directors to provide a breakdown of FFVP costs by component, including food, other operating expenses, and administrative expenses. Forty-eight of the 54 States implementing FFVP responded to the fall 2011 survey and of these, 44 provided some information in response to the cost question. Tracking and reporting this level of detail is not required by the legislation and thus many respondents had difficulty providing the level of detail requested. Only 24 States (50 percent) were able to report expenditures on fruits and vegetables, only 17 States (35 percent) provided data on operating expenses other than food, and only 25 States (52 percent) were able to account for 80–100 percent of the funds they had been allocated, suggesting underreporting of component costs in many States.

Among the 25 States included in the analysis, States, on average, reported spending 2.1 percent on their own administrative costs (Exhibit D4.1). This is less than half of the 5 percent of funds States are allowed to spend on administration according to FFVP guidelines. The remaining 97.9 percent of State funds were reported as being reimbursed to school districts: 94.3 percent on FFVP operating costs and 3.6 percent on school or district administrative costs. Reported administrative costs were well within FFVP guidelines of 10 percent of a school's allocated FFVP funds. Twelve States were able to provide a more detailed accounting of their operating costs, including food and other operating expenses (including preparation and supplies). On average among these States, food costs accounted for 79.0 percent of a State's reported spending and other operating costs accounted for an additional 14.8 percent. (The average percentage of a State's funds reported as being spent on total operating costs in these 12 States was slightly less than in the full 25 State average, at 93.8 percent.)

Exhibit D4.1: State Reported Expenditures from FFVP Funds

	Food costs (%)	Other operating costs (%)	Total operating costs³ (%)	School or district administrative costs (%)	Total school costs⁴ (%)	State administrative costs (%)
Average of States with all components reported ¹	79.0	14.8	93.8	4.6	98.4	1.6
Average of States with total operating expenses reported ²			94.3	3.6	97.9	2.1

Source: State follow-up survey

Notes: Only the 25 States that reported spending between 80 and 100 percent of their allocated FFVP funds are considered to have reliable data and are included in the analysis.

¹ Includes 12 States that reported food and other operating costs separately.

² Includes 12 States that reported food and other operating costs separately, plus 13 States that reported total operating costs without separating food from other costs.

³ The sum of food and other operating costs.

⁴ The sum of total operating costs and school or district administrative costs.

Exhibit D4.2: Reasons Schools Do Not Serve Specific Fruits (Student-Weighted) ¹

Fruit	Schools that have not and will not serve (N=599)		Reasons schools have not and will not serve fruits								
	(N)	(%)	Too expensive (%)	Too messy (%)	Too much work to prepare (%)	Out of season (%)	Hard to obtain (%)	Too easily damaged/spoiled (%)	Unpopular with students (%)	Poor quality (%)	Other (%)
Citrus											
Grapefruit	187	30.3	2.4	8.0	16.7	2.3	6.6	0.0	53.6	0.8	12.6
Mandarin oranges	157	26.1	15.4	4.2	3.4	9.7	35.9	0.0	5.6	0.1	27.6
Oranges	9	1.2	0.0	30.5	1.4	21.4	0.0	0.0	0.0	0.0	34.8
Tangerines	50	8.1	6.2	3.9	4.4	16.3	17.3	0.0	8.1	2.2	30.3
Melons											
Cantaloupe or honeydew	24	3.6	10.8	6.4	35.6	13.2	1.2	7.6	0.7	0.0	29.8
Watermelon	70	10.7	9.6	34.6	17.5	14.6	0.0	1.5	0.0	0.0	19.2
Berries											
Blackberries/ raspberries	180	31.3	33.9	9.1	2.2	28.1	19.2	13.6	4.3	0.0	7.9
Blueberries	105	17.4	17.6	15.7	2.1	20.0	19.0	4.2	7.0	24.1	0.0
Kiwis	51	7.9	17.1	4.2	17.6	4.8	7.6	0.0	1.9	0.0	44.0
Strawberries	17	2.1	6.9	1.1	5.4	8.9	26.1	13.1	0.0	0.0	13.9
Other											
Apples	3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.1
Apricots, nectarines, peaches	73	12.2	11.9	2.5	0.9	44.7	16.7	2.9	8.7	3.4	23.5
Bananas	17	3.0	0.0	0.0	0.0	0.0	7.3	13.2	0.0	0.0	66.1
Cherries	268	45.3	19.1	14.4	0.7	16.6	14.5	3.0	2.5	0.9	39.5
Grapes	10	1.1	2.4	0.0	0.0	13.1	0.0	0.0	0.0	0.0	50.7
Mangoes	170	27.9	18.0	11.3	21.0	22.8	19.3	0.2	3.5	2.2	8.5
Pears	24	4.0	3.4	0.0	5.7	17.6	12.3	0.0	38.2	0.0	10.7
Pineapple	35	4.4	31.4	36.5	14.3	0.9	2.6	0.0	5.8	0.0	11.4
Plums	81	11.5	1.2	7.0	2.8	38.4	15.3	0.2	9.9	5.8	20.5

Source: SFA school-level survey.

Note: Multiple responses allowed (rows do not sum to 100%).

¹ Weighted to represent all students in FFVP schools nationally (each student given equal weight; schools with higher enrollment contribute more to the results).

Exhibit D4.3: Reasons Schools Do Not Serve Specific Vegetables (Student-Weighted) ¹

Vegetable	Schools that have not and will not serve		Reasons schools have not and will not serve vegetables								
	(N)	(%)	Too expensive (%)	Too messy (%)	Too much work to prepare (%)	Out of season (%)	Hard to obtain (%)	Too easily damaged/spoiled (%)	Unpopular with students (%)	Poor quality (%)	Other (%)
Dark-green vegetables											
Broccoli	50	9.9	0.0	0.0	5.9	0.0	0.0	3.6	63.9	0.0	15.9
Orange vegetables											
Carrot	14	1.6	0.0	0.0	0.0	0.0	14.8	0.0	27.2	0.0	48.5
Yellow squash	207	32.3	5.2	0.0	27.6	5.7	8.0	0.4	45.4	0.0	11.4
Other											
Cauliflower	81	15.2	1.8	0.0	2.6	2.5	2.9	1.6	83.4	0.0	3.2
Celery	42	6.4	0.0	0.0	7.9	0.0	0.0	0.0	46.8	0.0	36.9
Cucumber	58	10.5	0.0	0.0	62.7	0.0	3.2	1.0	20.3	0.0	7.6
Lettuce, other leafy greens	204	33.2	3.0	5.4	22.1	0.5	0.9	9.7	33.8	0.0	18.8
Peppers	121	17.6	0.9	0.0	5.2	0.0	6.3	1.5	75.7	0.0	23.6
Snap peas	162	21.8	13.6	0.0	7.8	6.8	19.5	0.0	40.1	0.3	13.1
Snow peas	174	25.9	8.0	0.0	5.1	3.0	19.4	0.7	45.8	0.3	18.8
String/ green beans	215	33.5	5.1	0.0	9.5	2.8	11.1	0.2	53.6	0.4	15.7
Tomatoes	51	6.8	3.0	31.8	6.4	0.0	2.6	5.0	39.7	0.6	6.2
Zucchini	172	26.8	5.5	0.0	28.0	4.9	3.2	0.0	50.6	0.0	10.0

N = 599

Source: SFA school-level survey.

Note: Multiple responses allowed (rows do not sum to 100%).

¹ Weighted to represent all students in FFVP schools nationally (each student given equal weight; schools with higher enrollment contribute more to the results).

Exhibit D4.4: Variety of Fruits and Vegetables Served through FFVP during Reference Week

Number served during reference week	School-weighted			Student-weighted		
	Fruits and vegetables (%)	Fruits (%)	Vegetables (%)	Fruits and vegetables (%)	Fruits (%)	Vegetables (%)
0	2.8	4.1	28.8	2.5	4.3	29.6
1	2.6	13.6	35.0	2.1	13.5	37.0
2	10.9	14.8	18.1	11.3	14.8	17.6
3	19.4	27.2	6.1	20.1	25.6	5.4
4	17.7	17.3	2.7	18.1	18.3	1.7
5	22.9	9.4	2.3	24.2	10.7	1.5
6	5.8	1.8	1.5	5.5	1.6	1.3
7	2.3	2.9	1.3	1.9	2.7	1.1
8	2.6	2.0	1.2	2.5	2.3	1.1
9	2.7	1.2	1.1	2.3	1.3	1.4
10+	10.6	5.7	2.0	9.4	4.9	2.2

Source: SFA school-level survey. Analysis is reported with two weights: the first giving schools equal weight and the second giving equal weight to each student (so that schools with higher enrollment contribute more to the results).

Sample: Excludes 14 schools that did not respond to question.

Exhibit D4.5: District and School Staff Opinions of FFVP

Statement	Opinion	SFA director	Principal ¹	School food service manager	Teacher
My overall opinion of FFVP is favorable	Agree strongly	88.5%	91.8%	N/A	78.3%
	Agree somewhat	8.4%	7.1%		18.7%
	Disagree somewhat	1.9%	0.9%		0.9%
	Disagree strongly	1.1%	0.2%		2.1%
	Total N	262	534		327
I would like FFVP to continue in my district	Agree strongly	90.0%	93.5%	83.6%	81.8%
	Agree somewhat	6.6%	5.2%	11.7%	14.8%
	Disagree somewhat	1.5%	0.6%	3.1%	1.6%
	Disagree strongly	1.9%	0.7%	1.6%	1.9%
	Total N	259	535	128	318
I think students benefit from FFVP	Agree strongly	91.7%	93.3%	N/A	82.3%
	Agree somewhat	6.8%	6.3%		16.2%
	Disagree somewhat	1.1%	0.4%		0.3%
	Disagree strongly	0.4%	0.0%		1.2%
	Total N	264	536		328
I think FFVP is not worth the effort it takes	Agree strongly	2.7%	1.7%	3.3%	3.1%
	Agree somewhat	3.9%	2.9%	5.8%	4.1%
	Disagree somewhat	7.4%	7.1%	7.5%	13.4%
	Disagree strongly	86.0%	88.2%	83.3%	79.4%
	Total N	258	519	120	320
I wish more students took the FFVP fruit	Agree strongly	28.9%	51.7%	59.2%	39.9%
	Agree somewhat	35.3%	29.1%	26.5%	27.9%
	Disagree somewhat	18.1%	8.6%	5.1%	15.6%
	Disagree strongly	17.7%	10.6%	9.2%	16.7%
	Total N	249	499	98	276

Statement	Opinion	School food service manager			
		SFA director	Principal ¹	School food service manager	Teacher
I wish more students took the FFVP vegetables	Agree strongly	45.0%	58.4%	69.6%	46.2%
	Agree somewhat	33.5%	27.8%	20.6%	34.3%
	Disagree somewhat	10.8%	6.2%	3.9%	10.5%
	Disagree strongly	10.8%	7.6%	5.9%	9.0%
	Total N	251	500	102	277
Students eat more fruits and vegetables at school on FFVP days	Agree strongly	N/A	N/A	69.5%	74.5%
	Agree somewhat			27.1%	22.5%
	Disagree somewhat			3.4%	2.3%
	Disagree strongly			0.0%	0.7%
	Total N			118	302
Students eat fewer unhealthy snacks at school on FFVP days	Agree strongly	N/A	N/A	35.6%	38.8%
	Agree somewhat			28.8%	40.6%
	Disagree somewhat			19.2%	13.0%
	Disagree strongly			16.3%	7.6%
	Total N			104	276
If not offered daily, FFVP should be offered more ...	Agree strongly	38.8%	70.6%	48.9%	63.7%
	Agree somewhat	31.7%	19.4%	28.3%	25.7%
	Disagree somewhat	15.6%	5.6%	14.1%	7.6%
	Disagree strongly	13.8%	4.3%	8.7%	3.0%
	Total N	224	463	92	237
FFVP should be offered more times a day	Agree strongly	7.2%	23.6%	13.8%	17.0%
	Agree somewhat	15.1%	17.6%	13.8%	24.7%
	Disagree somewhat	33.5%	31.5%	42.2%	29.8%
	Disagree strongly	44.2%	27.3%	30.2%	28.5%
	Total N	251	483	116	312

Statement	Opinion	School food service manager			
		SFA director	Principal ¹	School food service manager	Teacher
At least once a month I verbally encourage the students to eat ...	Agree strongly	N/A	66.2%	N/A	N/A
	Agree somewhat		25.5%		
	Disagree somewhat		3.6%		
	Disagree strongly		4.6%		
	Total N		521		
We sometimes run out of FFVP produce ...	Agree strongly	2.3%	N/A	7.2%	N/A
	Agree somewhat	5.8%		6.3%	
	Disagree somewhat	10.5%		11.7%	
	Disagree strongly	81.3%		74.8%	
	Total N	257		111	
I am satisfied with how we distribute FFVP produce to students	Agree strongly	N/A	N/A	82.7%	N/A
	Agree somewhat			11.8%	
	Disagree somewhat			3.1%	
	Disagree strongly			2.4%	
	Total N			127	
Students like the FFVP fruits	Agree strongly	N/A	N/A	95.3%	80.8%
	Agree somewhat			4.7%	18.0%
	Disagree somewhat			0.0%	0.9%
	Disagree strongly			0.0%	0.3%
	Total N			127	328
Students like the FFVP vegetables	Agree strongly	N/A	N/A	36.7%	27.8%
	Agree somewhat			51.7%	56.2%
	Disagree somewhat			9.2%	13.1%
	Disagree strongly			2.5%	2.9%
	Total N			120	313

Statement	Opinion	School food service manager			
		SFA director	Principal ¹	School food service manager	Teacher
I wish the FFVP fruits were better quality	Agree strongly	1.9%	N/A	12.5%	8.2%
	Agree somewhat	16.7%		27.7%	30.9%
	Disagree somewhat	20.9%		18.8%	27.6%
	Disagree strongly	60.5%		41.1%	33.2%
	Total N	258		112	304
I wish the FFVP vegetables were better quality	Agree strongly	3.4%	N/A	13.8%	10.5%
	Agree somewhat	16.1%		23.9%	25.0%
	Disagree somewhat	22.6%		23.9%	27.7%
	Disagree strongly	57.9%		38.5%	36.8%
	Total N	261		109	296
I think the variety of FFVP fruits is good	Agree strongly	62.6%	N/A	79.5%	57.8%
	Agree somewhat	31.3%		16.5%	34.9%
	Disagree somewhat	4.9%		3.9%	6.4%
	Disagree strongly	1.1%		0.0%	0.9%
	Total N	265		127	327
I think the variety of FFVP vegetables is good	Agree strongly	55.9%	N/A	71.1%	47.3%
	Agree somewhat	35.7%		18.2%	33.7%
	Disagree somewhat	5.7%		9.9%	15.2%
	Disagree strongly	2.7%		0.8%	3.8%
	Total N	263		121	315

Source: SFA district-level, principal, school foodservice staff, and teacher surveys.

Sample: Reported Ns reflect all who responded to each question.

Note: N/A means the respondent was not asked that particular question.

¹ Weighted to be representative of all FFVP schools nationwide (schools are given equal weight).

Exhibit D4.6: Challenges to FFVP Implementation

Potential challenge	Rating	SFA director	Principal ¹	School food service manager	Teacher
Student acceptance of FFVP produce	Major challenge	3.4%	2.1%	7.4%	3.8%
	Minor challenge	28.4%	23.6%	29.5%	38.0%
	Not a challenge	68.2%	74.4%	63.1%	58.2%
	Total N	264	535	122	316
Students don't like to try new fruits and vegetables	Major challenge	N/A	N/A	9.4%	7.2%
	Minor challenge			42.7%	45.2%
	Not a challenge			47.9%	47.7%
	Total N			117	321
Students waste too much	Major challenge	N/A	N/A	7.7%	11.8%
	Minor challenge			40.2%	40.5%
	Not a challenge			52.1%	47.7%
	Total N			117	321
Disruption to class	Major challenge	N/A	4.1%	6.1%	13.5%
	Minor challenge		35.0%	22.4%	31.1%
	Not a challenge		60.9%	71.4%	55.4%
	Total N		535	98	325
Perishability of FFVP produce	Major challenge	10.9%	7.3%	9.1%	N/A
	Minor challenge	53.0%	46.0%	28.1%	
	Not a challenge	36.1%	46.7%	62.8%	
	Total N	266	533	121	
Inadequate quality of FFVP produce	Major challenge	3.4%	2.1%	3.2%	3.1%
	Minor challenge	29.3%	20.5%	23.2%	27.7%
	Not a challenge	67.3%	77.5%	73.6%	69.2%
	Total N	266	533	125	321
Inadequate variety of FFVP produce	Major challenge	7.9%	3.7%	8.0%	7.8%
	Minor challenge	35.3%	21.1%	24.0%	24.9%
	Not a challenge	56.8%	75.2%	68.0%	67.3%
	Total N	266	536	125	321
Inadequate amounts of FFVP produce	Major challenge	1.9%	1.7%	3.9%	4.7%
	Minor challenge	16.9%	13.7%	16.5%	14.6%
	Not a challenge	81.2%	84.6%	79.5%	80.7%
	Total N	266	534	127	321

Potential challenge	Rating	SFA director	Principal ¹	School food service manager	Teacher
High prices for FFVP produce	Major challenge	21.4%	N/A	N/A	N/A
	Minor challenge	47.7%			
	Not a challenge	30.8%			
	Total N	266			
Inadequate staff training	Major challenge	3.8%	2.2%	4.1%	2.2%
	Minor challenge	25.0%	20.1%	11.6%	24.4%
	Not a challenge	71.2%	77.6%	84.3%	73.3%
	Total N	264	536	121	315
Inadequate staff time	Major challenge	14.3%	9.1%	9.7%	12.3%
	Minor challenge	40.4%	33.3%	30.6%	32.0%
	Not a challenge	45.3%	57.6%	59.7%	55.7%
	Total N	265	538	124	316
Effort or cost of preparing FFVP produce	Major challenge	15.8%	N/A	N/A	N/A
	Minor challenge	44.9%			
	Not a challenge	39.2%			
	Total N	265			
Lack of storage space/facilities	Major challenge	22.6%	7.5%	16.1%	N/A
	Minor challenge	41.0%	23.8%	24.2%	
	Not a challenge	36.5%	68.7%	59.7%	
	Total N	266	534	124	
Inadequate kitchen facilities	Major challenge	N/A	3.9%	N/A	N/A
	Minor challenge		12.4%		
	Not a challenge		83.7%		
	Total N		534		
Messy to distribute and clean up	Major challenge	N/A	N/A	4.1%	13.8%
	Minor challenge			32.0%	43.1%
	Not a challenge			63.9%	43.1%
	Total N			122	320
Rules for purchasing produce for FFVP	Major challenge	8.7%	N/A	N/A	N/A
	Minor challenge	35.6%			
	Not a challenge	55.7%			
	Total N	264			
Restrictions on administrative cost	Major challenge	12.8%	N/A	N/A	N/A
	Minor challenge	32.1%			
	Not a challenge	55.1%			
	Total N	265			

Potential challenge	Rating	School food service manager			
		SFA director	Principal ¹	School food service manager	Teacher
Amount of paperwork/documentation	Major challenge	16.5%	3.4%	N/A	N/A
	Minor challenge	40.6%	24.2%		
	Not a challenge	42.9%	72.4%		
	Total N	266	533		
Other program requirements/regulations	Major challenge	7.6%	3.6%	6	N/A
	Minor challenge	31.3%	25.4%	17.1%	
	Not a challenge	61.1%	71.1%	76.9%	
	Total N	262	532	117	
Other	Major challenge	7.1%	7.5%	N/A	N/A
	Minor challenge	8.4%	8.8%		
	Not a challenge	84.4%	83.8%		
	Total N	154	160		

Source: SFA district-level, principal, school foodservice staff, and teacher surveys.

Sample: Reported Ns reflect all who responded to each question.

Note: N/A means the respondent was not asked about that potential challenge.

¹ Weighted to be representative of all FFVP schools nationwide (schools are given equal weight).

Exhibit D4.7: SFA Ratings on Fruit Quality

Fruit	Total (N)	Very poor quality (%)	Somewhat poor quality (%)	Average quality (%)	Somewhat high quality (%)	Very high quality (%)
Citrus						
Grapefruit	16	0.0	0.0	42.3	29.6	28.1
Mandarin oranges	21	0.0	0.0	55.8	5.2	39.0
Oranges	196	0.5	1.5	29.8	32.5	35.7
Tangerines	64	0.0	1.9	16.2	37.4	44.5
Melon						
Cantaloupe or honeydew	167	0.3	1.4	32.4	28.0	38.0
Watermelon	87	1.2	3.4	35.1	15.7	44.6
Berries						
Blackberries or raspberries	28	0.0	0.0	34.4	31.4	34.3
Blueberries	48	2.5	0.0	50.2	23.2	24.1
Kiwis	74	0.7	2.9	48.4	17.8	30.3
Strawberries	145	0.0	0.8	31.4	39.5	28.4
Other						
Apples	313	0.2	0.0	33.7	31.5	34.6
Apricots, nectarines, peaches	26	0.0	0.0	61.4	15.5	23.1
Bananas	196	0.0	1.6	46.9	22.1	29.4
Cherries	5	0.0	0.0	48.3	51.7	0.0
Grapes	206	0.0	1.7	36.7	22.6	39.0
Mangoes	51	0.4	0.0	17.6	26.6	55.4
Pears	110	0.0	0.0	40.4	29.7	29.9
Pineapple	162	0.1	0.0	19.7	32.0	48.1
Plums	72	1.7	1.7	32.3	14.4	49.8

Source: SFA school-level survey. Weighted to represent all FFVP schools nationally (schools are given equal weight).

Sample: Reported Ns represent the schools that both reported serving the fruit and rated it.

Exhibit D4.8: SFA Ratings on Vegetable Quality

Vegetable	Total (N)	Very poor quality (%)	Somewhat poor quality (%)	Average quality (%)	Somewhat high quality (%)	Very high quality (%)
Dark-green vegetables						
Broccoli	110	0.0	0.0	44.5	26.4	29.1
Orange vegetables						
Carrot	204	0.2	0.0	43.5	32.5	23.8
Yellow Squash	11	0.0	0.0	40.6	38.5	20.9
Other vegetables						
Cauliflower	53	0.0	2.1	56.2	20.2	21.5
Celery	90	0.0	0.0	61.1	16.0	22.9
Cucumber	89	0.0	0.0	50.9	17.5	31.6
Lettuce, other leafy greens	39	0.0	0.0	62.7	27.1	10.3
Peppers	77	0.0	0.0	32.9	40.5	26.6
Snap Peas	35	0.0	3.0	36.0	44.5	16.6
Snow Peas	19	0.0	0.0	54.9	16.7	28.4
String/green beans	9	0.0	0.0	65.5	0.0	34.5
Tomatoes	132	0.2	0.0	37.4	20.8	41.6
Zucchini	37	0.0	0.0	63.1	25.0	11.9

Source: SFA school-level survey. Weighted to represent all FFVP schools nationally (schools are given equal weight).

Sample: Reported Ns represent the schools that both reported serving the vegetable and rated it.

D.3 Exhibits to Accompany Chapter 6

Alternative Samples and Methods

As discussed in greater detail in Appendix C, our preferred analytic specification includes only students in schools within two and a half percentage points of the State-specific funding eligibility cutoff, and does not include the distance-from-the-cutoff ranking variable as a covariate. In this appendix, we present additional results for the full available sample, and specifications both including and excluding the ranking variable.

In addition, as discussed in greater detail in Appendix A, a late school-year reallocation of funding to California schools below the original funding cutoff represents a potential threat to the treatment/comparison balance that underlies the RD design. As a sensitivity check, in this appendix we present results excluding student interviews from California schools.

In general, results were robust to use of alternative samples and estimation procedures.

Sample Sizes

Exhibit D6.1 presents sample size totals for the four alternative sample specifications: restricted and inclusive, and including and excluding California schools.

Exhibit D6.1: Sample Sizes for Alternative Sample Specifications—Full Sample and Restricted Near-Cutoff Subsample, Including and Excluding California Schools

	Restricted near-cutoff subsample			Full analytic sample		
	Treatment	Comparison	All	Treatment	Comparison	All
Including California						
Schools	115	99	214	134	118	252
Students	2,471	2,225	4,696	2,903	2,657	5,560
Excluding California						
Schools	88	87	175	107	106	213
Students	1,923	1,961	3,884	2,355	2,393	4,748

Sample Student Characteristics

Exhibit D6.2 presents student demographic characteristics for the treatment and comparison groups for the full and restricted samples including California schools, and Exhibit D6.3 presents the analogous descriptive statistics on the sample excluding California schools.

Exhibit D6.2: Student Characteristics, Treatment vs. Comparison Group, Full Sample and Restricted Near-Cutoff Subsample, Including California Schools

	Restricted near-cutoff subsample (n=4,696)			Full analytic sample (n=5,560)		
	Treatment group (T)	Comparison group (C)	P-value for T- C difference	Treatment group (T)	Comparison group (C)	P-value for T-C difference
Gender						
Male	43.9%	43.0%	(0.589)	43.9%	44.1%	(0.921)
Female	56.1%	57.0%		56.1%	55.9%	
Grade level						
4th grade	44.5%	42.5%	(0.804)	44.1%	44.7%	(0.897)
5th grade	44.5%	45.3%		44.9%	43.5%	
6th grade	11.0%	12.2%		11.0%	11.7%	
Race/ethnicity						
Hispanic	45.2%	38.6%		39.4%	34.0%	
Non-Hispanic black	25.7%	22.7%	(0.111)	25.7%	22.0%	(0.144)
Non-Hispanic white	21.0%	29.8%		27.1%	35.5%	
Other race/ ethnicity	8.0%	8.9%		7.8%	8.5%	
FRPSL status						
Eligible for free lunch	74.7%	69.7%		72.4%	66.9%	
Eligible for reduced-price lunch	7.9%	8.9%	(0.236)	7.9%	8.8%	(0.123)
Not FRPSL eligible	17.4%	21.4%		19.7%	24.3%	
Sample size	2,471	2,225		2,903	2,657	

Source: Student diary-assisted recall interview and survey.

Note: There were no statistically significant differences in characteristics across treatment and comparison groups at the 95% confidence level. (Chi-square test, adjusting for clustering of students within schools.)

Exhibit D6.3: Student Characteristics, Treatment vs. Comparison Group, Full Sample and Restricted Near-Cutoff Subsample, Excluding California Schools

	Restricted near-cutoff subsample (n=3,884)			Full analytic sample (n=4,748)		
	Treatment group (T)	Comparison group (C)	P-value for T-C difference	Treatment group (T)	Comparison group (C)	P-value for T-C difference
Gender						
Male	43.6%	43.6%	(0.991)	43.7%	44.7%	(0.558)
Female	56.4%	56.4%		56.3%	55.3%	
Grade Level						
4th grade	45.7%	43.6%	(0.883)	44.9%	45.9%	(0.965)
5th grade	42.8%	44.7%		43.7%	42.8%	
6th grade	11.5%	11.7%		11.4%	11.3%	
Race/ethnicity						
Hispanic	37.6%	34.4%	(0.354)	31.8%	30.0%	(0.391)
Non-Hispanic black	30.3%	24.9%		29.4%	23.8%	
Non-Hispanic white	25.9%	33.3%		32.6%	39.0%	
Other race/ ethnicity	6.2%	7.4%		6.2%	7.2%	
FRPSL status						
Eligible for free lunch	71.7%	67.4%	(0.442)	69.4%	64.7%	(0.290)
Eligible for reduced-price lunch	7.7%	9.2%		7.8%	9.1%	
Not FRPSL eligible	20.6%	23.4%		22.8%	26.2%	
Sample size	1,923	1,961		2,355	2,393	

Source: Student diary-assisted recall interview and survey.

Notes: There were no statistically significant differences in characteristics across treatment and comparison groups at the 95% confidence level. (Chi-square test, adjusting for clustering of students within schools.)

Regression Discontinuity Estimates

Exhibit D6.4 provides RD estimates excluding and including the FRPSL ranking variable, for both the full analytic sample and the “near-cutoff” sample of schools within two and a half percentage points of the FRPSL cutoff in each sample State, including California. In the two alternative specifications including the ranking variable as covariates, the test on the coefficient for the ranking variable was not statistically significant at the 95 percent confidence level. This is as expected given the narrow range of values for FRPSL. Furthermore, this is the case for which the literature suggests not including the ranking variable (Lee & Lemieux, 2010). Our preferred specification therefore excludes the ranking variable, and includes only schools within two and a half percentage points of the FRPSL cutoff.

Further supporting the discussion in the body of the report, the point estimate for the impact of FFVP on total fruit and vegetable consumption per day is robust across all four specifications (range 0.32 to 0.33 cups) and always statistically significant at conventional levels (p-values all <0.001). As expected, the standard errors are larger in the models with a ranking variable, but, as noted, our tests do not support the need for this variable’s inclusion. Although the point estimate for the impact of FFVP on total energy was positive in all four specifications (range 30 to 47 kilocalories), this difference was never statistically significant.

Exhibit D6.4: Impact of FFVP on Consumption of Fruits and Vegetables and Total Energy Intake, Full Sample and Restricted Near-Cutoff Subsample, Including California Schools

	Restricted near-cutoff subsample (n=4,696)				Full analytic sample (n=5,560)			
	No ranking variable		With ranking variable		No ranking variable		With ranking variable	
	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)
Regression-adjusted mean, treatment group (S.E.)	2.39 (0.06)	1925 (25)	2.39 (0.06)	1925 (25)	2.37 (0.05)	1936 (23)	2.37 (0.05)	1936 (23)
Regression-adjusted mean, comparison group (S.E.)	2.07 (0.05)	1878 (23)	2.07 (0.05)	1878 (23)	2.04 (0.05)	1905 (21)	2.04 (0.05)	1906 (21)
Estimated impact (T-C)	0.32	47	0.32	47	0.33	31	0.33	30
Percent difference (T-C)/C	15.5%	2.5%	15.3%	2.5%	16.0%	1.6%	16.2%	1.6%
[standard error]	[0.08]	[35]	[0.08]	[35]	[0.07]	[32]	[0.07]	[32]
{t-statistic}	{3.98}	{1.32}	{3.94}	{1.34}	{4.72}	{0.97}	{4.77}	{0.94}
(P-value)	(<0.001)***	(0.187)	(<0.001)***	(0.183)	(<0.001)***	(0.333)	(<0.001)***	(0.348)
Ranking variable	N/A	N/A	-0.05	12	N/A	N/A	-0.03	8
[standard error]	N/A	N/A	[0.07]	[31]	N/A	N/A	[0.02]	[13]
{t-statistic}	N/A	N/A	{-0.68}	{0.39}	N/A	N/A	{-1.41}	{0.64}
(P-value)	N/A	N/A	(0.499)	(0.700)	N/A	N/A	(0.161)	(0.525)

Source: Student diary-assisted recall interview.

Notes: Regression adjustment using characteristics of Impact Analysis sample.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test for greater fruit and vegetable consumption; two-sided tests for total energy intake and for ranking variable.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Exhibit D6.5 provides RD estimates excluding and including the ranking variable, for both the full analytic sample and the “near-cutoff” sample of schools within two and a half percentage points of the FRPSL cutoff in each sample State, when California schools are dropped from the analysis.

Results excluding California schools are qualitatively similar to results for the sample including California. The point estimates for impacts on total fruit and vegetable consumption increase slightly (from 0.32 to 0.36 in our preferred near-cutoff specification excluding the ranking variable; range 0.35 to 0.37 across the four alternative specifications), and remain statistically significant ($p < 0.001$) in all specifications. Point estimates for impacts on total energy intake range from 39 to 61 kilocalories when California is excluded from the sample, but were not statistically significant in any specification.

Finally, as in the results for the sample including California schools, the ranking variable is not statistically significant in any specification, supporting our decision to exclude the ranking variable from our primary specification in the main text.

Exhibit D6.5: Impact of FFVP on Consumption of Fruits and Vegetables and Total Energy Intake, Full Sample and Restricted Near-Cutoff Subsample, Excluding California Schools

	Restricted near-cutoff subsample (n=4,696)				Full analytic sample (n=5,560)			
	No ranking variable		With ranking variable		No ranking variable		With ranking variable	
	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)	Fruits and vegetables, cup-equivalents per day	Total energy per day (kcal)
Regression-adjusted mean, treatment group (S.E.)	2.41 (0.07)	1981 (30)	2.40 (0.07)	1981 (30)	2.38 (0.06)	1984 (26)	2.38 (0.06)	1983 (26)
Regression-adjusted mean, comparison group (S.E.)	2.05 (0.05)	1920 (23)	2.05 (0.05)	1921 (23)	2.02 (0.05)	1944 (22)	2.02 (0.05)	1944 (22)
Estimated impact (T-C)	0.36	61	0.35	60	0.36	40	0.37	39
Percent difference (T-C)/C	17.5%	3.2%	17.2%	3.1%	17.9%	2.0%	18.1%	2.0%
[standard error]	[0.09]	[39]	[0.09]	[39]	[0.07]	[34]	[0.07]	[34]
{t-statistic}	{4.04}	{1.58}	{3.97}	{1.55}	{4.84}	{1.16}	{4.91}	{1.15}
(P-value)	(<0.001)***	(0.116)	(<0.001)***	(0.122)	(<0.001)***	(0.246)	(<0.001)***	(0.253)
Ranking variable	N/A	N/A	-0.08	-13	N/A	N/A	-0.04	4
[standard error]	N/A	N/A	[0.07]	[34]	N/A	N/A	[0.02]	[13]
{t-statistic}	N/A	N/A	{-1.16}	{-0.39}	N/A	N/A	{-1.63}	{0.31}
(P-value)	N/A	N/A	(0.246)	(0.699)	N/A	N/A	(0.104)	(0.753)

Source: Student diary-assisted recall interview.

Notes: Regression adjustment using characteristics of Impact Analysis sample.

Asterisks indicate statistical significance for regression coefficients: *p<0.10, **p<0.05, ***p<0.01. (One-sided test for greater fruit and vegetable consumption; two-sided tests for total energy intake and for ranking variable.)

Due to rounding, reported impacts (T-C differences) may differ from differences between reported regression-adjusted means for the treatment and comparison groups.

Usual Intake Estimates

Exhibit D6.6: Usual Daily Intake of Total and Fresh Fruit and Vegetable Intake by Type, On FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Total fruits and vegetables	2.49	(0.20)	2.36	2.06	(0.18)	1.95
Fresh fruits and vegetables	1.63	(0.12)	1.55	1.16	(0.12)	1.07
Other fruits and vegetables (frozen, canned, dried, etc.)	0.90	(0.06)	0.87	0.94	(0.08)	0.90
Total fruits	1.52	(0.13)	1.43	1.13	(0.11)	1.05
Fresh fruits	1.25	(0.10)	1.18	0.90	(0.09)	0.84
Raw fresh fruits	0.68	(0.07)	0.62	0.52	(0.08)	0.46
Fruits cooked from fresh	N/A	N/A	N/A	N/A	N/A	N/A
100% fruit juice	0.59	(0.07)	0.55	0.38	(0.06)	0.32
Other fruits (frozen, canned, dried, etc.)	0.23	(0.02)	0.22	0.18	(0.01)	0.19
Total vegetables	0.97	(0.07)	0.92	0.94	(0.07)	0.91
Fresh vegetables	0.34	(0.04)	0.30	0.26	(0.03)	0.24
Raw fresh vegetables	0.23	(0.03)	0.21	0.12	(0.02)	0.09
Vegetables cooked from fresh	0.12	(0.03)	0.08	0.14	(0.03)	0.10
100% vegetable juice	N/A	N/A	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.60	(0.05)	0.57	0.70	(0.05)	0.67

Source: Student diary-assisted recall interview.

N/A: Usual intake estimates for this outcome are inestimable because intake was near zero in both groups.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit D6.7: Usual Daily Intake of MyPyramid Fruit and Vegetable Groups, On FFVP Days, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Total fruits	1.52	(0.13)	1.43	1.13	(0.11)	1.05
Citrus fruits, melons, and berries	0.54	(0.07)	0.46	0.40	(0.06)	0.33
Other fruits	1.01	(0.10)	0.92	0.73	(0.08)	0.67
Total vegetables	0.97	(0.07)	0.92	0.94	(0.07)	0.91
Dark-green vegetables	0.04	(0.01)	0.02	0.04	(0.02)	0.01
Orange vegetables	0.06	(0.01)	0.05	0.06	(0.01)	0.05
Starchy vegetables	0.31	(0.04)	0.27	0.36	(0.04)	0.32
White potatoes	0.24	(0.03)	0.20	0.24	(0.03)	0.21
Other starchy vegetables	0.06	(0.01)	0.03	0.11	(0.03)	0.07
Other vegetables	0.57	(0.04)	0.54	0.52	(0.04)	0.49
Tomatoes	0.33	(0.04)	0.29	0.28	(0.04)	0.24
Other	0.22	(0.03)	0.19	0.23	(0.02)	0.22

Source: Student diary-assisted recall interview.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit D6.8: Usual Daily Intake of MyPyramid Food Groups, Foods Other than Fruits and Vegetables, on FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Total grains (ounce-equivalents)	6.33	(0.35)	6.17	6.34	(0.29)	6.24
Whole grains (ounce-equivalents)	0.49	(0.04)	0.46	0.53	(0.07)	0.46
Other grains (ounce-equivalents)	5.87	(0.32)	5.73	5.81	(0.27)	5.71
Total milk, yogurt, cheese (cup-equivalents)	2.14	(0.18)	2.03	2.37	(0.18)	2.29
Meat, poultry, fish, and eggs (ounce-equivalents)	3.41	(0.22)	3.29	4.18	(0.28)	4.05
Legumes (cooked dry beans and peas, soybean products, nuts and seeds) (ounce-equivalents)	0.33	(0.05)	0.27	0.34	(0.08)	0.22
Discretionary oils (grams)	14.11	(1.09)	13.36	13.54	(1.03)	12.89
Discretionary solid fats (grams)	37.90	(2.45)	36.60	47.72	(2.57)	46.68
Added sugars (teaspoons)	13.85	(1.35)	12.79	17.32	(1.60)	16.20

Source: Student diary-assisted recall interview.

Exhibit D6.9: Usual Daily Intake of Selected Discretionary Foods, on FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Sugar-sweetened beverages	74.03	(10.36)	64.56	108.77	(14.20)	96.30
Fried potatoes/similar potato products	22.66	(3.81)	17.26	20.94	(1.06)	20.27
Cookies, cakes, brownies	110.00	(15.63)	92.26	122.79	(21.96)	94.42
Candy	27.97	(8.99)	12.59	22.30	(5.31)	14.32
Dairy-based desserts (ice cream, pudding)	24.19	(3.97)	18.70	21.24	(6.91)	8.96
Gelatin (non-fruited), ice pops	N/A	N/A	N/A	N/A	N/A	N/A
Snack chips (popcorn, potato chips)	6.19	(1.41)	3.69	5.37	(1.74)	2.16

Source: Student diary-assisted recall interview.

N/A: Usual intake estimates for this outcome are inestimable because intake was near zero in both groups.

Exhibit D6.10: Usual Daily Intake of Energy from Fluid Milk Intake, On FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Total fluid milk	175.78	(18.28)	167.64	192.46	(19.12)	187.94
Unflavored	119.48	(12.32)	113.28	116.05	(13.01)	114.87
Whole	15.69	(5.06)	6.79	22.78	(8.05)	9.95
Reduced-fat	N/A	N/A	N/A	N/A	N/A	N/A
Lowfat	52.39	(7.76)	46.16	46.37	(9.05)	33.32
Nonfat	N/A	N/A	N/A	N/A	N/A	N/A
Type not specified	N/A	N/A	N/A	N/A	N/A	N/A
Flavored	56.66	(10.17)	44.80	77.59	(15.83)	56.21
Whole	N/A	N/A	N/A	N/A	N/A	N/A
Reduced-fat	N/A	N/A	N/A	N/A	N/A	N/A
Lowfat	29.45	(7.41)	12.59	42.21	(12.70)	9.81
Nonfat	14.55	(5.01)	1.69	14.42	(5.91)	1.92
Type not specified	N/A	N/A	N/A	N/A	N/A	N/A

Source: Student diary-assisted recall interview.

N/A: Usual intake estimates for this outcome are inestimable because intake was near zero in both groups.

Exhibit D6.11: Usual Daily Intake of Macronutrients, On FFVP Days, in Kilocalories, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Total energy	1764.37	(95.35)	1719.38	1948.91	(98.46)	1907.48
Energy from fat	561.19	(16.15)	557.20	669.98	(21.55)	664.15
Energy from saturated fat	193.65	(12.54)	186.96	234.86	(13.50)	228.38
Energy from carbohydrates	963.65	(51.11)	938.78	1002.41	(52.58)	980.79
Energy from protein	263.37	(14.47)	256.81	295.80	(15.81)	289.18

Source: Student diary-assisted recall interview.

Exhibit D6.12: Usual Daily Intake of Fiber and Micronutrients, On FFVP Days, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Treatment			Comparison		
	Mean	SE	Median	Mean	SE	Median
Calcium (mg)	913.53	(60.43)	882.99	1024.50	(66.59)	994.84
Iron (mg)	14.36	(0.94)	13.74	15.82	(0.80)	15.47
Zinc (mg)	9.42	(0.56)	9.09	11.93	(0.73)	11.53
Magnesium (mg)	222.92	(11.10)	218.19	236.28	(13.13)	230.30
Beta carotene (mcg)	1337.71	(211.80)	1052.52	955.42	(110.29)	840.99
Vitamin A, RAE (mcg)	640.40	(47.49)	609.63	691.49	(44.10)	669.02
Vitamin C (mg)	95.28	(8.33)	88.97	84.64	(8.57)	77.74
Folate (mcg)	539.97	(44.91)	502.15	582.46	(37.56)	559.45
Sodium (mg)	2870.33	(165.05)	2792.96	3279.19	(157.01)	3223.72
Fiber (g)	13.57	(0.71)	13.23	13.15	(0.87)	12.66

Source: Student diary-assisted recall interview.

Exhibit D6.13: Usual Daily Intake of Fruits and Vegetables by Type, on FFVP Days, Total, In School, and Out of School, In Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Total				In school				Out of school			
	Treatment		Comparison		Treatment		Comparison		Treatment		Comparison	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Total fruits and vegetables	2.33	(0.19)	2.29	(0.20)	1.00	(0.09)	0.99	(0.09)	1.51	(0.14)	1.48	(0.14)
Fresh fruits and vegetables	1.47	(0.12)	1.42	(0.13)	0.61	(0.07)	0.59	(0.07)	0.88	(0.09)	0.85	(0.09)
Other fruits and vegetables (frozen, canned, dried, etc.)	0.91	(0.07)	0.92	(0.07)	0.42	(0.02)	0.43	(0.02)	0.63	(0.04)	0.63	(0.04)
Total fruits	1.39	(0.12)	1.34	(0.13)	0.59	(0.07)	0.58	(0.07)	0.87	(0.10)	0.83	(0.11)
Whole fruits (excluding juice)	0.85	(0.09)	0.82	(0.10)	0.42	(0.05)	0.41	(0.05)	0.43	(0.07)	0.41	(0.07)
Fresh fruits	1.13	(0.09)	1.08	(0.10)	0.50	(0.06)	0.48	(0.06)	0.66	(0.07)	0.63	(0.07)
Raw fresh fruits	0.62	(0.07)	0.59	(0.08)	0.32	(0.04)	0.31	(0.04)	0.31	(0.06)	0.29	(0.07)
100% fruit juice	0.51	(0.07)	0.50	(0.07)	0.18	(0.04)	0.18	(0.04)	0.35	(0.04)	0.34	(0.04)
Other fruits (frozen, canned, dried, etc.)	0.21	(0.02)	0.21	(0.02)	0.09	(0.01)	0.10	(0.02)	0.11	(0.01)	0.11	(0.01)
Total vegetables	0.95	(0.07)	0.96	(0.07)	0.33	(0.02)	0.34	(0.02)	0.62	(0.04)	0.63	(0.05)
Total vegetables excluding fried potatoes	0.90	(0.07)	0.91	(0.07)	0.31	(0.02)	0.32	(0.02)	0.59	(0.05)	0.59	(0.05)
Fresh vegetables	0.31	(0.03)	0.31	(0.04)	0.10	(0.02)	0.10	(0.02)	0.21	(0.03)	0.21	(0.03)
Raw fresh vegetables	0.19	(0.02)	0.18	(0.03)	0.09	(0.02)	0.09	(0.02)	0.09	(0.02)	0.09	(0.02)
Vegetables cooked from fresh	0.12	(0.02)	0.13	(0.03)	0.01	(<0.01)	0.01	(<0.01)	0.11	(0.02)	0.12	(0.03)
Other vegetables (frozen, canned, etc.)	0.63	(0.05)	0.64	(0.05)	0.23	(0.02)	0.24	(0.02)	0.39	(0.03)	0.39	(0.03)

Source: Student diary-assisted recall interview.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit D6.14: Usual Daily Intake of Fruits and Vegetables by MyPyramid Subgroup and Usual Daily Intake of Total Energy, on FFVP Days, Total, In School, and Out of School, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Total				In school				Out of school			
	Treatment		Comparison		Treatment		Comparison		Treatment		Comparison	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Total fruits (cup-equivalents)	1.39	(0.12)	1.34	(0.13)	0.59	(0.07)	0.58	(0.07)	0.87	(0.10)	0.83	(0.11)
Citrus fruits, melons, & berries	0.49	(0.07)	0.47	(0.07)	0.15	(0.03)	0.15	(0.03)	0.36	(0.06)	0.34	(0.06)
Other fruits	0.91	(0.09)	0.88	(0.10)	0.44	(0.05)	0.43	(0.05)	0.49	(0.08)	0.47	(0.09)
Total vegetables (cup-equivalents)	0.95	(0.07)	0.96	(0.07)	0.33	(0.02)	0.34	(0.02)	0.62	(0.04)	0.63	(0.05)
Dark-green vegetables	0.03	(0.01)	0.03	(0.02)	N/A	N/A	N/A	N/A	0.02	(0.01)	0.02	(0.02)
Orange vegetables	0.06	(0.01)	0.06	(0.01)	0.03	(0.01)	0.03	(0.01)	0.03	(<0.01)	0.03	(<0.01)
Starchy vegetables	0.32	(0.04)	0.34	(0.04)	0.09	(0.01)	0.10	(0.02)	0.23	(0.03)	0.24	(0.04)
White potatoes	0.24	(0.03)	0.25	(0.03)	0.07	(0.01)	0.08	(0.01)	0.17	(0.02)	0.18	(0.03)
Other starchy vegetables	0.07	(0.02)	0.07	(0.02)	0.03	(0.01)	0.03	(0.01)	0.04	(0.01)	0.04	(0.01)
Other vegetables	0.55	(0.04)	0.55	(0.04)	0.20	(0.02)	0.20	(0.02)	0.33	(0.03)	0.33	(0.04)
Tomatoes	0.30	(0.04)	0.30	(0.04)	0.12	(0.01)	0.12	(0.01)	0.19	(0.03)	0.18	(0.03)
Total energy (kcal)	1825.68	(93.02)	1843.92	(98.54)	682.87	(11.71)	692.42	(12.35)	1150.99	(79.05)	1159.73	(83.52)

Source: Student diary-assisted recall interview.

N/A: Usual intake for this outcome was not estimable due to near-zero intakes.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

D6.15: Usual Daily Intake of Fruits and Vegetables by Type, on FFVP Days, In School by Time of Day, in Cup-Equivalents,¹ Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Total school intake				At school in the morning				At school during lunch				At school in the afternoon			
	Treatment		Comparison		Treatment		Comparison		Treatment		Comparison		Treatment		Comparison	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Total fruits and vegetables	1.00	(0.09)	0.99	(0.09)	0.58	(0.04)	0.57	(0.05)	0.67	(0.06)	0.67	(0.06)	0.55	(0.06)	0.55	(0.07)
Fresh fruits and vegetables	0.61	(0.07)	0.59	(0.07)	0.22	(0.04)	0.21	(0.04)	0.29	(0.04)	0.28	(0.04)	0.09	(0.03)	0.09	(0.03)
Other fruits and vegetables (frozen, canned, dried, etc.)	0.42	(0.02)	0.43	(0.02)	0.13	(0.01)	0.13	(0.01)	0.40	(0.03)	0.41	(0.03)	0.29	(0.07)	0.30	(0.09)
Total fruits	0.59	(0.07)	0.58	(0.07)	0.21	(0.04)	0.20	(0.04)	0.29	(0.04)	0.29	(0.04)	0.09	(0.03)	0.08	(0.03)
Whole fruits (excluding juice)	0.42	(0.05)	0.41	(0.05)	0.16	(0.05)	0.15	(0.05)	0.22	(0.03)	0.22	(0.03)	0.07	(0.02)	0.07	(0.02)
Fresh fruits	0.50	(0.06)	0.48	(0.06)	0.18	(0.04)	0.17	(0.04)	0.23	(0.03)	0.22	(0.04)	0.08	(0.02)	0.08	(0.03)
Raw fresh fruits	0.32	(0.04)	0.31	(0.04)	0.11	(0.03)	0.10	(0.03)	0.15	(0.02)	0.14	(0.02)	0.06	(0.02)	0.06	(0.02)
100% fruit juice	0.18	(0.04)	0.18	(0.04)	0.08	(0.02)	0.08	(0.02)	0.08	(0.03)	0.07	(0.03)	N/A	N/A	N/A	N/A
Other fruits (frozen, canned, dried, etc.)	0.09	(0.01)	0.10	(0.02)	0.01	(<0.01)	0.01	(<0.01)	0.07	(0.01)	0.07	(0.01)	<0.01	(<0.01)	<0.01	(<0.01)
Total vegetables	0.33	(0.02)	0.34	(0.02)	0.07	(0.03)	0.07	(0.03)	0.25	(0.02)	0.26	(0.02)	N/A	N/A	N/A	N/A
Total vegetables excluding fried potatoes	0.31	(0.02)	0.32	(0.02)	0.07	(0.03)	0.07	(0.03)	0.23	(0.02)	0.24	(0.02)	0.04	(0.01)	0.04	(0.02)
Fresh vegetables	0.10	(0.02)	0.10	(0.02)	0.05	(0.01)	0.04	(0.01)	0.05	(0.01)	0.05	(0.01)	N/A	N/A	N/A	N/A
Raw fresh vegetables	0.09	(0.02)	0.09	(0.02)	0.05	(0.01)	0.04	(0.01)	0.04	(0.01)	0.04	(0.01)	N/A	N/A	N/A	N/A
Vegetables cooked from fresh	0.01	(<0.01)	0.01	(<0.01)	N/A	N/A	N/A	N/A	0.01	(<0.01)	0.01	(<0.01)	N/A	N/A	N/A	N/A
Other vegetables (frozen, canned, etc.)	0.23	(0.02)	0.24	(0.02)	0.01	(0.01)	0.02	(0.02)	0.20	(0.02)	0.21	(0.02)	N/A	N/A	N/A	N/A

Source: Student diary-assisted recall interview.

N/A: Usual intake for this outcome was not estimable due to near-zero intakes.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

D6.16: Usual Daily Intake of Fruits and Vegetables by MyPyramid Subgroup and Usual Daily Intake of Total Energy in Kilocalories, on FFVP Days, by Time of Day, Restricted Near-Cutoff Subsample (N=4,696)

Outcome	Total school intake				At school in the morning				At school during lunch				At school in the afternoon			
	Treatment		Comparison		Treatment		Comparison		Treatment		Comparison		Treatment		Comparison	
	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Total fruits (cup-equivalents)	0.59	(0.07)	0.58	(0.07)	0.30	(0.06)	0.29	(0.06)	0.31	(0.04)	0.30	(0.04)	0.19	(0.06)	0.18	(0.06)
Citrus fruits, melons, & berries	0.15	(0.03)	0.15	(0.03)	0.09	(0.03)	0.09	(0.03)	0.07	(0.02)	0.07	(0.02)	0.05	(0.02)	0.05	(0.02)
Other fruits	0.44	(0.05)	0.43	(0.05)	0.22	(0.05)	0.21	(0.06)	0.24	(0.03)	0.24	(0.03)	0.14	(0.04)	0.13	(0.05)
Total vegetables (cup-equivalents)	0.33	(0.02)	0.34	(0.02)	0.09	(0.04)	0.09	(0.04)	0.26	(0.02)	0.27	(0.02)	N/A	N/A	N/A	N/A
Dark-green vegetables	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orange vegetables	0.03	(0.01)	0.03	(0.01)	N/A	N/A	N/A	N/A	0.02	(0.01)	0.02	(0.01)	N/A	N/A	N/A	N/A
Starchy vegetables	0.09	(0.01)	0.10	(0.02)	0.02	(0.30)	0.02	(0.17)	0.08	(0.01)	0.08	(0.01)	N/A	N/A	N/A	N/A
White potatoes	0.07	(0.01)	0.08	(0.01)	<0.01	(<0.01)	<0.01	(<0.01)	0.06	(0.01)	0.06	(0.01)	0.02	(0.02)	0.02	(0.02)
Other starchy vegetables	0.03	(0.01)	0.03	(0.01)	N/A	N/A	N/A	N/A	0.03	(0.01)	0.03	(0.01)	<0.01	(<0.01)	<0.01	(<0.01)
Other vegetables	0.20	(0.02)	0.20	(0.02)	0.06	(0.02)	0.06	(0.02)	0.16	(0.02)	0.16	(0.02)	0.03	(0.01)	0.03	(0.01)
Tomatoes	0.12	(0.01)	0.12	(0.01)	0.03	(0.01)	0.03	(0.01)	0.10	(0.01)	0.10	(0.01)	N/A	N/A	N/A	N/A
Other	0.07	(0.01)	0.07	(0.01)	0.04	(0.01)	0.04	(0.01)	0.05	(0.01)	0.05	(0.01)	N/A	N/A	N/A	N/A
Total grains (ounce-equivalents)	2.43	(0.13)	2.47	(0.13)	1.49	(0.12)	1.50	(0.13)	1.69	(0.03)	1.73	(0.04)	1.04	(0.04)	1.04	(0.04)
Whole grains (ounce-equivalents)	0.17	(0.03)	0.16	(0.03)	0.07	(0.02)	0.07	(0.02)	0.11	(0.02)	0.11	(0.02)	0.05	(0.01)	0.05	(0.01)
Other grains (ounce-equivalents)	2.28	(0.12)	2.32	(0.13)	1.42	(0.13)	1.43	(0.14)	1.60	(0.04)	1.63	(0.04)	1.00	(0.03)	1.00	(0.04)
Total milk, yogurt, cheese (cup-equivalents)	1.32	(0.10)	1.30	(0.10)	0.83	(0.08)	0.82	(0.09)	0.95	(0.06)	0.94	(0.07)	0.62	(0.17)	0.61	(0.19)
Meat, poultry, fish, and eggs (ounce-equivalents)	1.09	(0.08)	1.11	(0.08)	0.30	(0.06)	0.30	(0.07)	0.82	(0.07)	0.83	(0.07)	0.08	(0.02)	0.08	(0.02)
Legumes (cooked dry beans and peas, soybean products, nuts and seeds) (ounce-equivalents)	0.13	(0.04)	0.14	(0.04)	0.06	(0.02)	0.06	(0.02)	0.10	(0.04)	0.10	(0.04)	0.02	(0.02)	0.02	(0.03)
Discretionary oils (grams)	6.67	(0.58)	6.77	(0.62)	2.42	(1.76)	2.41	(2.12)	5.28	(0.66)	5.34	(0.70)	8.34	(2.92)	8.32	(3.22)
Discretionary solid fats (grams)	15.72	(1.13)	15.95	(1.19)	8.03	(0.67)	8.06	(0.74)	10.36	(0.76)	10.55	(0.80)	5.60	(0.90)	5.85	(1.10)
Added sugars (teaspoons)	5.35	(0.47)	5.48	(0.50)	2.86	(0.18)	2.86	(0.20)	3.22	(0.31)	3.31	(0.33)	3.22	(0.27)	3.37	(0.29)
Total energy (kcal)	682.87	(11.71)	692.42	(12.35)	254.22	(10.24)	257.07	(11.42)	453.56	(9.14)	461.32	(9.85)	203.73	(19.33)	207.68	(23.18)

Source: Student diary-assisted recall interview.

N/A: Outcome was not estimable.

¹MyPyramid cup-equivalent = 1 cup cut-up raw or cooked fruits or vegetables.

Exhibit D6.17: Percent Meeting Dietary Guidelines for Americans, Mean/Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Food group (DGA)	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent meeting DGA	Mean intake	SE of mean	Median intake	Percent meeting DGA
Number of fruit and vegetable subgroups consumed (mean)	4.02	(0.05)	4	N/A	3.87	(0.05)	4	N/A
Citrus fruit, melon or berries (intake>0)	0.72	(0.02)	N/A	N/A	0.67	(0.01)	N/A	N/A
Other fruits (intake>0)	0.83	(0.01)	N/A	N/A	0.78	(0.01)	N/A	N/A
Number of vegetable subgroups consumed (mean)	2.47	(0.04)	2	N/A	2.42	(0.04)	2	N/A
Dark-green vegetables (intake>0)	0.17	(0.02)	N/A	N/A	0.16	(0.01)	N/A	N/A
Orange vegetables (intake>0)	0.27	(0.02)	N/A	N/A	0.21	(0.01)	N/A	N/A
Legumes (intake>0)	0.64	(0.02)	N/A	N/A	0.67	(0.02)	N/A	N/A
Starchy vegetables (intake>0)	0.50	(0.02)	N/A	N/A	0.53	(0.02)	N/A	N/A
Other vegetables (intake>0)	0.88	(0.02)	N/A	N/A	0.85	(0.01)	N/A	N/A
Dairy (lowfat/nonfat fluid milk intake≥2 cups/day)	1.24	(0.01)	1.19	12.2%	1.24	(0.13)	1.18	12.1%
Fat and saturated fat:								
25–35% of energy intake from fat	0.32	(0.01)	0.32	3.03%	0.32	(0.01)	0.32	2.85%
<10% of energy from saturated fat	0.11	(<0.01)	0.11	47.8%	0.11	(<0.01)	0.11	47.0%

Source: Student diary-assisted recall interview.

N/A: Outcomes defined as proportions or counts – no specific DGA level specified.

Exhibit D6.18: Percent Meeting MyPyramid Guidelines, Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Food group (MyPyramid guideline)	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent meeting MyPyramid guidelines	Mean intake	SE of mean	Median intake	Percent meeting MyPyramid guidelines
Fruits and vegetables								
Fruits (≥1.5 cups/day)	1.34	(0.11)	1.26	28.3%	1.29	(0.11)	1.21	25.5%
Vegetables (≥2.5 cups/day)	0.95	(0.06)	0.91	0.04%	0.97	(0.07)	0.93	0.05%
Grains								
Total grains (≥6 oz./day)	6.26	(0.29)	6.14	53.5%	6.31	(0.31)	6.18	54.7%
Whole grains (≥50% of grains)	0.08	(0.01)	0.07	<0.01%	0.08	(0.01)	0.07	<0.01%
Dairy (≥2 cups lowfat/nonfat milk/day)	1.24	(0.12)	1.19	12.2%	1.24	(0.13)	1.18	12.1%
Meat and beans (≥5 oz./day)	4.18	(0.26)	4.04	23.4%	4.21	(0.27)	4.06	24.2%

Source: Student diary-assisted recall interview.

D6.19: Percent Meeting School Meals Guidelines, Usual Intake in Schools on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Nutrient (guideline)	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent meeting school meals guidelines	Mean intake	SE of mean	Median intake	Percent meeting school meals guidelines
Fat								
No more than 30% of calories from fat (all foods consumed at school)	0.31	(0.00)	0.31	45.8%	0.31	(0.00)	0.32	44.2%
No more than 10% of calories from saturated fat (all foods consumed at school)	0.11	(0.00)	0.11	56.0%	0.11	(0.00)	0.11	55.0%
Protein								
1/3 of RDA (lunch/other PM foods consumed at school)	20.90	(0.01)	20.50	95.6%	22.22	(0.36)	21.64	95.6%
1/4 of RDA (breakfast/other AM foods consumed at school)	8.93	(0.01)	7.61	43.6%	9.56	(0.38)	8.09	43.1%
Vitamin A								
1/4 of RDA (breakfast/other AM foods consumed at school)	156.11	(0.25)	119.92	39.4%	180.87	(9.48)	135.16	38.5%
1/3 of RDA (lunch/other PM foods consumed at school)	171.28	(0.13)	161.28	30.2%	188.39	(4.57)	175.87	30.0%
Vitamin C								
1/4 of RDA (breakfast/other AM foods consumed at school)	23.59	(0.02)	20.87	84.3%	26.70	(0.92)	23.21	83.7%
1/3 of RDA (lunch/other PM foods consumed at school)	20.75	(0.03)	17.11	57.6%	17.33	(0.81)	13.75	57.1%

Nutrient (guideline)	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent meeting school meals guidelines	Mean intake	SE of mean	Median intake	Percent meeting school meals guidelines
Iron								
1/4 of RDA (breakfast/other AM foods consumed at school)	2.29	(0.00)	1.95	57.6%	2.47	(0.10)	2.07	38.0%
1/3 of RDA (lunch/other PM foods consumed at school)	3.38	(0.00)	3.30	70.3%	3.44	(0.05)	3.34	66.0%
Calcium								
1/4 of RDA (breakfast/other AM foods consumed at school)	181.60	(0.34)	127.56	14.9%	177.52	(0.34)	124.42	14.3%
1/3 of RDA (lunch/other PM foods consumed at school)	332.91	(0.24)	319.65	20.8%	333.01	(0.25)	319.88	20.9%

Source: Student diary-assisted recall interview

Exhibit D6.20: Percent Meeting Estimated Energy Requirement (EER) and Acceptable Macronutrient Distribution Ranges (AMDRs), Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Nutrient (Guideline)	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent meeting guidelines	Mean intake	SE of mean	Median intake	Percent meeting guidelines
Total energy (intake ≥ EER for sedentary activity level)	1824.39 ¹	(114.07)	1783.30	59.6%	2005.22	(2910.88)	1946.54	60.8%
AMDRs								
Energy from fat (intake between 25–35%)	0.32	(0.01)	0.32	77.8%	0.32	(0.01)	0.32	76.9%
Energy from carbohydrates (intake between 45–65%)	0.54	(0.01)	0.54	97.3%	0.54	(0.01)	0.54	97.2%
Energy from protein (intake between 10–30%)	0.15	(<0.01)	0.15	99.8%	0.15	(<0.01)	0.15	99.7%

Source: Student diary-assisted recall interview.

¹ In kilocalories

Exhibit D6.21: Percent with Intake Below Estimated Average Requirements (EARs) for Nutrients, Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Nutrient	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent below ER	Mean intake	SE of mean	Median intake	Percent below ER
Protein (g)	69.40	(3.39)	67.80	0.18%	75.31	(112.88)	73.12	0.16%
Calcium (mg)	941.87	(57.00)	910.19	72.4%	939.84	(59.34)	908.79	72.5%
Iron (mg)	14.07	(0.99)	13.61	0.21%	15.22	(25.94)	14.61	0.20%
Zinc (mg)	10.30	(0.57)	9.95	12.5%	10.96	(19.02)	10.47	12.4%
Magnesium (mg)	225.52	(10.73)	220.14	35.7%	233.17	(353.29)	224.91	35.5%
Vitamin A (mcg)	600.58	(52.65)	573.99	19.6%	648.15	(1363.37)	611.76	19.7%
Vitamin C (mg)	92.09	(7.90)	85.08	6.35%	87.35	(248.03)	79.52	6.85%
Folate (mcg)	535.73	(36.18)	506.47	2.92%	557.26	(1232.08)	519.81	2.95%

Source: Student diary-assisted recall interview.

Exhibit D6.22: Percent with Intake At or Above Adequate Intake (AI) Levels for Nutrients, Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Guideline	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent at or above AI	Mean intake	SE of mean	Median intake	Percent at or above AI
Sodium (mg)	3084.06	(144.26)	3019.55	99.3%	3107.70	(151.56)	3043.93	99.4%
Fiber (g)	13.09	(0.91)	12.69	0.17%	13.31	(22.61)	12.78	0.17%

Source: Student diary-assisted recall interview.

Exhibit D6.23: Percent with Intake At or Above Tolerable Upper Intake Levels (ULs) for Nutrients, Usual Intake on FFVP Days, by Treatment and Comparison Status, Restricted Near-Cutoff Subsample (N=4,696)

Nutrient	Treatment				Comparison			
	Mean intake	SE of mean	Median intake	Percent at or above UL	Mean intake	SE of mean	Median intake	Percent at or above UL
Calcium (mg)	941.93	(57.00)	910.38	0.01%	939.84	(59.34)	908.79	0.01%
Iron (mg)	14.59	(0.78)	14.10	0.00%	15.22	(25.94)	14.61	0.00%
Zinc (mg)	10.30	(0.57)	9.95	0.14%	10.96	(19.02)	10.47	0.12%
Magnesium (mg)	225.52	(10.73)	220.14	2.86%	225.78	(11.21)	220.42	2.78%
Vitamin A (mcg)	628.01	(41.24)	600.13	0.05%	648.15	(1363.37)	611.76	0.04%
Vitamin C (mg)	92.09	(7.90)	85.08	0.00%	87.35	(248.03)	79.52	0.00%
Folate (mcg)	535.73	(36.18)	506.47	31.7%	557.26	(1232.08)	519.81	31.4%
Sodium (mg)	3084.06	(144.26)	3019.55	88.2%	3341.87	(4763.21)	3245.49	88.7%

Source: Student diary-assisted recall interview.

Appendix E: Usual Intake Estimation

A single 24-hour dietary recall measures consumption at one point in time. However, intake estimates calculated based on a single day of recall data may not accurately represent long-term average intake for that individual, referred to as “usual intake.” The distribution of single-day intake has a larger variance than the distribution of usual intake because there is substantial variation in consumption patterns from day to day.

For estimating impacts on mean intake levels, large day-to-day within-person variation does not pose a problem, as a simple comparison of means across subgroups is sufficient to obtain unbiased estimates. However, estimating the *proportion* of the population with intake above or below some standard (e.g. Estimated Average Requirements for nutrients, or MyPyramid serving guidelines for fruit and vegetable intakes) based on a single day of recall data (or even a two-day average) will lead to biased estimates. The large day-to-day within-person variation will also lead to loss of statistical power in regression-based analyses. While multiple days of intake tend to be more representative of usual intakes of individuals, it is not practical to collect more than one day of intake on the entire sample proposed (without either dramatically increasing the cost of the study and/or reducing the sample size and power to detect differences in intake).

There are, however, statistical methods for estimating usual intake for samples in which a subset of respondents report a second day of recall data (IOM, 2000a). Usual intake in these models is conceptualized as the *probability* of consumption on a given day times the average *amount* consumed on a “consumption day.”

In light of FNS interest in comparing the prevalence of inadequate intake across FFVP and non-FFVP participants in addition to impacts on group mean intakes, our study incorporated collection of a second, nonconsecutive day of diary-assisted 24-hour dietary recall data for a 10 percent subsample of students. This strategy allowed us to employ standard statistical dietary assessment methodology to estimate the distribution of usual intake for our study population, yielding valid estimates of the prevalence of inadequate intake.

According to current IOM dietary assessment guidance, for estimation of usual intake the *number* of replicate observations is more important than the *proportion* of replicate observations relative to the full sample. Nusser et al. (1996) recommend that replicate data be collected on not fewer than about 50 or 60 subjects. IOM guidance notes that replicate subsamples consisting of fewer than 70 to 80 individuals have been successfully used in the past to obtain usual intake estimates (IOM, 2000b).

Our proposed representative second-day replicate 10 percent sample was intended to include approximately 600 students, 300 in FFVP schools and 300 in non-FFVP schools, far exceeding the recommended IOM recommendations for the number of replicate observations for obtaining usual intake estimates. In fact, by standard IOM guidance this replicate sample would be adequate for estimating usual intake for subgroups comprising 25 percent or more of students, or approximately 75 students in the intervention group and 75 students in the control group.

We estimated usual intake distributions based on the coded first- and second-day 24-hour recall data employing methodology recently developed by the National Cancer Institute (NCI) in collaboration with staff at the USDA Center for Nutrition Policy and Promotion. The NCI method models usual

intake as the product of the probability of consumption on a given day and the average amount consumed per consumption day. See Tooze et al. (2006) for a detailed description of the NCI method.

E.1 Advantages of the NCI Method

Like the Iowa State University (ISU) method, the previous standard for estimating usual intake (Nusser et al., 1996; Carriquiry, 2003), the NCI method takes into account reported zero-consumption days and reported consumption-day amounts that are positively skewed, and distinguishes between within-person and between-person variation in consumption. The NCI method has two advantages over the ISU method. First, it allows for correlation between amount and frequency of consumption, and permits the incorporation of covariates such as weekend indicators or supplementary information on frequency of fruit and vegetable consumption from a food frequency questionnaire (FFQ) or similar instrument, which in some cases can improve the power to detect relationships between dietary intake and other variables (Subar et al., 2006).

Second, unlike the ISU method, the NCI method allows for efficient estimation of usual intake for subgroups. Instead of stratifying the sample by subpopulation and estimating usual intake separately for each subgroup, we include covariates defining subgroups in the NCI model, such that covariate values differ across the subgroups, but the (harder to estimate) variance components are assumed common, and estimated from the full sample. For subgroups of students comprising a relatively small proportion of the full sample, the efficiency gains from this capability are likely to be substantial.

E.2 Regularly and Episodically Consumed Dietary Components

We produced usual intake estimates for two broad types of dietary components: 1) nutrients, including protein, calcium, iron, zinc, carotene, vitamin A, folate, sodium, fiber, vitamin D, and magnesium; and 2) foods and food groups, such as fruits, vegetables, and corresponding subgroups, and other food groups of interest, including those used to compute HEI-2005 scores.

Nutrients are consumed by nearly every individual in the population on a daily basis. In contrast, some foods and food groups of interest may be consumed on only an episodic basis. For example, a child may not eat dark-green vegetables or citrus fruits every day. To estimate usual intake distributions for nutrients and other dietary components that are consumed regularly (non-zero consumption for at least 90 percent of sample respondents), we employed a version of the NCI method in which only the amount of consumption is estimated. To estimate usual intake distributions for episodically consumed dietary components such as fruits and vegetables, we employed a two-part model, in which both probability and amount of consumption are estimated.

E.3 Estimation Procedures

Our estimation procedures followed Tooze et al. (2006), using SAS macros supplied on the NCI website. In both the amount-only and the two-part models, the amount data were first transformed to approximate normality using the Box-Cox transformation. Then, using the transformed data, for each individual in the sample, we estimated a linear predictor of amount of consumption. Estimation proceeded via a generalized linear model with model covariates including student race/ethnicity, grade level, gender, and FRPSL status; we also included FFQ items from the student survey where appropriate. Parameter estimates from this model were then used as starting values in a nonlinear mixed model with student-specific random effects.

In the two-part models for episodically consumed dietary components (non-zero consumption for 10 percent or more of the sample), probability of any consumption was additionally estimated via logistic regression, with the same set of model covariates as in the amount specification. Parameter estimates from the logistic regression were then used as starting values in a nonlinear mixed model with person-specific random effects. The probability model was then linked with the amount model by using the parameter estimates from the two uncorrelated specifications as starting values for a model in which the two student-specific random effects are permitted to be correlated.

Next, Monte Carlo simulation was used to generate random effects for 100 pseudo-persons for each student in the original sample. The random effect was then added to the linear predictor for each pseudo-person, and the amount estimates were back-transformed to the original scale with Taylor linearization. Means and percentiles were estimated empirically from the resulting distribution, as reported in Appendix D.

E.4 Assessing Prevalence of Nutrient Inadequacy

The Institute of Medicine's Dietary Reference Intake (DRI) framework was used as the primary basis for assessing the prevalence of nutrient inadequacy in the study population. DRI recommendations have been developed for population subgroups defined by age and gender, the DRI "life stage" groups. For the purposes of our study, the relevant DRI life stage groups are males aged 9–13, females aged 9–13, and possibly children aged 4–8.

The Estimated Average Requirement (EAR) is defined as the intake level for each DRI life stage group at which the risk of inadequate intake is 50 percent. Of the nutrients in our study, EAR levels have been established for protein and energy (IOM, 2002), vitamin C (IOM, 2000b), folate (IOM 1998), magnesium (IOM 1997), and vitamin A, zinc, and iron (IOM, 2001).

When the distribution of requirements is symmetrical, one can estimate the prevalence of inadequate intake for a group as the proportion of the group with intakes below the EAR. We employed this approach, known as the EAR cut-point method, in estimating the prevalence of inadequate intake in our study population for protein, vitamin C, folate, magnesium, vitamin A, and zinc, for each of which past research has found an approximately symmetrical distribution of requirements in the population (IOM, 2000a). Additionally, although the distribution of requirements for iron is skewed among adults, it is approximately symmetrical for our 4th-6th grade student sample. We also therefore applied the cut-point method for iron.

The cut-point method assumes that intake levels and requirements are independent. For energy, this key assumption does not hold: an individual who requires more calories usually consumes more calories. The above methods are therefore inappropriate for assessing adequacy of energy intake. We therefore instead assessed energy intake adequacy simply by comparing estimated mean energy intake to estimated energy requirement (EER) levels, which are defined based on age, gender, and activity level. Where mean energy intake exceeds the EER, we would conclude that positive energy balance or weight gain would be expected; if the mean energy intake is below the EER, negative energy balance or weight loss would be expected. Since collecting physical activity data on students was beyond the scope of this study, we assumed EERs based on sedentary activity levels.

The IOM has established Adequate Intake (AI) levels for three nutrients of interest for which insufficient scientific evidence exists for setting an EAR: calcium (IOM 1997), sodium (IOM, 2005),

and fiber (IOM, 2002). The AI is a recommended average daily nutrient intake level that is generally assumed to be adequate for healthy individuals; however, nutrient intake below the AI is not necessarily “inadequate,” so AI cannot therefore be used to calculate the prevalence of nutrient inadequacy for groups. However, the prevalence of nutrient inadequacy is assumed to be low for groups with mean intake at or above the AI (IOM, 2000a).

E.5 Assessing Overall Dietary Quality

The 2005 Dietary Guidelines for Americans (DGA) establish recommendations for daily consumption by food group and subgroup, including fruits and vegetables. Standard usual intake procedures allowed us to estimate the proportion of students in FFVP schools in the Impact Study sample meeting these recommendations, as well as the proportion of students meeting DGA recommendations in the non-FFVP Impact Study sample. Comparing these two estimates will allow us to determine the impact of FFVP on compliance with DGA recommendations.

Additionally, for each student in our sample, we calculated the 2005 Healthy Eating Index (HEI-2005), a measure of dietary quality based on the DGAs, from data on MyPyramid equivalent amounts per 1,000 calories consumed. A comparison of mean HEI-2005 across treatment and control groups allows us to assess the impact of FFVP on overall dietary quality.

Appendix F: Survey Instruments

Student Food Diary	F-1
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Non-FFVP Student Survey	F-37
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Teacher Survey	F-50
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SFA Director Survey	F-86
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My Food

Diary



Your Name:

Start Time:

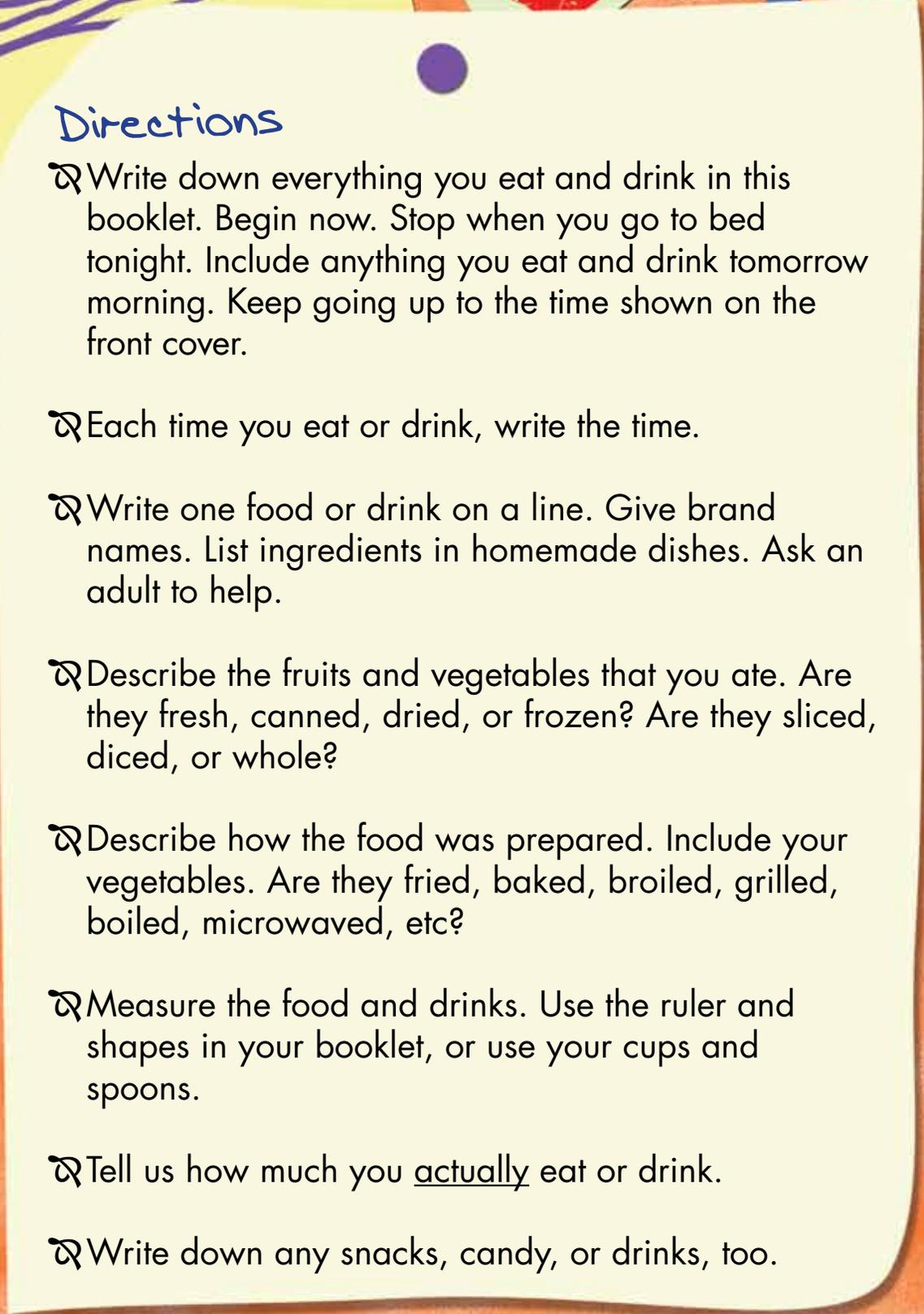
Stop Time:

Please ask your parent or caregiver to help you fill in the details of foods and drinks that you have at home.

Please bring your completed diary with you to school tomorrow.

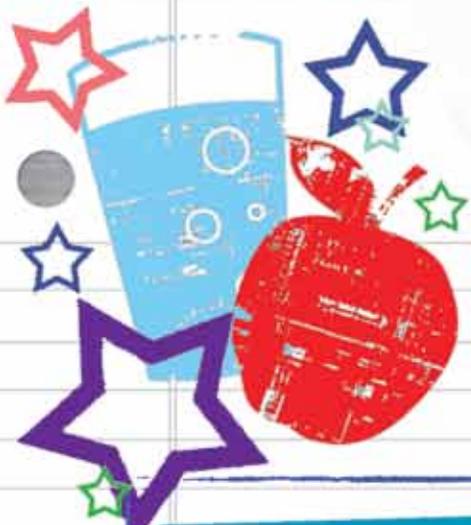


Start After
this Class!



Directions

- ☞ Write down everything you eat and drink in this booklet. Begin now. Stop when you go to bed tonight. Include anything you eat and drink tomorrow morning. Keep going up to the time shown on the front cover.
- ☞ Each time you eat or drink, write the time.
- ☞ Write one food or drink on a line. Give brand names. List ingredients in homemade dishes. Ask an adult to help.
- ☞ Describe the fruits and vegetables that you ate. Are they fresh, canned, dried, or frozen? Are they sliced, diced, or whole?
- ☞ Describe how the food was prepared. Include your vegetables. Are they fried, baked, broiled, grilled, boiled, microwaved, etc?
- ☞ Measure the food and drinks. Use the ruler and shapes in your booklet, or use your cups and spoons.
- ☞ Tell us how much you actually eat or drink.
- ☞ Write down any snacks, candy, or drinks, too.



My Food Diary

Date

/ /

Month

Day

Year

Day of the week

Boy

Girl

Age

years

Grade

Name of school

Teacher's Name

My Food Diary

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

TIP!

Sample

Write 1 food per line. Do not write in shaded areas.

When? Time (Write in Time)	What? Food and Drink (Write type, brand, description)	How Much? Amount I Ate or Drank (Write in cups, inches, ounces from packages)	Where? (Do not write here)
<u>10:00</u>	Blueberries, fresh	1/3 cup	
<u>12:30</u>	Grilled cheese sandwich — white bread, American cheese	Bread — 4 inches square Cheese — 3 inches square Left the crusts	
<u>12:30</u>	Chocolate milk, 1% fat	1 carton 8 fl oz of milk	
<u>12:30</u>	Pear halves, canned	1/2 cup Left about half of it	
<u>12:30</u>	Strawberry vanilla yogurt (Yoplait Lite)	4 oz — one carton	
<u>3:15</u>	Nestle crunch bar	2 1/2 x 1 x 1/2 inch 1 oz on wrapper	

My Food Diary

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

TIP!

Sample

Write 1 food per line. Do not write in shaded areas.

When? Time (Write in Time)	What? Food and Drink (Write type, brand, description)	How Much? Amount I Ate or Drank (Write in cups, inches, ounces from packages)	Where? (Do not write here)
6 : 00	Spaghetti with Meat Sauce	Spaghetti noodles - 3/4 cup Meat sauce - 1/2 cup Grated cheese 1tbsp Ate it all!	
6 : 00	Coke, diet	12 fl oz - 1 can	
7 : 30	Honey Nut Cheerios, General Mills	3/4 cup	
7 : 30	1% milk	1 cup	
:			
:			

Use this space to draw the food that you ate, if you like.

My Food Diary

Practice

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

TIP!

Write 1 food per line. Do not write in shaded areas.

When? Time (Write in Time)	What? Food and Drink (Write type, brand, description)	How Much? Amount I Ate or Drank (Write in cups, inches, ounces from packages)	Where? (Do not write here)
: _____			
: _____			
: _____			
: _____			
: _____			
: _____			
: _____			
: _____			
: _____			

Use this space to draw the food that you ate, if you like.

My Food Diary

Coder _____
 Interviewer _____
 Participant ID _____

Tip!

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

Write 1 food per line. Do not write in shaded areas.

When? Time (Write in Time)	What? Food and Drink (Write type, brand, description)	How Much? Amount I Ate or Drank (Write in cups, inches, ounces from packages)	Where? (Do not write here)
_____: _____			Where eaten: S H FH FF/P R O Source: S H FH FF/P R O DK AM/PM B L D S
_____: _____			Where eaten: S H FH FF/P R O Source: S H FH FF/P R O DK AM/PM B L D S
_____: _____			Where eaten: S H FH FF/P R O Source: S H FH FF/P R O DK AM/PM B L D S
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_____: _____			Where eaten: S H FH FF/P R O Source: S H FH FF/P R O DK AM/PM B L D S

Fls: Note Fr and/or FFVP if relevant

Use this space to draw the food that you ate, if you like.

My Food Diary

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

TIP!

Write 1 food per line. Do not write in shaded areas.

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Use this space to draw the food that you ate, if you like.

My Food Diary

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

TIP!

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When? Time (Write in Time)	What? Food and Drink (Write type, brand, description)	How Much? Amount I Ate or Drank (Write in cups, inches, ounces from packages)	Where? (Do not write here)
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My Food Diary

Use your cups, spoons, ruler, or shape pictures to help you describe how much you ate or drank. Or you may draw the actual size of your food on the back of this page.

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____:____ ____:____			Where eaten: S H FH FF/P R O Source: S H FH FF/P R O DK AM/PM B L D S

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	AMOUNT — Check One: <input type="checkbox"/> L <input type="checkbox"/> M <input type="checkbox"/> S <input type="checkbox"/> Unrel	Reason if L: <input type="checkbox"/> Si <input type="checkbox"/> Other	
	NOTES: _____ _____ _____	Other: Specify reason for L: _____ _____ _____	

Fls: Note Fr and/or FFVP if relevant

Food Description Guide

Describe each food and drink. Record as much information as you can. Ask your parent or an adult to help you. Even if you cannot describe a food, be sure to write its name in your diary.



Breads / Bagels / Biscuits / Muffins

- Type? (white, whole wheat, cornbread, etc.)
- Store-bought (give brand name), or homemade?
- Any additions? (butter, margarine, mayonnaise, jelly, etc.) (See Spreads/Salad Dressings/Fats)
- Tortilla (corn, flour, or whole wheat, plain or fried)
- Muffins (bran, carrot, blueberry, chocolate chip, etc.)
- Size? (diameter, height, length, in inches)

Burritos / Tacos / Pizzas

- Homemade or bought? Kind of burrito, taco, etc (bean, meat, veggie, etc.)
- Tortilla: Type? (flour, corn, whole wheat, fried, plain)
- Diameter of tortilla (6, 10, 12 inches, larger?)
- Any sauces? (salsa, cheese, sour cream, guacamole)
- Any vegetables? (corn, lettuce, tomato, avocado, squash, bell peppers, onions, cabbage, etc.)
- Any meat? (chicken, pork, ground beef, shredded beef, fish, shrimp, etc.)
- Preparation (pan or deep fried, etc.)
- Any cheese? Type?
- Any beans? Type?
- Any rice? Type?

Dessert / Snacks

- **Candy/Chocolate**
 - Brand name, description, measurements
 - Weight from package
 - Bars: package size (fun-size, snack-size, or king-size, etc)

• Cookies / Cakes / Donuts / Pastries

- Brand name, description, measurements
- Type? (chocolate chip, yellow cake, etc.)
- Store-bought, homemade – mix or scratch?
- Any frosting or glaze? (flavor; mix, scratch, can?)
- Size of cookies, donuts, pastries (in inches)
- **Pies**
 - Type? (fruit, cream, custard, sweet potato, etc.)
 - Type of crust? (dough or graham cracker, single or double crust)
 - Any additions? (ice cream or whipped cream)
- **Yogurt/Ice Cream/Frozen Yogurt/Frozen Dessert**
 - Flavor
 - Regular, low-fat or low sugar
 - Brand name, package weight, or measure with cups
 - Any additions? (nuts, sprinkles, whipped cream, sauce, etc.)

Drinks: Type? Amount? Any ice?

- **Juice (100%, juice drinks, or juice blends)**
 - Type of juice (orange, apple, grape, etc)
 - Brand name, flavor
 - Regular or low-calorie, added calcium, or other vitamins or minerals
- **Milk**
 - White, chocolate, or other flavor
 - Whole, 2%, 1%, skim (nonfat)
- **Soda/Sparkling Water/Vitamin Waters**
 - Brand name
 - Sweetened/flavored or unsweetened/unflavored?
 - Regular or diet?
- **Water: tap or bottled**
 - Sports drinks, energy drinks
 - Brand name

Eggs

- Type? (scrambled, fried, boiled)
- Any additions? (cheese, meat, ketchup, salsa)

Fast Foods

- Name of restaurant
- Name of food (Big Mac, BK Double Stacker, Pepperoni Pizza, etc.)
- Add anything or take anything off? (ketchup, mustard, lettuce, tomato, etc.)
- Size of order (small, medium, or large)

Fruits

- Kind? (orange, peach or banana, etc)
- Fresh, canned (heavy syrup, light syrup, water, or juice), or dried?
- Peeled, sliced, diced, or whole?

Frozen Meals

- Brand name and description of foods
- Package weight and amount eaten

Meat

- Type? (beef, pork, etc.)
- Cut (ground, ribs, chops, steak, etc.)
- Fat eaten or trimmed away
- Preparation (fried, baked, grilled, or broiled)
- Measurements including thickness, with or without bone
- Any additions? (ketchup, steak sauce, gravy, etc.)

Meat (continued)

- **Chicken**
 - Piece (breast, wing, thigh, drumstick, etc.) or type meat (light or dark)
 - Breading or coating? Skin eaten?
 - With or without bone?
 - Preparation (baked, stewed, barbequed, pan or deep-fried, etc.)
 - For nuggets, give number eaten; for chicken strips give number and measurements
 - Any additions? (BBQ sauce, gravy, etc.)
- **Fish/Shellfish**
 - Type? (tuna, catfish, sole, shrimp, bass, etc.)
 - Fresh, frozen, canned (oil or water pack)
 - Breaded or batter dipped
 - Preparation (fried, baked, broiled, or steamed)
 - Type of crab? (Alaskan, blue, softshell, etc.)
Give number of legs or whole crab
 - Any additions? (tartar sauce, melted butter, cocktail sauce, etc.)

Mixed Dishes / Recipes

- Name of dish or recipe (spaghetti, macaroni and cheese, Hamburger Helper, etc.)
- List and describe main ingredients
- Preparation (baked, fried, or stir-fried)
- Any sauce? (tomato, cream, soy, etc.)
- Any vegetables? Type?
- Any meat? Type?
- Noodles, rice, or potato?
- Any additions? (sour cream, hot sauce, cheese, etc.)

Rice / Pasta / Noodles / Spaghetti

- Rice: Type? (white, brown, convenience mix brand, Rice A Roni)
- Pasta/noodles: Type? (regular, or whole grain)
- Any additions? (butter, oil, gravy, sauce, cheese, etc.)

Salads

- Type? (green, pasta, tuna, chicken, coleslaw, bean, etc.)
- Type of lettuce? (iceberg, mixed greens, romaine, or spinach)
- Vegetables added? (cucumber, tomato, green beans, onion, corn, etc.)
- Any additions? (croutons, nuts, seeds, cheese, beans, meat, egg, etc.)
- Salad dressing? (see Spreads/Salad Dressings /Fats)

Sandwiches

- Kind of sandwich (grilled cheese, hamburger, tuna, peanut butter and jelly, etc.)
- List and describe all ingredients
- Type of bread? (roll, hamburger bun, sliced, white, whole wheat, etc.)
- Any additions? (ketchup, mayonnaise, butter, etc.) (see Spreads/Salad Dressings/Fats)
- Any vegetables? (lettuce, tomato, etc.)
- Any meat or cheese? Type?
- Lunch meats (regular, thin-sliced; regular, low-fat)
- Hot dogs (beef, pork, turkey, or chicken; regular, low-fat)
- Preparation (grilled, or boiled)

Snack Foods

- **Chips / Snack Foods / Crackers**
 - Brand name, package weight, or number, measure with cups or ruler
 - Type? (potato, tortilla, rice cakes, pork rinds, cheese curls, etc.)
 - Regular or baked?
 - Any additions? (dips, cheese spread or sauce, salsa, etc.)
- **Popcorn**
 - Type? (popped in pan with oil, air popped or microwaved regular or light, etc)
 - Brand name
 - Plain, butter-flavored, butter/margarine added?
 - Weight from bag, number of cups

Cheese

- Brand name, package weight, or measure with cups or ruler
- Type? (cheddar, American, Swiss, string, etc.)
- Regular or low-fat?

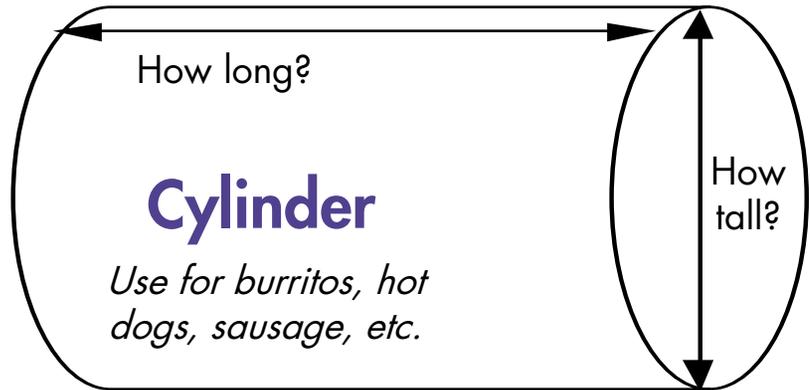
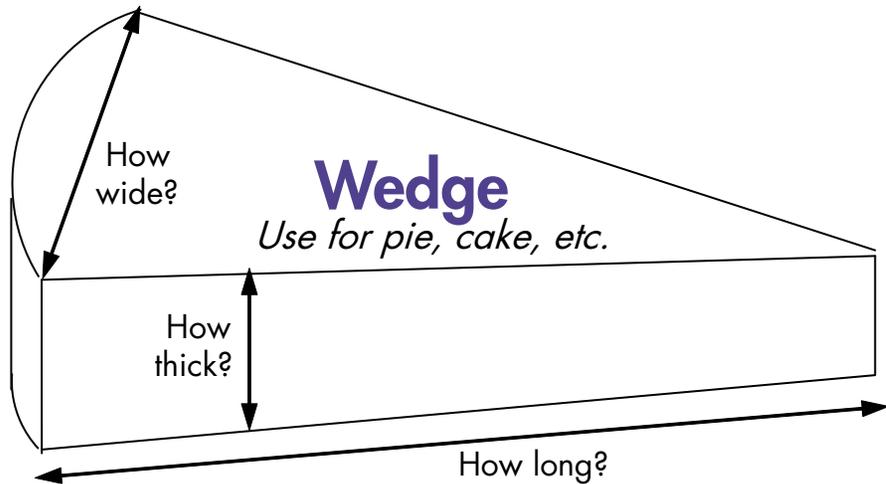
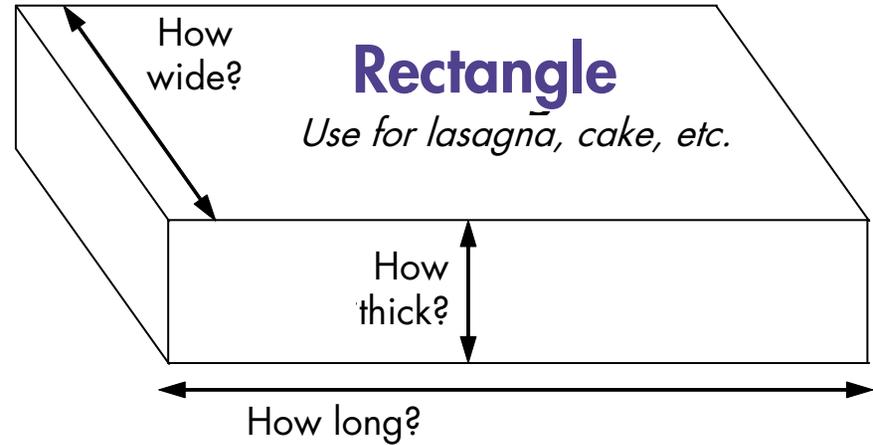
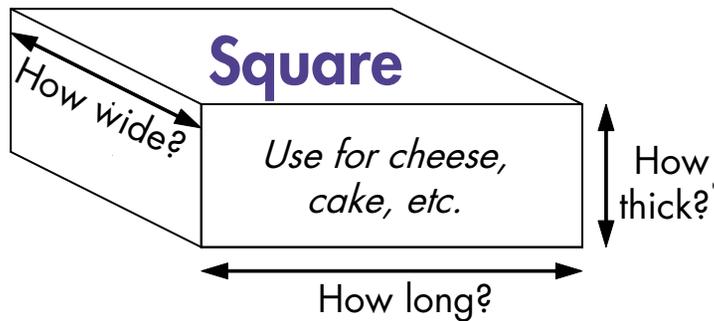
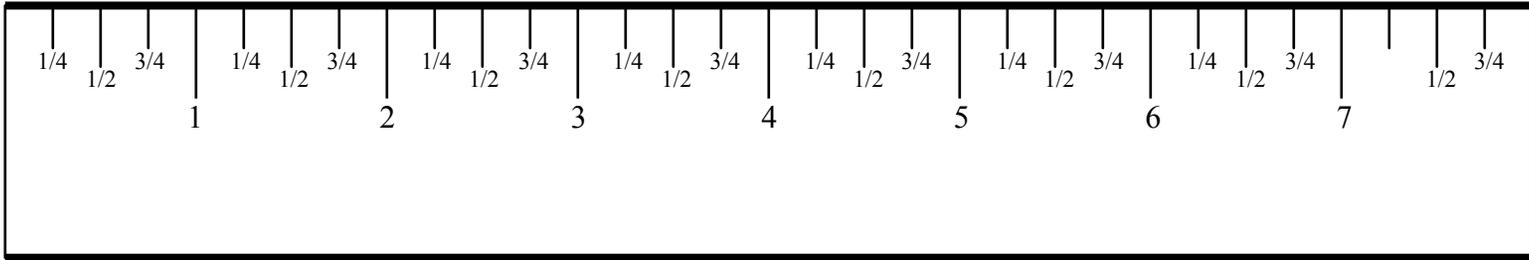
Spreads / Salad Dressings / Fats

- **Butter, Margarine**
 - Brand name
 - Butter (regular, whipped, butter/margarine blend)
 - Margarine (stick, tub, spray, or squeeze, regular, light, fat-free, etc.)
- **Mayonnaise**
 - Brand name
 - Type? (real or Miracle Whip-type; regular, low-fat)
 - Jelly/Sweet Spreads
 - Type? (jelly, jam, honey, chocolate spread, etc.)
- **Salad Dressing**
 - Type? (Ranch, French, Italian, etc.)
 - Store-bought (give brand name) or homemade (give ingredients if known)
 - Regular or low-fat
- **Shortening, Oil, Cooking Fats**
 - Brand name (Crisco, etc.)
 - Type? (canola, vegetable, olive, lard, pork fat, etc.)

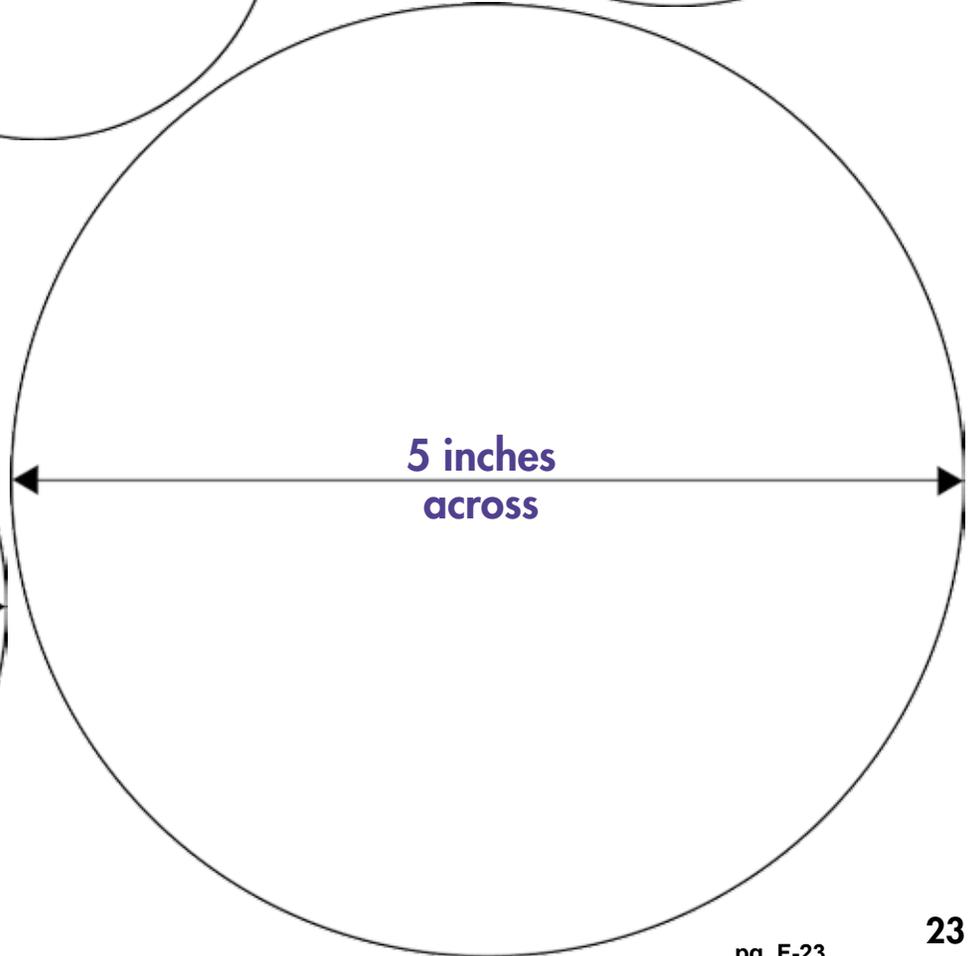
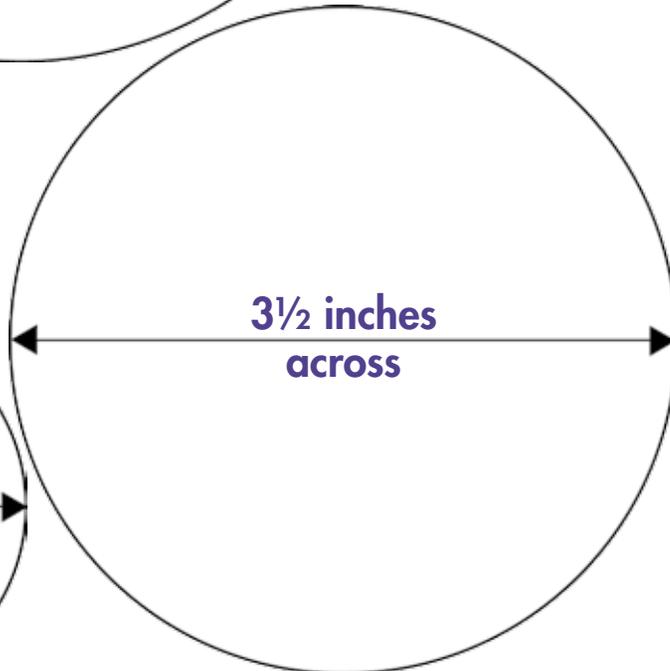
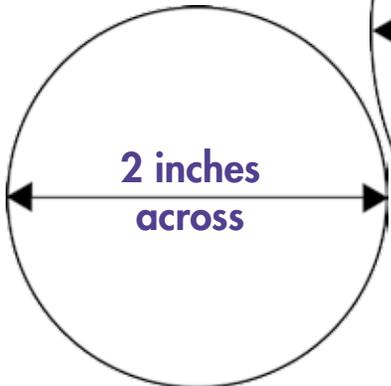
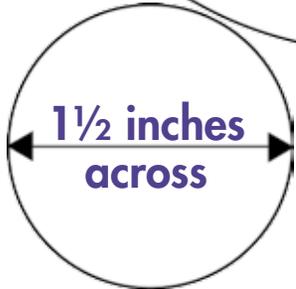
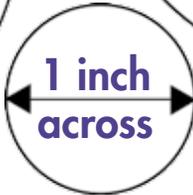
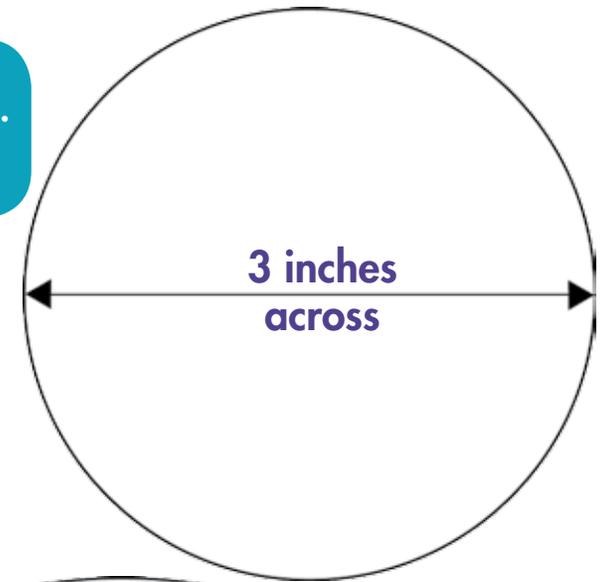
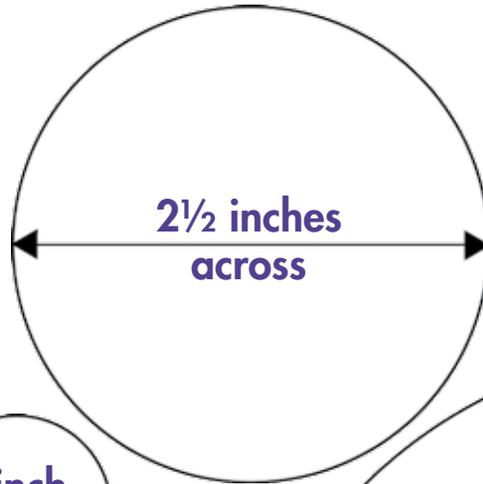
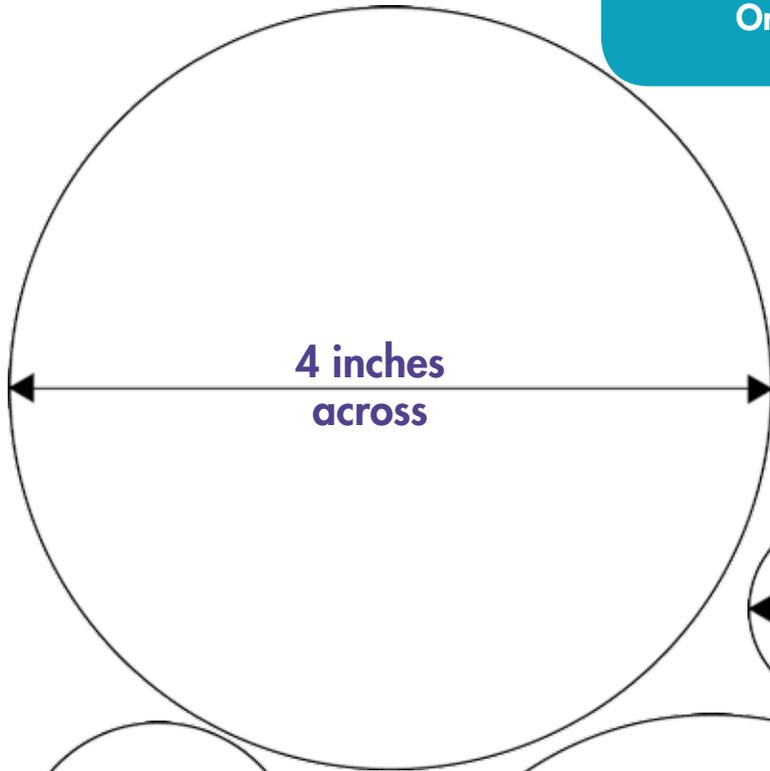
Vegetables / Beans

- Type of vegetable? (peas, green beans, corn, etc.)
- Peeled, sliced, diced, or whole?
- Type of beans? (pinto, kidney, blackeyed peas, refried, etc.)
- Preparation (boiled, microwaved, steamed, stir-fried, etc.)
- Canned, fresh, or frozen?
- Seasoned with meat? (bacon, ham hocks, etc.)
- Fat in preparation or at table? Type? (see Spreads/Salad/Dressings/Fats)
- Potatoes (with or without skin, mashed, boiled, roasted, or baked)
- French fries, hash browns, tater tots, etc.

Describe how much you ate or drank. Use the cups, spoons, and the drawings of the ruler or shape pictures to help. Or you may draw the size of the food on a blank page in this Diary.



Describe how much you ate or drank.
Use your ruler or these shapes to help you with sizes.
Or you may draw the size of the food
on a blank page in this Diary.



My Food Diary

What Do Students Eat?

Please answer the questions below by checking the box or filling in the blanks.

😊 This is not a test! There are **no** right or wrong answers. 😊

We want to know about *you* and what *you* like to eat.

Many of these questions are about the foods you ate or drank during the past 7 days (weekdays and weekend days). Think about all meals, snacks, and drinks you had each day and evening for all 7 days.

Be sure to include food you ate at home, school, restaurants, and anywhere else.

1. During the past 7 days, how many times did you drink any punch, Kool-Aid, sports drinks, energy drinks, vitamin water, or other fruit-flavored drinks? Do **NOT** count 100% fruit juice or soda. Mark only ONE box.



- ₁ I did not drink any fruit-flavored drinks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

2. During the past 7 days, how many times did you drink any regular (NOT diet) sodas or soft drinks? Mark only ONE box.



- ₁ I did not drink any regular (NOT diet) sodas during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

3. During the past 7 days, how many times did you drink any *diet sodas* or soft drinks? Mark only ONE box.



- ₁ I did not drink any DIET sodas or other soft drinks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

4. During the past 7 days, how many times did you drink any 100% fruit juices such as orange juice, apple juice, or grape juice? Do **NOT** count fruit punch, Kool-Aid, sports drinks, energy drinks, vitamin water or other fruit-flavored drinks. Mark only ONE box.



- ₁ I did not drink any 100% fruit juice during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

5. During the past 7 days, how many times did you eat any fruit? Include fresh, canned, frozen, and dried fruit. Do **NOT** count fruit juice. Mark only ONE box.



- ₁ I did not eat any fruit during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

6. During the past 7 days, how many times did you eat any green salad?

Mark only ONE box.



- ₁ I did not eat any green salad during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

7. During the past 7 days, how many times did you eat any French fries, fried potatoes, or chips?

Chips are potato chips, tortilla chips, Cheetos, puffs, corn chips, or other snack chips.

Mark only ONE box.



- ₁ I did not eat any French fries, fried potatoes, or chips during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

8. During the past 7 days, how many times did you eat any other salty snacks?

Other salty snacks include cheese nibs, Chex Mix, goldfish crackers, Ritz, or other snack chips.

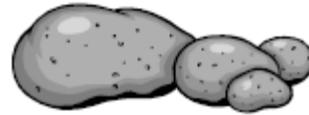
Mark only ONE box.



- ₁ I did not eat any other salty snacks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

➔ ➔ ➔ **Good job!**

9. During the past 7 days, how many times did you eat any other kinds of potatoes? Do **NOT** count French fries, fried potatoes, or potato chips. Mark only ONE box.



- ₁ I did not eat any potatoes during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

10. During the past 7 days, how many times did you eat carrots? Include cooked or raw carrots. Mark only ONE box.



- ₁ I did not eat any carrots during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

11. During the past 7 days, how many times did you eat any other vegetables? Include fresh, canned, and frozen vegetables. Do **NOT** count green salad, potatoes, or carrots. Mark only ONE box.



- ₁ I did not eat any other vegetables during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

12. During the past 7 days, how many times did you eat a frozen dessert?

A frozen dessert is a cold, sweet food like ice cream, sherbet, milk shake, frozen yogurt, an ice cream bar, or a popsicle. Mark only ONE box.



- ₁ I did not eat any frozen desserts during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

13. During the past 7 days, how many times did you eat sweet rolls, doughnuts, Pop Tarts, Twinkies, HoHos, cookies, brownies, pies or cake? Mark only ONE box.

- ₁ I did not eat things like cookies during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

14. During the past 7 days, how many times did you eat any candy?

Count chocolate candy, candy bars, jelly bellies, gummies, and Lifesavers. *Do NOT count* cookies or gum. Mark only ONE box.



- ₁ I did not eat things like cookies during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

15. In a usual school week (weekdays), how often do you eat the following school meals?
Mark only ONE box for each statement.

	Less than once a week or never	1 to 2 times a week	3 to 4 times a week	Every day
A. I usually eat the school lunch....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. I usually bring lunch from home....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. I usually eat the school breakfast....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

Your school offers free fresh fruit and vegetable snacks BETWEEN meals.

- 16a. When they are offered, how often do you usually take the free fresh FRUIT snack?
Mark only ONE box.

<input type="checkbox"/> ₁ Every time offered	<input type="checkbox"/> ₄ Never
<input type="checkbox"/> ₂ Most times offered	<input type="checkbox"/> ₅ Haven't seen it offered
<input type="checkbox"/> ₃ Occasionally	

- 16b. When they are offered, how often do you usually take the free fresh VEGETABLE snack?
Mark only ONE box.

<input type="checkbox"/> ₁ Every time offered	<input type="checkbox"/> ₄ Never
<input type="checkbox"/> ₂ Most times offered	<input type="checkbox"/> ₅ Haven't seen it offered
<input type="checkbox"/> ₃ Occasionally	

➔ ➔ ➔ ➔ ➔ ➔ You're half-way done already!

16c. If you take the free fresh FRUIT snack when it is offered, how much of it do you usually eat? Mark only ONE box.

₁ I usually eat all of it

₄ I don't usually eat any of it

₂ I usually eat most of it

₅ I don't usually take the free fresh fruit

₃ I usually eat some of it

16d. If you take the free fresh VEGETABLE snack when it is offered, how much of it do you usually eat? Mark only ONE box.

₁ I usually eat all of it

₄ I don't usually eat any of it

₂ I usually eat most of it

₅ I don't usually take the free fresh vegetables

₃ I usually eat some of it

16e. If you don't take the fruit or vegetable snacks when they are offered, why not?

Check ALL that apply.

₁ I already take them every time they are offered

₄ I don't like the look of the fruits and vegetables offered

₂ I don't like fruits and vegetables

₅ Another reason (please write why):

₃ I'm not hungry when they're offered

17a. Have you heard or seen any information around school about the free fresh fruit and vegetable snacks? Mark only ONE box.

₁ Yes ₂ No → If no, skip to question 18

17b. If you answered “yes” to question 17a, where did you see or hear the information?
Check ALL that apply.

₁ School cafeteria staff ₄ Teacher/classroom
 ₂ Announcement over the loudspeaker ₅ Other (please describe where)
 ₃ Posters around school _____

18. How much do you agree or disagree with the following statements?

Mark only ONE box for each statement.

	I agree very much 	I agree a little 	I disagree a little 	I disagree a lot 
A. I eat more fruits and vegetables on days when free fresh fruits and vegetable snacks are given at school than on other days	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. The free fresh fruits and vegetables they give us for school snacks look good and taste good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. I wish they would give us different kinds of fresh fruits and vegetables to eat for school snacks.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
D. On days when I eat a free fresh fruit or a vegetable snack at school, I don't eat other kinds of snacks.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
E. I hope the free fresh fruit and vegetable snack program continues at our school.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

19. If you could change *anything* about the free fresh fruit and vegetable snack program, what changes would *you* make?

20. How many servings of fruits and vegetables do you think are healthy to eat each day?
Mark only ONE box.

₁ At least 1 serving

₄ 5 servings or more

₂ 1-2 servings

₅ Don't know

₃ 3-4 servings

21. How much do you agree or disagree with each of the following statements?
Mark only ONE box for each statement.

	I agree very much 	I agree a little 	I disagree a little 	I disagree a lot 
A. I like most fruits	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. I like most vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. I like to try new kinds of fruits	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
D. I like to try new kinds of vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ Not long now!

22. For each fresh fruit or vegetable, mark how much you like it. Even if you can't eat one of these foods now (for example, if you have braces or for some other reason), answer whether you like or don't like it. Mark only ONE box for each fruit or vegetable.

	Like It A Lot 😊😊	Like It A Little 😊	Don't Like It 😞	Don't Know or Never Tasted It ?
A. Apples	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
B. Bananas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
C. Strawberries	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
D. Kiwi Fruits	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
E. Oranges	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
F. Pears	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
G. Grapes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
H. Cantaloupe	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
I. Peaches	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
J. Pineapple	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
K. Plums	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
L. Watermelon	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
M. Nectarines	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
N. Blueberries	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

22. (Continued.) For each fresh fruit or vegetable, mark how much you like it.

Mark only ONE box for each fruit or vegetable.

	Like It A Lot 😊😊	Like It A Little 😊	Don't Like It 😞	Don't Know or Never Tasted It ?
O. Tomatoes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
P. Carrots	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Q. Bell peppers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
R. Zucchini	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
S. Celery	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
T. Broccoli	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
U. Cauliflower	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
V. Cucumbers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
W. Lettuce	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
X. Snow peas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

You're nearly finished! We've just got a couple of questions to ask about *you*...

23. Are you Hispanic or Latino? ₁ Yes ₂ No**24. How do you describe yourself? Mark all that apply.** ₁ American Indian or Alaska Native ₂ Asian ₃ Black or African American ₄ Native Hawaiian or Other Pacific Islander ₅ White**25. What language do you use with your parents most of the time?** ₁ English ₂ Spanish ₃ Other (please describe) _____

Thank you for your help with this questionnaire!



You're done!

What Do Students Eat?

Please answer the questions below by checking the box or filling in the blanks.

😊 This is not a test! There are **no** right or wrong answers. 😊

We want to know about *you* and what *you* like to eat.

Many of these questions are about the foods you ate or drank during the past 7 days (weekdays and weekend days). Think about all meals, snacks, and drinks you had each day and evening for all 7 days.

Be sure to include food you ate at home, school, restaurants and anywhere else.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

1. During the past 7 days, how many times did you drink any punch, Kool-Aid, sports drinks, energy drinks, vitamin water, or other fruit-flavored drinks? Do **NOT** count 100% fruit juice or soda. Mark only ONE box.



- ₁ I did not drink any fruit-flavored drinks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

2. During the past 7 days, how many times did you drink any regular (NOT diet) sodas or soft drinks? Mark only ONE box.



- ₁ I did not drink any regular (NOT diet) sodas during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

3. During the past 7 days, how many times did you drink any diet sodas or soft drinks? Mark only ONE box.



- ₁ I did not drink any DIET sodas or other soft drinks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

4. During the past 7 days, how many times did you drink any 100% fruit juices such as orange juice, apple juice, or grape juice? Do **NOT** count fruit punch, Kool-Aid, sports drinks, energy drinks, vitamin water or other fruit-flavored drinks. Mark only ONE box.



- ₁ I did not drink any 100% fruit juice during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

5. During the past 7 days, how many times did you eat any fruit? Include fresh, canned, frozen, and dried fruit. Do **NOT** count fruit juice. Mark only ONE box.



- ₁ I did not eat any fruit during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

6. During the past 7 days, how many times did you eat any green salad? Mark only ONE box.



- ₁ I did not eat any green salad during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

➔ ➔ ➔ **Good job!**

7. **During the past 7 days, how many times did you eat any French fries, fried potatoes, or chips?** Chips are potato chips, tortilla chips, Cheetos, puffs, corn chips, or other snack chips. Mark only ONE box.



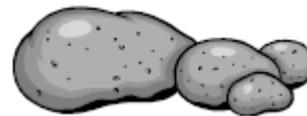
- ₁ I did not eat any French fries, fried potatoes, or chips during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

8. **During the past 7 days, how many times did you eat any other salty snacks?** Other salty snacks include cheese nibs, Chex Mix, goldfish crackers, Ritz, or other snack chips. Mark only ONE box.



- ₁ I did not eat any other salty snacks during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

9. **During the past 7 days, how many times did you eat any other kinds of potatoes?** Do **NOT** count French fries, fried potatoes, or potato chips. Mark only ONE box.



- ₁ I did not eat any potatoes during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

10. During the past 7 days, how many times did you eat carrots? Include cooked or raw carrots. Mark only ONE box.



- ₁ I did not eat any carrots during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

11. During the past 7 days, how many times did you eat any other vegetables? Include fresh, canned, and frozen vegetables. *Do NOT count* green salad, potatoes, or carrots. Mark only ONE box.



- ₁ I did not eat any other vegetables during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

12. During the past 7 days, how many times did you eat a frozen dessert? A frozen dessert is a cold, sweet food like ice cream, sherbet, milk shake, frozen yogurt, an ice cream bar, or a popsicle. Mark only ONE box.



- ₁ I did not eat any frozen desserts during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

13. During the past 7 days, how many times did you eat sweet rolls, doughnuts, Pop Tarts, Twinkies, HoHos, cookies, brownies, pies or cake? Mark only ONE box.



- ₁ I did not eat things like cookies during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

14. During the past 7 days, how many times did you eat any candy? Count chocolate candy, candy bars, gummies, jelly bellies, and Lifesavers. Do NOT count cookies or gum. Mark only ONE box.



- ₁ I did not eat things like cookies during the past 7 days
- ₂ 1 to 3 times during the past 7 days ₅ 2 times per day
- ₃ 4 to 6 times during the past 7 days ₆ 3 times per day
- ₄ 1 time per day ₇ 4 or more times per day

15. In a usual school week (weekdays), how often do you eat the following schoolmeals?
Mark only ONE box for each statement.

	Less than once a week or never	1 to 2 times a week	3 to 4 times a week	Every day
A. I usually eat the school lunch....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. I usually bring lunch from home....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. I usually eat the school breakfast....	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

16. How many servings of fruits and vegetables do you think are healthy to eat each day?
Mark only ONE box.

<input type="checkbox"/> ₁ At least 1 serving	<input type="checkbox"/> ₄ 5 servings or more
<input type="checkbox"/> ₂ 1-2 servings	<input type="checkbox"/> ₅ Don't know
<input type="checkbox"/> ₃ 3-4 servings	

17. How much do you agree or disagree with each of the following statements?
Mark only ONE box for each statement.

	I agree very much 	I agree a little 	I disagree a little 	I disagree a lot 
A. I like most fruits	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. I like most vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. I like to try new kinds of fruits	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
D. I like to try new kinds of vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

➔ ➔ ➔ ➔ ➔ ➔ You're getting close....

18. For each fresh fruit or vegetable, mark how much you like it. Even if you can't eat one of these foods now (for example, if you have braces or for some other reason), answer whether you like or don't like it. Mark only ONE box for each fruit or vegetable.

	Like It A Lot 😊😊	Like It A Little 😊	Don't Like It 😞	Don't Know or Never Tasted It ?
A. Apples	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
B. Bananas	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
C. Strawberries	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
D. Kiwi Fruits	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
E. Oranges	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
F. Pears	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
G. Grapes	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
H. Cantaloupe	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
I. Peaches	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
J. Pineapple	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
K. Plums	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
L. Watermelon	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
M. Nectarines	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

Student Survey

18. (Continued.) For each fresh fruit or vegetable, mark how much you like it.

Mark only ONE box for each fruit or vegetable.

	Like It A Lot 😊😊	Like It A Little 😊	Don't Like It 😞	Don't Know or Never Tasted It ?
N. Blueberries	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
O. Tomatoes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
P. Carrots	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Q. Bell peppers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
R. Zucchini	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
S. Celery	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
T. Broccoli	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
U. Cauliflower	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
V. Cucumbers	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
W. Lettuce	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
X. Snow peas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

You're nearly finished! We've just got a couple of questions to ask about you...

19. Are you Hispanic or Latino? ₁ Yes ₂ No**20. How do you describe yourself? Mark all that apply.** ₁ American Indian or Alaska Native ₂ Asian ₃ Black or African American ₄ Native Hawaiian or Other Pacific Islander ₅ White**21. What language do you use with your parents most of the time?** ₁ English ₂ Spanish ₃ Other (please describe) _____

Thank you for your help with this survey!

➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ ➔ You're done! 😊

Parent Survey

This is not a test! There are **no** right or wrong answers.
 Your child’s elementary school provides **free fresh fruits & vegetables**
 to students as snacks—separate from the school meal (breakfast or lunch).
 Think about **this school year** and please mark **one answer** (☒)
 for each question or statement below.

My child’s first name: _____

1. My child likes to eat the free fresh fruit and vegetable snacks offered at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
2. My child eats more fruits and vegetables since they have been offered as a free snack at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
3. My child complains about the quality of the free fresh fruits and vegetables offered at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
4. My child gets tired of the same kinds of free fresh fruits and vegetables offered at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
5. My child eats fewer unhealthy foods on days when fresh fruits and vegetables are offered as a free snack at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
6. My child has asked for fruits and vegetables at home more often since they have been offered as a free snack at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable
7. I encourage my child to eat the free fresh fruit and vegetable snacks offered at school.	<input type="checkbox"/> ₁ Rarely or never	<input type="checkbox"/> ₂ Some of the time	<input type="checkbox"/> ₃ Most of the time	<input type="checkbox"/> ₄ All of the time	<input type="checkbox"/> ₅ Don't know or not applicable

(continued on back)

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8. I don't like it when **teachers take time from class** to give out the free fresh fruit and vegetable snacks to children.

₁
Agree
Strongly

₂
Agree
Somewhat

₃
Disagree
Somewhat

₄
Disagree
Strongly

₅
Don't know or
not applicable

9. The fresh fruit and vegetable snacks at school should be offered **more frequently**.

₁
Agree
Strongly

₂
Agree
Somewhat

₃
Disagree
Somewhat

₄
Disagree
Strongly

₅
Don't know or
not applicable

10. **Overall**, I think the free fresh fruit and vegetable snack program is **good**.

₁
Agree
Strongly

₂
Agree
Somewhat

₃
Disagree
Somewhat

₄
Disagree
Strongly

₅
Don't know or
not applicable

11. If you could **change one thing** about the free fruit and vegetable snack program it would be: *(Please write in)*

12. Has your child **attended this school** since the beginning of the current school year (2010-2011)?

₁
Yes

₂
No

13. What does your child **usually** do for **breakfast** on school days?

₁
Eats
breakfast
at home

₂
Brings
breakfast
from home

₃
Eats a
school
breakfast

₄
Eats
breakfast
someplace else

₅
Does
not eat
breakfast

14. What does your child **usually** do for **lunch** on school days?

₁
Eats
lunch at
home

₂
Brings
lunch
from home

₃
Eats a
school
lunch

₄
Eats lunch
someplace else

₅
Does
not eat
lunch

15. Does your child receive **free or reduced price meals** at school?

₁
Yes, receives
FREE meals

₂
Yes, receives
REDUCED PRICE
meals

₃
No

₄
Don't know

16. Is your child **Hispanic or Latino**?

₁
Yes

₂
No

17. How would you describe your child? **Please mark all that apply**.

₁
American
Indian or
Alaska Native

₂
Asian

₃
Black or
African
American

₄
Native
Hawaiian or
Other Pacific
Islander

₅
White

Thank you for your help!

Parent Survey

This is not a test! There are **no** right or wrong answers.
Think about **this school year** and please mark **one answer** (☒)
for each question or statement below.

My child's first name: _____

1. Has your child attended this school since the beginning of the current school year (2010-2011)?	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No			
2. What does your child usually do for breakfast on school days?	<input type="checkbox"/> ₁ Eats breakfast at home	<input type="checkbox"/> ₂ Brings breakfast from home	<input type="checkbox"/> ₃ Eats a school breakfast	<input type="checkbox"/> ₄ Eats breakfast someplace else	<input type="checkbox"/> ₅ Does not eat breakfast
3. What does your child usually do for lunch on school days?	<input type="checkbox"/> ₁ Eats lunch at home	<input type="checkbox"/> ₂ Brings lunch from home	<input type="checkbox"/> ₃ Eats a School lunch	<input type="checkbox"/> ₄ Eats lunch someplace else	<input type="checkbox"/> ₅ Does not eat lunch
4. Does your child receive free or reduced price meals at school?	<input type="checkbox"/> ₁ Yes, receives FREE meals	<input type="checkbox"/> ₂ Yes, receives REDUCED PRICE meals	<input type="checkbox"/> ₃ No	<input type="checkbox"/> ₄ Don't know	
5. Is your child Hispanic or Latino ?	<input type="checkbox"/> ₁ Yes	<input type="checkbox"/> ₂ No			
6. How would you describe your child? Please mark all that apply.	<input type="checkbox"/> ₁ American Indian or Alaska Native	<input type="checkbox"/> ₂ Asian	<input type="checkbox"/> ₃ Black or African American	<input type="checkbox"/> ₄ Native Hawaiian or Other Pacific Islander	<input type="checkbox"/> ₅ White

Thank you for your help!

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Teacher Survey

Your elementary school provides **free fresh fruits & vegetables** to students as snacks— separate from the school meal (breakfast or lunch). Below are statements or questions about the free fresh fruit and vegetable snack program (FFVP).

Thinking about **this school year** and the students **in your classroom**, please mark **one answer** () for each question or statement below, unless indicated otherwise.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't Know or not applicable
1. Students like the FFVP fruits .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. Students like the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. I wish more students took the FFVP fruits .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
4. I wish more students took the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
5. Students eat more fruits and vegetables at school on FFVP days.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
6. Students eat fewer unhealthy snacks at school on FFVP days.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
7. <i>If not offered daily</i> , the FFVP should be offered more days during the week .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
8. The FFVP should be offered more times a day .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
9. I wish the FFVP fruits were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
10. I wish the FFVP vegetables were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
11. I think the variety of FFVP fruits is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
12. I think the variety of FFVP vegetables is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

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	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't Know or not applicable
13. I think students benefit from the FFVP.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
14. I think the FFVP is NOT worth the effort it takes .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
15. My overall opinion of FFVP is favorable.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
16. I would like FFVP to continue in my school.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
17. If I could change one thing about the free fruit and vegetable snack program it would be: <i>(Please write in)</i>	_____				
18. How much of the fruits provided in the FFVP do students usually eat?	<input type="checkbox"/> ₁ All or most (>75%)	<input type="checkbox"/> ₂ Much (50-75%)	<input type="checkbox"/> ₃ Some (25-49%)	<input type="checkbox"/> ₄ Little or none (<25%)	<input type="checkbox"/> ₅ Don't know or not applicable
19. How much of the vegetables provided in the FFVP do students usually eat?	<input type="checkbox"/> ₁ All or most (>75%)	<input type="checkbox"/> ₂ Much (50-75%)	<input type="checkbox"/> ₃ Some (25-49%)	<input type="checkbox"/> ₄ Little or none (<25%)	<input type="checkbox"/> ₅ Don't know or not applicable
20. I provide nutrition education or food-related activities to students.	<input type="checkbox"/> ₁ Daily or almost daily	<input type="checkbox"/> ₂ Weekly or almost weekly	<input type="checkbox"/> ₃ Monthly or almost monthly	<input type="checkbox"/> ₄ A few times per year	<input type="checkbox"/> ₅ Rarely or never
21. I verbally encourage the students to eat the FFVP snacks.	<input type="checkbox"/> ₁ Daily or almost daily	<input type="checkbox"/> ₂ Weekly or almost weekly	<input type="checkbox"/> ₃ Monthly or almost monthly	<input type="checkbox"/> ₄ A few times per year	<input type="checkbox"/> ₅ Rarely or never
22. Which 3 fruits do students like best in the FFVP? <i>(Please write in)</i>	_____				<input type="checkbox"/> ₄ Don't know
23. Which 3 fruits do students like least in the FFVP? <i>(Please write in)</i>	_____				<input type="checkbox"/> ₄ Don't know
24. Which 3 vegetables do students like best in the FFVP? <i>(Please write in)</i>	_____				<input type="checkbox"/> ₄ Don't know
25. Which 3 vegetables do students like least in the FFVP? <i>(Please write in)</i>	_____				<input type="checkbox"/> ₄ Don't know

26. Which of the following factors is a challenge of the FFVP?	Major Challenge	Minor Challenge	Not a Challenge	Don't Know
a) Students don't like fruits & vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
b) Students waste too much	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
c) Messy to distribute and clean up	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
d) Inadequate teacher training or information	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
e) Inadequate teacher time	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
f) Class time interrupted or taken away from student learning	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
g) Students don't like to try new fruits & vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
h) Inadequate quality of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
i) Inadequate variety of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
j) Inadequate amounts of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
k) Other (<i>Please write in</i>)	<hr/> <hr/>			

27. Which of the following factors is a benefit of the FFVP?	Major Benefit	Minor Benefit	Not a Benefit	Don't Know
a) Students eat more fruits & vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
b) Students are more willing to try new fruits & vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
c) Students learn about healthy foods	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
d) Students eat fewer unhealthy foods	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
e) Improved student behavior	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
f) Other (<i>Please write in</i>)	<hr/> <hr/>			

Thank you for your help!

SCHOOL FOODSERVICE STAFF SURVEY

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Your elementary school provides **free fresh fruits and vegetables** to students as snacks – separate from the school meal (breakfast or lunch). Below are statements or questions about the free fresh fruit and vegetable snack program (**FFVP**). Thinking about **this school year and the students at your school**, please mark only **one** response to each statement or question, unless instructed otherwise.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't know or does not apply
1. Students like the FFVP fruits .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
2. Students like the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
3. I wish more students took the FFVP fruit .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
4. I wish more students took the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
5. Students eat more fruits and vegetables at school on FFVP days.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
6. Students eat fewer unhealthy snacks at school on FFVP days.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
7. <i>If not offered daily</i> , the FFVP should be offered more days during the week .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
8. The FFVP should be offered more times a day .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
9. I wish the FFVP fruits were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
10. I wish the FFVP vegetables were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
11. I think the variety of FFVP fruits is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
11. I think the variety of FFVP vegetables is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
12. We sometimes run out of FFVP produce and can't serve all of the children.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
13. I am satisfied with how we distribute FFVP produce to students.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
14. I think the FFVP is NOT worth the effort it takes .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
15. I would like FFVP to continue in my school.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

17. How much of the fruits provided in the FFVP do students usually eat?	<input type="checkbox"/> ₁ All or most (>75%)	<input type="checkbox"/> ₂ Much (50-75%)	<input type="checkbox"/> ₃ Some (25-49%)	<input type="checkbox"/> ₄ Little or none (<25%)	<input type="checkbox"/> ₅ Don't know
18. How much of the vegetables provided in the FFVP do students usually eat?	<input type="checkbox"/> ₁ All or most (>75%)	<input type="checkbox"/> ₂ Much (50-75%)	<input type="checkbox"/> ₃ Some (25-49%)	<input type="checkbox"/> ₄ Little or none (<25%)	<input type="checkbox"/> ₅ Don't know
19. Students eat less at school breakfast because of FFVP.	<input type="checkbox"/> ₁ All of the time	<input type="checkbox"/> ₂ Much of the time	<input type="checkbox"/> ₃ Some of the time	<input type="checkbox"/> ₄ Rarely or never	<input type="checkbox"/> ₅ Don't know
20. Students eat less at school lunch because of FFVP.	<input type="checkbox"/> ₁ All of the time	<input type="checkbox"/> ₂ Much of the time	<input type="checkbox"/> ₃ Some of the time	<input type="checkbox"/> ₄ Rarely or never	<input type="checkbox"/> ₅ Don't know
21. Has the FFVP changed the fruits or vegetables that students take and eat at school lunch ?	<input type="checkbox"/> ₁ No	<input type="checkbox"/> ₂ Yes, fewer fruits & veggies	<input type="checkbox"/> ₃ Yes, more fruits & veggies	<input type="checkbox"/> ₄ Different kinds of fruits & veggies	<input type="checkbox"/> ₅ Don't know
22. Which 3 fruits do students like best in the FFVP? <i>(Please write in)</i>	_____	_____	_____		<input type="checkbox"/> ₁ Don't know
23. Which 3 fruits do students like least in the FFVP? <i>(Please write in)</i>	_____	_____	_____		<input type="checkbox"/> ₁ Don't know
24. Which 3 vegetables do students like best in the FFVP? <i>(Please write in)</i>	_____	_____	_____		<input type="checkbox"/> ₁ Don't know
25. Which 3 vegetables do students like least in the FFVP? <i>(Please write in)</i>	_____	_____	_____		<input type="checkbox"/> ₁ Don't know
26. During this current school year, how has the FFVP been promoted by foodservice staff ?	Never	1 to 6 times a year	Monthly or Nearly Monthly	Weekly or Nearly Weekly	Daily or Nearly Daily
a) Posters or displays	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
b) Fliers sent home	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
c) Taste tests for students	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
d) Nutrition education classes/instruction to students	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
e) Verbal encouragement of students	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
f) Loudspeaker announcements	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
g) Information to teachers on fruits and vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
h) Other <i>(please write in)</i>	_____				

27. Which of the following factors is a challenge of the FFVP?	Major Challenge	Minor Challenge	Not a Challenge	Don't Know
a) Students don't like fruits and vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
b) Students waste too much	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
c) Messy to distribute and clean up	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
d) Inadequate foodservice staff training or information	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
e) Inadequate foodservice staff time	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
f) Class time interrupted or taken away from student learning	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
g) Students don't like to try new fruits and vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
h) Inadequate quality of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
i) Inadequate variety of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
j) Inadequate amounts of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
k) Program requirements/regulations	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
l) Perishability of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
m) Inadequate kitchen facilities/storage space	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

28. Which of the following factors is a benefit of the FFVP?	Major Benefits	Minor Benefits	Not a Benefit	Don't Know
a) Students eat more fruits and vegetables	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
b) Students are more willing to try new foods	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
c) Students learn about healthy foods	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
d) Students eat fewer unhealthy foods	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄
e) Improved student behavior	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄

THANK YOU FOR COMPLETING THIS SURVEY!

School Food Environment Assessment – FFVP School

Date: _____ Time: _____ Observer ID# _____ School ID#: _____

A. FRESH FRUIT AND VEGETABLE PROGRAM (FFVP)

1. Where is FFVP **served to students**? (mark all that apply)

- Classroom (describe method of **service**) _____
- Cafeteria (describe method of **service**) _____
- Playground (describe method of **service**) _____
- Other (specify all that apply)
- Vending machine Kiosk Hallway Food cart
 School store Snack Bar Office Other: _____

2. Number of **points of service** (distinct places where distributed to students):

- Not applicable **OR**
- One Two Three Four Five Other: _____

3. **Service lines:**

- Not applicable **OR** Line length (specify approx. # of students in longest lines) _____

Most of the time the lines are:

- Progressing steadily Progressing slowly Hardly moving

4. Where is FFVP **eaten**: (mark all that apply)

- Classroom Cafeteria
- Playground Other (specify location) _____

5. Who **serves to students**? (mark all that apply)

- Foodservice staff Student helpers
- Parents Other (specify) _____
- Teachers

6. **Overall FFVP eating environment:** *(mark all that apply)*

- Cheerful, inviting Noisy, chaotic
 Clean, well-maintained Dirty, dingy, not well-maintained
 Organized, orderly Crowded, disorderly

On a scale of **One** *(most inviting, clean, organized and appealing)* to **Five** *(most unpleasant, dirty, chaotic and crowded)* **rate the appeal** of the eating environment:

- One (best) Two Three Four Five (worst)
-

7. **Nutrition promotion materials/education** present in the **FFVP eating area?** *(mark all that apply; circle those related to fruits or vegetables)*

- None Not applicable
 Nutrition posters #: _____ Staff providing education Taste testing
 Nutrition displays #: _____ Staff encouraging student Other: _____
-

8. **Overall, do the fresh fruits** look fresh, crisp, ripe, and otherwise in **good condition?** *(not wilted, brown, bruised, or over-ripe)*

- Yes Somewhat No Not served
-

9. **Overall, do the fresh vegetables** look fresh, crisp, ripe and otherwise in **good condition?** *(not wilted, brown, bruised, or over-ripe)*

- Yes Somewhat No Not served
-

10. Is a staff member **actively promoting fresh fruit or vegetable** choices?

- No Yes *(specify how)* _____

Who? Foodservice staff Teacher Principal

Other *(describe)* _____

11. Describe the overall **staff** *(foodservice, monitor, teacher, principal)* **attitude:**

- Engaging with students *(smiling, interactive, encouraging)*
 Neutral/Normal *(interact enough to process snack)*
 Impolite, impatient, or negative with students
 Unable to observe
-

12. How many of the students are **taking the fruit(s)**? Unable to observe or N/A

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

13. How many of the students are **taking the vegetable(s)**? Unable to observe or N/A

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

14. Are the students **eating the fruit(s) that they take**? Unable to observe or N/A

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

15. Are the students **eating the vegetable(s) that they take**? Unable to observe or N/A

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

16. If more than one type of fruit/vegetable is offered, which one(s) are **most frequently selected and eaten** by students? *(Note only those that are clearly more popular than others and confirm with staff.)*

Only one type offered

All options about equally popular

One or some more frequently selected and eaten than others
(list top three choices in order)

(1) _____, (2) _____, (3) _____

17. Pick up a copy of the current **FFVP menu**. Note any differences with actual foods served and any substitutions. *(mark all that apply)*

No difference

Different fruit offered *(write in substitution)* _____

Different vegetable offered *(write in substitution)* _____

Other *(describe)* _____

- Outdoor:** Cheerful, inviting Noisy, chaotic
 Clean, well-maintained Dirty, dingy, not well-maintained
 Organized, orderly Crowded, disorderly

On a scale of **One** (*most inviting, clean, organized and appealing*) to **Five** (*most unpleasant, dirty, chaotic and crowded*) rate the appeal of the **outdoor** serving/eating environment:

- One (best) Two Three Four Five (worst)

6. **Nutrition promotion materials/education** present in the **cafeteria?**

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: ____ Staff providing education Taste testing
 Nutrition displays #: ____ Staff encouraging student Other: _____

7. **Nutrition promotion materials/education** present in the **classroom?**

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: ____ Staff providing education Taste testing
 Nutrition displays #: ____ Staff encouraging student Other: _____

8. **Nutrition promotion materials/education** present at **other foodservice areas?**

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: ____ Staff providing education Taste testing
 Nutrition displays #: ____ Staff encouraging student Other: _____

9. **Overall**, do the **fresh fruits** look fresh, crisp, ripe and otherwise in **good condition?**

(not wilted, brown, bruised, or over-ripe)

- Yes Somewhat No Not served

10. **Overall**, do the **fresh vegetables** look fresh, crisp, ripe and otherwise in **good condition?** (not wilted, brown, bruised, or over-ripe)

- Yes Somewhat No Not served

11. Are the students **eating the fruit(s) that they take?** Unable to observe

Fresh fruit:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

Other fruit:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

12. Are the students **eating the vegetable(s) that they take?** Unable to observe

Fresh vegetable:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

Other vegetable:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

13. Pick up a copy of the current **lunch menu**. Note any differences with actual foods served and any substitutions. *(mark all that apply)*

No difference

Different fruit offered *(write in substitution)* _____

Different vegetable offered *(write in substitution)* _____

Other *(describe)* _____

School Food Environment Assessment – Non-FFVP School

Date: _____ Time: _____ Observer ID#: _____ School ID#: _____

A. FREE SNACK PROGRAM — IF INCLUDES FRESH FRUIT/VEGETABLES

Not applicable (skip to page 4)

1. Where is the free snack **served to student**? (mark all that apply)

Classroom (Describe method of **service**) _____

Cafeteria (Describe method of **service**) _____

Playground (Describe method of **service**) _____

Other (Specify all that apply)

Vending machine Kiosk Hallway Food cart

School store Snack Bar Office Other: _____

2. Number of **points of service** (distinct places where distributed to students):

Not applicable **OR**

One Two Three Four Five Other: _____

3. **Service lines:**

Not applicable **OR** Line length (specify approx. # of students in longest lines) _____

Most of the time the lines are:

Progressing steadily Progressing slowly Hardly moving

4. Where is the free snack **eaten**: (mark all that apply)

Classroom Cafeteria

Playground Other (specify location) _____

5. Who **serves to students**? (mark all that apply)

Foodservice staff Student helpers

Parents Other (specify) _____

Teachers

6. **Overall snack eating environment:** *(mark all that apply)*

- Cheerful, inviting Noisy, chaotic
 Clean, well-maintained Dirty, dingy, not well-maintained
 Organized, orderly Crowded, disorderly

On a scale of **One** *(most inviting, clean, organized and appealing)* to **Five** *(most unpleasant, dirty, chaotic and crowded)* **rate the appeal** of the eating environment:

- One (best) Two Three Four Five (worst)
-

7. **Nutrition promotion materials/education** present in the snack **eating area?** *(mark all that apply; circle those related to fruits or vegetables)*

- None Not applicable
 Nutrition posters #: _____ Staff providing education Taste testing
 Nutrition displays #: _____ Staff encouraging student Other: _____
-

8. **Overall**, do the **fresh fruits** look fresh, crisp, ripe, and otherwise in **good condition?** *(not wilted, brown, bruised, or over-ripe)*

- Yes Somewhat No Not served
-

9. **Overall**, do the **fresh vegetables** look fresh, crisp, ripe and otherwise in **good condition?** *(not wilted, brown, bruised, or over-ripe)*

- Yes Somewhat No Not served
-

10. Is a staff member **actively promoting fresh fruit or vegetable** choices?

- No Yes *(specify how)* _____

Who? Foodservice staff Teacher Principal

Other *(describe)* _____

11. Describe the overall **staff** *(foodservice, monitor, teacher, principal)* **attitude:**

- Engaging with students *(smiling, interactive, encouraging)*
 Neutral/Normal *(interact enough to process snack)*
 Impolite, impatient, or negative with students
 Unable to observe
-

12. How many of the students are **taking the fruit(s)**? Unable to observe or N/A
 Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

13. How many of the students are **taking the vegetable(s)**? Unable to observe or N/A
 Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

14. Are the students **eating the fruit(s) that they take**? Unable to observe or N/A
 Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

15. Are the students **eating the vegetable(s) that they take**? Unable to observe or N/A
 Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

16. If more than one type of fruit/vegetable is offered, which one(s) are **most frequently selected and eaten** by students? *(Note only those that are clearly more popular than others and confirm with staff.)*

- Only one type offered
- All options about equally popular
- One or some more frequently selected and eaten than others
(list top three choices in order)

(1) _____, (2) _____, (3) _____

17. Pick up a copy of the current **snack menu**. Note any differences with actual foods served and any substitutions. *(mark all that apply)*

- No difference
- Different fruit offered *(write in substitution)* _____
- Different vegetable offered *(write in substitution)* _____
- Other *(describe)* _____

One (best) Two Three Four Five (worst)

- Outdoor:** Cheerful, inviting Noisy, chaotic
 Clean, well-maintained Dirty, dingy, not well-maintained
 Organized, orderly Crowded, disorderly

On a scale of **One** (*most inviting, clean, organized and appealing*) to **Five** (*most unpleasant, dirty, chaotic and crowded*) rate the appeal of the **outdoor** serving/eating environment:

One (best) Two Three Four Five (worst)

6. Nutrition promotion materials/education present in the cafeteria?

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: _____ Staff providing education Taste testing
 Nutrition displays #: _____ Staff encouraging student Other: _____

7. Nutrition promotion materials/education present in the classroom?

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: _____ Staff providing education Taste testing
 Nutrition displays #: _____ Staff encouraging student Other: _____

8. Nutrition promotion materials/education present at other foodservice areas?

(mark all that apply; circle those related to fruits or vegetables)

- None Not applicable
 Nutrition posters #: _____ Staff providing education Taste testing
 Nutrition displays #: _____ Staff encouraging student Other: _____

9. Overall, do the fresh fruits look fresh, crisp, ripe and otherwise in good condition?

(not wilted, brown, bruised, or over-ripe)

- Yes Somewhat No Not served

10. Overall, do the fresh vegetables look fresh, crisp, ripe and otherwise in good condition?

(not wilted, brown, bruised, or over-ripe)

- Yes Somewhat No Not served

11. Are the students **eating the fruit(s) that they take?** Unable to observe

Fresh fruit:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

Other fruit:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

12. Are the students **eating the vegetable(s) that they take?** Unable to observe

Fresh vegetable:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

Other vegetable:

Most (76-100%) Some (51-75%) Few (25-50%) Very few (<25%)

13. Pick up a copy of the current **lunch menu**. Note any differences with actual foods served and any substitutions. *(mark all that apply)*

No difference

Different fruit offered *(write in substitution)* _____

Different vegetable offered *(write in substitution)* _____

Other *(describe)* _____

Fresh Fruit and Vegetable Program Evaluation

Principal Survey

Respondent contact information

School name and district: _____

Contact name: _____

Telephone number: _____

Your participation in this study is voluntary. There are no penalties if you do not participate. You can refuse to answer any question and may even stop the survey at any time. Your answers will be kept confidential to the fullest extent permitted by law and your name will not be identified with any answers you give. Your responses to this survey will be grouped with others like yours across the 704 schools participating in this study in the study report. The data files that result from this study will not contain any personal identifiers or any characteristics that would make it possible for specific schools to be identified.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

SCHOOL PRINCIPAL SURVEY FOR FFVP EVALUATION

Instructions for FFVP schools:

This survey is part of an evaluation of the USDA Fresh Fruit and Vegetable Program (FFVP) being conducted by Abt Associates for the USDA Food & Nutrition Service. We are interested in learning more about your school's participation in the FFVP and other nutrition programs and activities. **Please consult with other personnel in your school if needed to complete this questionnaire.**

Also, please note that for comparison purposes some questions ask about school activities **during the 2008-2009 school year**. Please feel free to consult any records or administrative data you have available to help you answer these questions.

Instructions non-FFVP schools:

This survey is part of an evaluation of the USDA Fresh Fruit and Vegetable Program (FFVP) being conducted by Abt Associates for the USDA Food & Nutrition Service. We are interested in learning more about how nutrition programs and activities in your school compare with those in schools in which the FFVP operates. **Please consult with other personnel in your school if needed to complete this questionnaire.**

Also, please note that for comparison purposes some questions ask about school activities **during the 2008-2009 school year**. Please feel free to consult any records or administrative data you have available to help you answer these questions.

E. Enrollment

E1. How many **total students** were enrolled in your school on or about October 1, 2008 and October 1, 2010?

	Total students enrolled on....	
<u>Grade levels</u>	<u>October 1, 2008</u>	<u>October 1, 2010</u>
Pre-school/Pre-Kindergarten		
Elementary (Fill in included grade levels:_____)		
Secondary (Fill in included grade levels:_____)		

E2. Is there any other information you would like to share with us about changes in enrollment in your school since 2008-2009?

N. Nutrition Education

The next question asks you to provide details about nutrition activities in your school during the week of [REFERENCE WEEK].

N1. Please check off **all grades** that participated in nutrition education or promotion activities at [SCHOOL NAME] for each **day and time** during [REFERENCE WEEK] in the chart below.

Nutrition education or promotion activities are **events** such as classroom instruction, demonstrations, hands-on learning, special speakers, or showing videos. **Do not** count here any nutrition education displays, such as posters or banners, or distributing media such as newsletters, etc.

	Monday	Tuesday	Wednesday	Thursday	Friday
No nutrition education activities occurred this day	<input type="checkbox"/>				
During school, before first lunch period	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade

<p>Between start of first lunch and end of last lunch</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>
<p>During school, after last lunch period</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>	<p><input type="checkbox"/> All grades If not all grades, check the grades below:</p> <p><input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade</p>

The next few questions ask you to consider the kinds of nutrition education and promotion activities that took place in your school during the last month, or in the four weeks ending in [REFERENCE WEEK].

N1a. Did your school have **any** nutrition education or promotion activities during the **three weeks before** [REFERENCE WEEK]?

- Yes
- No

[IF NO NUTRITION EDUCATION/PROMOTION ACTIVITY ON ANY DAY DURING REFERENCE WEEK OR PRIOR THREE WEEKS, SKIP TO N5.]

N2. What **message(s)** were conveyed by the nutrition education or promotion activities conducted during the four weeks ending in [REFERENCE WEEK] at your school? (Please check yes or no for each message listed.)

Message	Was the message conveyed by nutrition education or promotion activities during the last month?
Role of fresh fruits and vegetables in a complete diet	<input type="checkbox"/> Yes <input type="checkbox"/> No
Where fresh fruits and vegetables come from, links to local farms	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trying new foods, variety	<input type="checkbox"/> Yes <input type="checkbox"/> No
USDA MyPyramid food guidance system	<input type="checkbox"/> Yes <input type="checkbox"/> No
Eating lower fat foods more often	<input type="checkbox"/> Yes <input type="checkbox"/> No
Eating whole grains more often	<input type="checkbox"/> Yes <input type="checkbox"/> No
Eating lower sodium foods more often	<input type="checkbox"/> Yes <input type="checkbox"/> No
Eating higher fiber foods more often	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cooking with fresh fruits and vegetables	<input type="checkbox"/> Yes <input type="checkbox"/> No
Healthy weight and overweight	<input type="checkbox"/> Yes <input type="checkbox"/> No
Physical activity	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other message (Please specify: _____)	<input type="checkbox"/> Yes <input type="checkbox"/> No

N3. Did your school **coordinate** the specific foods discussed during nutrition education and promotion activities with specific foods offered during any of the following USDA programs? For example, dark green vegetables might be featured in a nutrition education class and in the lunch menu. (Please check all that apply.)

- USDA School Breakfast Program
- USDA National School Lunch Program
- USDA Fresh Fruit and Vegetable Program [FFVP schools only]
- USDA After-School Snack Program
- Other program (Please specify: _____)
- No, did not attempt to coordinate nutrition education and promotion activities with any USDA meals programs.

N4. What types of **professionals or volunteers** conduct or lead nutrition education or promotion activities in your school? Please check all that apply.

- Classroom teacher
- Principal or administrator
- Nutritionist or dietitian
- Doctor, nurse, or other health professional
- Trained non-professional
- Other (Please specify: _____)

N5. During the four weeks ending in [REFERENCE WEEK], did your school have any **displays**, such as posters or banners that conveyed nutrition education or promotion messages?

- Yes
- No [SKIP TO N6]

N5a. What **message(s)** were conveyed by the posters, displays, or similar media during the four weeks ending in [REFERENCE WEEK]? Please check all that apply.

- Role of fresh fruits and vegetables in a complete diet
- Where fresh fruits and vegetables come from, links to local farms
- Trying new foods, variety
- USDA MyPyramid food guidance system
- Eating lower fat foods more often
- Eating whole grains more often
- Eating lower sodium foods more often
- Eating higher fiber foods more often
- Cooking with fresh fruits and vegetables
- Healthy weight and overweight
- Physical activity
- Other messages. (Please specify: _____)

N6. During the four weeks ending in [REFERENCE WEEK], did your school distribute to students or parents any fliers, brochures, newsletters, or similar **media** that conveyed nutrition education or promotion messages?

- Yes
- No [SKIP TO N7]

N6a. What **message(s)** were conveyed by the fliers, brochures, newsletters, or similar media during the four weeks ending in [REFERENCE WEEK]? Please check all that apply.

- Role of fresh fruits and vegetables in a complete diet
- Where fresh fruits and vegetables come from, links to local farms
- Trying new foods, variety
- USDA MyPyramid food guidance system
- Eating lower fat foods more often
- Eating whole grains more often
- Eating lower sodium foods more often
- Eating higher fiber foods more often
- Cooking with fresh fruits and vegetables
- Healthy weight and overweight
- Physical activity
- Other messages. (Please specify: _____)

N7. During the 2010-2011 school year, is the **average time per week** spent on nutrition education in your school more than, less than, or about the same as **in the 2008-2009 school year**?

- More** than in 2008-2009
- Less** than in 2008-2009
- Same** as in 2008-2009
- Don't know

N8. Is there any other information you would like to share with us about nutrition education and promotion activities in your school?

N9. Please indicate what types of policies your school or school district has (if any) regarding the availability of **healthy food choices** when foods are offered to students outside of school meals. **Healthy food choices** are foods that meet school district or State standards for nutrient content, such as limits on fat, salt, or added sweeteners. Please check a response for each row below.

Type of occasion	Not applicable at my school	Allow only healthy food choices	Require at least some healthy food options	No policy on food choices
Foods sold on regular basis outside of school meals (snack bar, vending machines, school store, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods sold on special occasions during school (fund-raisers, festivals, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods sold before/after school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods offered free to students during school hours (parties, etc), not including snacks provided by a Federal, State, or district program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods given to individual students as rewards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

N10. Does your school have an **advisory/policy group** of parents, teachers/staff, or community members who provide input on the types of foods offered in the school?

- Yes
- No (SKIP TO C1)

N10a. Which of the following **types** of meals, snacks, and other food offerings does this advisory/policy group have input on? Please check all that apply.

- School Breakfast Program
- National School Lunch Program
- Fresh Fruit and Vegetable Program [FFVP schools only]
- Snacks for after-school program
- Other snacks provided by school
- Sales of foods outside of the above
- Other foods offered to students during school
- Other foods offered to students before/after school, on school grounds

C. Competitive foods module

In this section, we ask questions about **changes** in the sales of foods offered in **school-operated venues** since the 2008-2009 school year. School-operated venues **exclude** those that are operated by the school food service.

C1. Compared to the 2008-2009 school year, would you say that **sales of foods** from each of the following **venues operated by your school** have increased, decreased, or stayed about the same? (Please check one answer in each row.)

Please do **not** include sales for venues operated by your school food service. You may need to consult with someone who oversees these venues to answer this question.

	No sales from this venue in 2008-2009 or now	More sales from this venue since 2008-2009	About the same sales from this venue since 2008-2009	Less sales from this venue since 2008-2009	Venue eliminated after 2008-2009
Vending machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Snack bar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other school-operated venues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total food sales from school-operated venues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[IF NO SALES IN 2008-2009 OR NOW FROM ALL SOURCES LISTED, SKIP TO MODULE F.]

C2. Compared to the 2008-2009 school year, would you say your school now serves more, less, or about the same amount of the following **types of foods in school-operated venues**? (Check one response for each food.)

Please do **not** include sales for venues operated by your school food service. You may need to consult with someone who oversees these venues to answer this question.

Food category	This food not offered in 2008-2009 or now	More of this food since 2008-2009	About the same amount of this type of food	Less of this type of food since 2008-2009	Offered this food in 2008-2009, but do not offer this food now
100% fruit juice or 100% vegetable juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soda pop or fruit drinks that are not 100% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sports drinks, such as Gatorade®	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bottled water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole or 2% fat milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1% or skim milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bread sticks, rolls, bagels, pita bread, or other bread products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat or nonfat yogurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lettuce, vegetable, or bean salads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables with low-fat dip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Food category	This food not offered in 2008-2009 or now	More of this food since 2008-2009	About the same amount of this type of food	Less of this type of food since 2008-2009	Offered this food in 2008-2009, but do not offer this food now
Deep fried French fried potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oven baked French fried potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other kinds of candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty snacks that are low in fat, such as pretzels, baked chips, or other low-fat chips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty snacks that are not low in fat, such as regular potato chips or cheese puffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat or fat-free ice cream, frozen yogurt, or sherbet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice cream or frozen yogurt that is not low in fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C3. Is there any other information you would like to share with us about changes in types of food offered in school-operated venues since 2008-2009?

F. FFVP module [FFVP schools only]

F1. Does your school **on its own** maintain **relationships with any outside partners** as part of the FFVP? **Do not include district-wide partnerships.**

Also, please do **not** include suppliers from whom you **purchase** fresh fruits or vegetables or other supplies for the FFVP, unless they also separately donate items to the program **for free**.

F1a. Please check all partnerships that apply for your school, or “none” if your school does not maintain any partnerships.

- Produce for Better Health
- Healthcare providers, including hospitals and clinics; doctors, nurses, nutritionists, dietitians/dietetic interns, or other clinicians
- State, or Tribal government agency (e.g. health departments, agriculture departments, etc.)
- City, County or other local government agency (e.g. health departments, agriculture departments, etc.)
- Cooperative Extension Service
- Supermarkets, grocery stores, or other retail stores
- Farmers’ markets
- Food wholesalers or other food distributors
- Vocational clubs
- Produce associations/commodity groups
- Nutrition trade associations (e.g. American Dietetic Association, School Nutrition Associations)
- Health associations (e.g. State or National affiliates of the American Cancer, Diabetes, or Heart Associations)
- Universities, colleges, or other higher education institutions
- Community action agency, food bank, or other community/faith-based organization
- Other partner type (specify): _____
- Other partner type (specify): _____
- Other partner type (specify): _____
- None

F2. For each partner type you checked above, please indicate the **role** that partner played in implementing the FFVP in your school. If there is more than one partner of a specified type (such as two different clinics), please check all roles that apply for that group of partners.

	Partner 1	Partner 2	Partner N
Providing free nutrition education or promotion materials (print, video, audio, etc.)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing free instruction or demonstrations for students	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing fresh fruits and vegetables for free	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing other food (e.g., dips, condiments) for free	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing free supplies	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Free advising on nutrition education	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Free training for teachers/staff	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

O. Opinions about the FFVP [FFVP schools only]

This section asks your opinion about different aspects of your district’s Fresh Fruit and Vegetable Program. For each statement, decide if you agree or disagree and then whether you strongly or somewhat agree or disagree. There are no right or wrong answers. *Check the box that best fits your opinion.*

		Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't Know
O1.	I wish more students took the FFVP fruit .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O2.	I wish more students took the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O3.	<i>If not offered daily</i> , the FFVP should be offered more days during the week .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O4.	The FFVP should be offered more times a day .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O5.	I think the FFVP is NOT worth the effort it takes .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O6.	At least once a month I verbally encourage the students to eat FFVP produce.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O7.	I think students benefit from the FFVP.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O8.	I would like FFVP to continue in my school	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O9.	My overall opinion of FFVP is favorable.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O10.	If I could change one thing about the FFVP it would be:	(write in): _____				

O11. Which of the following factors is a **challenge or barrier** to providing fresh fruits and vegetables in the FFVP?

	Major Barrier	Minor Barrier	Not a Barrier
a) Student acceptance of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
b) Program requirements/regulations	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
c) Too much paperwork/documentation	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
d) Inadequate staff training	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
e) Inadequate staff time	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
f) Perishability of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
g) Inadequate quality of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
h) Inadequate variety of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
i) Inadequate amounts of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
j) Inadequate kitchen facilities	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
k) Lack of storage space/facilities	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
l) Disruption to class schedules	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
m) Other (write in)_____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃

Thank you for completing this survey!

Fresh Fruit and Vegetable Program Evaluation

SFA Director Survey

Respondent contact information

School district: _____

Contact name: _____

Telephone number: _____

Your participation in this study is voluntary. There are no penalties if you do not participate. You can refuse to answer any question and may even stop the survey at any time. Your answers will be kept confidential to the fullest extent permitted by law and your name will not be identified with any answers you give. Your responses to this survey will be grouped with others like yours across the 704 schools and associated SFAs participating in this study in the study report. The data files that result from this study will not contain any personal identifiers or any characteristics that would make it possible for specific SFAs or schools to be identified.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

SFA SURVEY FOR FFVP EVALUATION

Instructions for SFAs with FFVP schools:

This survey is part of an evaluation of the USDA Fresh Fruit and Vegetable Program (FFVP) being conducted by Abt Associates for the USDA Food & Nutrition Service. We are interested in learning more about your School Food Authority's participation in the FFVP, and about other related School Food Authority operations in your district.

This survey consists of two or more modules: one module is a set of district-level questions about the FFVP to be answered by you and your staff for selected schools in your district, and the other module(s) are a set of school-specific questions to be answered separately for the individual school(s) participating in the study. **We anticipate that you may need to consult with staff members from the listed school(s) to help you answer the school-specific questions as accurately as possible.**

Also, please note that for comparison purposes some questions ask about school and district activities **during the 2008-2009 school year**. Please feel free to consult any records or administrative data you have available to help you answer these questions.

Instructions for SFAs without FFVP schools:

This survey is part of an evaluation of the USDA Fresh Fruit and Vegetable Program (FFVP) being conducted by Abt Associates for the USDA Food & Nutrition Service. We are interested in learning more about how School Food Authority operations in your district compare with operations in districts that participate in the FFVP.

This survey includes a number of school-specific questions to be answered separately for the individual school(s) participating in the study. **We anticipate that you may need to consult with staff members from the listed school(s) to help you answer the school-specific questions as accurately as possible.**

Also, please note that for comparison purposes some questions ask about school and district activities **during the 2008-2009 school year**. Please feel free to consult any records or administrative data you have available to help you answer these questions.

DISTRICT-LEVEL QUESTIONS

M. Meal counts

M1. How many **total meals per month** were served to students in each listed school under the School Breakfast Program and National School Lunch Program? Please fill in meal counts for the most recent complete month and the two prior months, and the same three-month period during the 2008-2009 school year for comparison purposes.

Note: We understand that meal counts depend on a wide variety of factors, so we are also collecting data from other sources about school enrollment and related items in order to help us better understand any changes in meal counts over time that you may report.

School Breakfast Program meals served:

	2008-2009			2010-2011 (current school year)		
School	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
School 1						
School 2						
...						
School N						

National School Lunch Program meals served:

	2008-2009			2010-2011 (current school year)		
School	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
School 1						
School 2						
...						
School N						

M2. Is there anything else you would like to tell us about changes in meal counts for schools in your district since 2008-2009?

F. About the FFVP [SFAs with FFVP schools only]

The Fresh Fruit and Vegetable Program (FFVP) provides free fresh fruits and vegetables to students in participating schools in your district, outside of normal school-provided meals. This part of the survey asks you to provide information and opinions about the general administration and implementation of the FFVP in your district.

F1. In what school year did your district **first participate** in the FFVP?

- Before SY2008-2009
- 2008-2009
- 2009-2010
- 2010-2011

F2. Does your district maintain **relationships with any outside partners** as part of the FFVP in the current school year? Please include only **district-wide** partnerships for all FFVP schools, not relationships maintained by individual schools in your district.

Also, please do **not** include suppliers from whom you **purchase** fresh fruits or vegetables or other supplies for the FFVP, unless they also separately donate items to the program **for free**.

F2a. Please check all partnerships that apply for your district, or “none” if your district does not maintain any partnerships.

- Produce for Better Health
- Healthcare providers, including hospitals and clinics; doctors, nurses, nutritionists, dietitians/dietetic interns, or other clinicians
- State, or Tribal government agency (e.g. health departments, agriculture departments, etc.)
- City, County or other local government agency (e.g. health departments, agriculture departments, etc.)
- Cooperative Extension Service
- Supermarkets, grocery stores, or other retail stores
- Farmers’ markets
- Food wholesalers or other food distributors
- Vocational clubs
- Produce associations/commodity groups
- Nutrition trade associations (e.g. American Dietetic Association, School Nutrition Associations)
- Health associations (e.g. State or National affiliates of the American Cancer, Diabetes, or Heart Associations)
- Universities, colleges, or other higher education institutions
- Community action agency, food bank, or other community/faith-based organization
- Other partner type (specify): _____
- Other partner type (specify): _____
- Other partner type (specify): _____
- None

F2b. For each type of partner you checked above, please indicate the **role** that partner played in implementing the FFVP in your district. If there is more than one partner of a specified type (such as two different clinics), check roles that applied for any partner.

	Partner 1	Partner 2	...	Partner N
Providing free nutrition education or promotion materials (print, video, audio, etc.)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing free instruction or demonstrations for students	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing fresh fruits and vegetables for free	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing other food (e.g., dips, condiments) for free	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Providing free supplies	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Free advising on nutrition education	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Free training for teachers/staff	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other role (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

F3a. In a typical week, which of the following statements best describes the **relationship** of the fresh fruits or vegetables offered to students in schools in your district through the FFVP and the fruits or vegetables offered in those schools through the USDA **National School Lunch Program**? (Please check one statement only.)

- The specific fruits or vegetables offered by the FFVP each week are also **intentionally served** in National School Lunch Program meals in the same week.
- The specific fruits or vegetables offered by the FFVP each week are **intentionally avoided** in National School Lunch Program meals in the same week.
- No attempt** is made to coordinate the specific fruits or vegetables offered by the FFVP each week and those offered through the National School Lunch Program.

F3b. In a typical week, which of the following statements best describes the **relationship** of the fresh fruits or vegetables offered to students in schools in your district through the FFVP and the fruits or vegetables offered in those schools through the USDA **School Breakfast Program**? (Please check one statement only.)

- The specific fruits or vegetables offered by the FFVP each week are also **intentionally served** in School Breakfast Program meals in the same week.
- The specific fruits or vegetables offered by the FFVP each week are **intentionally avoided** in School Breakfast Program meals in the same week.
- No attempt** is made to coordinate the specific fruits or vegetables offered by the FFVP each week and those offered through the School Breakfast Program.

F4. Please indicate whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with the following statements about the FFVP **application** and **selection** process.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
a. The application process for the FFVP was easy to complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a1. If you disagree or strongly disagree, why?					
b. The State Agency provided clear and sufficient information about the application process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b1. If you disagree or strongly disagree, why?					
c. Our SFA had sufficient time to prepare applications for interested schools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c1. If you disagree or strongly disagree, why?					
d. The State Agency approved the specific schools where our SFA wanted to offer the FFVP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d1. If you disagree or strongly disagree, why?					
e. The school selection process for the FFVP was fair.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e1. If you disagree or strongly disagree, why?					

O. Opinions about the FFVP [SFAs with FFVP schools only]

This section asks your opinion about different aspects of your district’s Fresh Fruit and Vegetable Program. For each statement, decide if you agree or disagree and then whether you strongly or somewhat agree or disagree. There are no right or wrong answers.

		Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't Know
O1.	I wish more students took the FFVP fruit .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O2.	I wish more students took the FFVP vegetables .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O3.	<i>If not offered daily</i> , the FFVP should be offered more days during the week .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O4.	The FFVP should be offered more times a day .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O5.	I think the FFVP is NOT worth the effort it takes .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O6.	We sometimes run out of FFVP produce and can't serve all of the children.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O7.	I wish the FFVP fruits were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O8.	I wish the FFVP vegetables were better quality .	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O9.	I think the variety of FFVP fruits is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O10.	I think the variety of FFVP vegetables is good.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

		Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Don't Know
O11	I think students benefit from the FFVP.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O12	I would like FFVP to continue in my district.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O13	My overall opinion of FFVP is favorable.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
O14	If I could change one thing about the FFVP it would be:	<i>(write in):</i> _____				

O15. Which of the following factors is a **challenge or barrier** to implementing the FFVP in your district?

	Major Barrier	Minor Barrier	Not a Barrier
a) Student acceptance of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
b) Inadequate staff training	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
c) Inadequate staff time	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
d) Perishability of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
e) Inadequate quality of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
f) Inadequate variety of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
g) Inadequate amounts of FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
h) High prices for FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
i) Effort or cost of preparing FFVP produce	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
j) Lack of storage space/facilities	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
k) Rules for purchasing produce for FFVP	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
l) Restrictions on administrative cost	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
m) Amount of paperwork/documentation	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
n) Other program requirements/regulations	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃
o) Other (write in) _____	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃

O16. Are there any other thoughts or opinions about the FFVP you would like to share with us?

X. FFVP Claims [SFAs with FFVP schools only]

X1. For which of the following FFVP functions does your school district claim staff expenses as a cost? (Check all that apply.)

- Preparing fresh fruits and vegetables
- Serving fresh fruits and vegetables
- Cleaning up areas where fresh fruits and vegetables are served
- Training food service staff to operate the FFVP
- FFVP administration (purchasing, filing claims and reports, etc.)
- District pays contractor (such as food service management company or other vendor) a combined price for food and labor for FFVP
- None of the above – District does not claim any staff or contractor expenses as a cost of the FFVP

SCHOOL-SPECIFIC QUESTIONS

T. About this School

For comparison purposes, many questions in this section ask about the 2008-2009 school year. Please feel free to consult your records or administrative data, and/or to consult with staff from this school, to help you answer these questions as accurately as possible.

T1. According to our records, [SCHOOL NAME] does not currently participate in the FFVP during this current 2010-2011 school year. Has [SCHOOL NAME] **ever** participated in the FFVP in previous years? [*Non-FFVP schools only*]

- No, never participated in FFVP
- Yes, before 2008-2009
- Yes, in 2008-2009
- Yes, in 2009-2010

T2. We are interested in hearing about changes in the **types of fruits and vegetables** taken **in school breakfasts and lunches** by students over the past several years at [SCHOOL NAME].

T2a. **Compared to the 2008-2009 school year**, would you say you students now take more, less, or about the same amount of the following types of fruits and vegetables as part of the **School Breakfast Program** at [SCHOOL NAME]? (Check one response for each food.)

	More of this type of food since 2008-2009	About the same amount of this type of food	Less of this type of food since 2008-2009
Vegetables:			
Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruits:			
Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

T2b. **Compared to the 2008-2009 school year**, would you say students now take more, less, or about the same amount of the following types of fruits and vegetables as part of the **National School Lunch Program** at [SCHOOL NAME]? (Check one response for each food.)

	More of this food since 2008-2009	About the same amount of this type of food	Less of this type of food since 2008-2009
Vegetables:			
Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruits:			
Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

T2c. Have you changed the overall **variety of different types of fruits and vegetables** offered to students in school breakfasts or lunches at [SCHOOL NAME]? In particular....

T2c_i. Have you changed the overall **variety of different types of fruits and vegetables** offered to students through the **School Breakfast Program** since the 2008-2009 school year?

- Yes, offer **greater** variety of different types of fruits and vegetables since 2008-2009
- Yes, offer **less** variety of different types of fruits and vegetables since 2008-2009
- No, **no change** in variety of different types of fruits and vegetables since 2008-2009

T2c_ii. Have you changed the overall **variety of different types of fruits and vegetables** offered to students through the **National School Lunch Program** since the 2008-2009 school year?

- Yes, offer **greater** variety of fruits and vegetables since 2008-2009
- Yes, offer **less** variety of fruits and vegetables since 2008-2009
- No, **no change** in variety of fruits and vegetables since 2008-2009

T2d. Is there any other information you would like to share with us about changes in fruits and vegetables offered or taken as part of school breakfasts or lunches?

T3. Compared to the 2008-2009 school year, would you say that **sales** at [SCHOOL NAME] from each of the following **SFA-operated venues** have increased, decreased, or stayed about the same? (Please check only one box in each row. **Do not** include sales from sources **not operated by the SFA**.)

	No sales from this venue in 2008-2009 or now	More sales from this venue since 2008-2009	About the same sales from this venue since 2008-2009	Less sales from this venue since 2008-2009	Venue eliminated after 2008-2009
Vending machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A la carte foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Snack bar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other SFA-operated venues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total food sales outside USDA meals programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[IF NO SALES IN 2008-2009 OR NOW FROM ANY SOURCES LISTED IN T3, SKIP TO T4.]

T3a. Compared to the 2008-2009 school year, would you say students now take more, less, or about the same amount of the following types of foods in SFA-operated venues **outside of USDA school meals programs** at [SCHOOL NAME]? Please include sales from vending machines, a la carte foods, snack bars, and other SFA-operated venues. (Check one response for each food.)

Food category	No sales from this venue in 2008-2009 or now	More sales from this venue since 2008-2009	About the same sales from this venue since 2008-2009	Less sales from this venue since 2008-2009	Venue eliminated after 2008-2009
100% fruit juice or 100% vegetable juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soda pop or fruit drinks that are not 100% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sports drinks, such as Gatorade®	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bottled water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole or 2% fat milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1% or skim milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bread sticks, rolls, bagels, pita bread, or other bread products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat or nonfat yogurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lettuce, vegetable, or bean salads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables with low-fat dip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deep fried French fried potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oven baked French fried potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Food category	No sales from this venue in 2008-2009 or now	More sales from this venue since 2008-2009	About the same sales from this venue since 2008-2009	Less sales from this venue since 2008-2009	Venue eliminated after 2008-2009
Other vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other kinds of candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty snacks that are low in fat, such as pretzels, baked chips, or other low-fat chips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty snacks that are not low in fat, such as regular potato chips or cheese puffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat or fat-free ice cream, frozen yogurt, or sherbet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice cream or frozen yogurt that is not low in fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

T4. Please check the **USDA nutrition promotion programs** in which [SCHOOL NAME] has participated during the 2010-2011 school year. (Check all that apply.)

- Team Nutrition
- Healthier US Schools Challenge
- SNAP Nutrition Education
- Eat Smart, Play Hard
- Other USDA nutrition promotion program 1 (Please specify: _____)
- Other USDA nutrition promotion program 2 (Please specify: _____)
- Other USDA nutrition promotion program 3 (Please specify: _____)

T5. Does [SCHOOL NAME] offer **free snacks** to students, **other than** fresh fruit and vegetable snacks funded by the USDA Fresh Fruit and Vegetable Program? [highlighted phrase included only for FFVP schools]

- Yes
- No

[SKIP PATTERN: IF T5=No, SKIP TO NEXT SECTION]

T5a. To which **grade levels** are these non-FFVP free snacks offered by [SCHOOL NAME]? (Check all that apply.)

- Pre-school
- Pre-Kindergarten
- Kindergarten
- 1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- 7th grade
- 8th grade

T5b. At what **time of day** are these non-FFVP free snacks offered by [SCHOOL NAME]? (Check all that apply.)

- Before school
- After breakfast, before lunch
- After lunch, before end of school
- After school as part of USDA program
- After school, other

T5c. On how many **days per week** (in a full school week) are these non-FFVP free snacks usually offered by [SCHOOL NAME]?

- 1
- 2
- 3
- 4
- 5
- Number of times varies, unable to determine usual or average number of days per week

T5d. What **types of food** are these non-FFVP free snacks offered by [SCHOOL NAME]? (Check all that apply.)

- Fresh fruit
- Fresh vegetables
- Other fruit
- Other vegetables
- Bread/grain products
- Dairy products
- Other type of food 1 (Please specify: _____)
- Other type of food 2 (Please specify: _____)
- Other type of food 2 (Please specify: _____)

T5e. What is the **funding source** for these non-FFVP free snacks offered by [SCHOOL NAME]? (Check all that apply.)

- USDA
- State
- SFA
- Other funding source 1 (Please specify: _____)
- Other funding source 2 (Please specify: _____)
- Other funding source 3 (Please specify: _____)

S. About the FFVP in this School [SFAs with FFVP schools; one section per school]

This part of the survey asks about the operation of the Fresh Fruit and Vegetable Program at [SCHOOL NAME]. Several of the questions refer to the week of [REFERENCE WEEK]. If necessary, you may wish to consult with staff members from [SCHOOL NAME] to help you answer these questions as accurately as possible.

S1. Please indicate the school year in which [SCHOOL NAME] **first participated** in the FFVP.

- Before 2008-2009
- 2008-2009
- 2009-2010
- 2010-2011

[SKIP PATTERN: IF S1 RESPONSE WAS 2010-2011, SKIP TO S3].

S2. You indicated above that [SCHOOL NAME] participated in the FFVP prior to the current 2010-2011 school year. Have there been any **changes in FFVP implementation** by [SCHOOL NAME] in the current school year as compared to prior years?

Fruit and vegetable distribution methods (e.g., kiosk, classroom) for FFVP	<input type="checkbox"/> Added new distribution method(s) in 2010-2011	<input type="checkbox"/> Dropped distribution method(s) in 2010-2011	<input type="checkbox"/> No change in distribution methods
Time of day FFVP is offered	<input type="checkbox"/> Earlier time of day in 2010-2011	<input type="checkbox"/> Later time of day in 2010-2011	<input type="checkbox"/> No change in time of day
Number of days FFVP is offered	<input type="checkbox"/> More days in 2010-2011	<input type="checkbox"/> Fewer days in 2010-2011	<input type="checkbox"/> No change in number of days
Number of times per day FFVP is offered on FFVP days	<input type="checkbox"/> More times per day in 2010-2011	<input type="checkbox"/> Fewer times per day in 2010-2011	<input type="checkbox"/> No change in number of times per day
FFVP nutrition education and promotion activities	<input type="checkbox"/> More activities in 2010-2011	<input type="checkbox"/> Fewer activities in 2010-2011	<input type="checkbox"/> No change in number of activities
Involvement of outside partners in FFVP	<input type="checkbox"/> More involvement in 2010-2011	<input type="checkbox"/> Less involvement in 2010-2011	<input type="checkbox"/> No change in level of involvement
Variety of fruits and vegetables offered in FFVP	<input type="checkbox"/> More variety in 2010-2011	<input type="checkbox"/> Less variety in 2010-2011	<input type="checkbox"/> No change in variety
Total per-student quantity of fruits and vegetables served each month in FFVP	<input type="checkbox"/> More served in 2010-2011	<input type="checkbox"/> Less served in 2010-2011	<input type="checkbox"/> No change in quantity served

S3. **How** were fresh fruits or vegetables handed out or made available **to students** at [SCHOOL NAME] during the week of [REFERENCE WEEK] as part of the FFVP? Please check all distribution methods that apply.

- Inside classrooms
- School cafeteria
- Hallway
- Office (nurse, other)
- Cart/other mobile method
- Kiosks (A kiosk is a booth, window, counter, or similar location where food is distributed by a food service worker.)
- Snack bar
- School store
- Free vending machines
- Other method 1 (Please specify: _____)
- Other method 2 (Please specify: _____)
- Other method 3 (Please specify: _____)

S3a. **Besides** the distribution methods you indicated were used during the week of [REFERENCE WEEK], in the current school year does [SCHOOL NAME] ever distribute fresh fruits or vegetables **to students** via any other methods as part of the FFVP? Please check all distribution methods that apply.

- Inside classrooms
- School cafeteria
- Hallway
- Office (nurse, other)
- Cart/other mobile method
- Kiosks
- Snack bar
- School store
- Free vending machines
- Other method 1 (Please specify: _____)
- Other method 2 (Please specify: _____)
- Other method 3 (Please specify: _____)
- No other distribution methods used

S4. For each day of the week of [REFERENCE WEEK], please indicate (a) which grades of students were offered **fresh fruits or vegetables** (if any) **as part of the FFVP** before or after lunch. Then indicate (b) what type(s) of staff **supervised** this distribution and (c) **how long** fruits or vegetables were made available to students in each class. (If distribution was of shorter or longer duration for different grade levels, please report the average amount of time fruits or vegetables were made available for each grade level.)

	Monday	Tuesday	Wednesday	Thursday	Friday
No fresh fruits or vegetables offered to students as part of the FFVP on this day	<input type="checkbox"/>				
a1. Grades offered fresh fruits or vegetables during school, before lunch	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade
a2. Grades offered fresh fruits or vegetables during school, after lunch	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade	<input type="checkbox"/> All grades If not all grades, check the grades below: <input type="checkbox"/> Pre-school <input type="checkbox"/> Pre-kindergarten <input type="checkbox"/> Kindergarten <input type="checkbox"/> 1st grade <input type="checkbox"/> 2nd grade <input type="checkbox"/> 3rd grade <input type="checkbox"/> 4th grade <input type="checkbox"/> 5th grade <input type="checkbox"/> 6th grade <input type="checkbox"/> 7th grade <input type="checkbox"/> 8th grade

	Monday	Tuesday	Wednesday	Thursday	Friday
b. Type(s) of staff supervising distribution	<input type="checkbox"/> Teacher <input type="checkbox"/> Aide <input type="checkbox"/> Food service staff <input type="checkbox"/> Administrator <input type="checkbox"/> Other staff (Please specify: _____) <input type="checkbox"/> None of the above	<input type="checkbox"/> Teacher <input type="checkbox"/> Aide <input type="checkbox"/> Food service staff <input type="checkbox"/> Administrator <input type="checkbox"/> Other staff (Please specify: _____) <input type="checkbox"/> None of the above	<input type="checkbox"/> Teacher <input type="checkbox"/> Aide <input type="checkbox"/> Food service staff <input type="checkbox"/> Administrator <input type="checkbox"/> Other staff (Please specify: _____) <input type="checkbox"/> None of the above	<input type="checkbox"/> Teacher <input type="checkbox"/> Aide <input type="checkbox"/> Food service staff <input type="checkbox"/> Administrator <input type="checkbox"/> Other staff (Please specify: _____) <input type="checkbox"/> None of the above	<input type="checkbox"/> Teacher <input type="checkbox"/> Aide <input type="checkbox"/> Food service staff <input type="checkbox"/> Administrator <input type="checkbox"/> Other staff (Please specify: _____) <input type="checkbox"/> None of the above
c. Average minutes per class that fresh fruits/vegetables were available	_____ minutes per class <input type="checkbox"/> Or check here if don't know.	_____ minutes per class <input type="checkbox"/> Or check here if don't know.	_____ minutes per class <input type="checkbox"/> Or check here if don't know.	_____ minutes per class <input type="checkbox"/> Or check here if don't know.	_____ minutes per class <input type="checkbox"/> Or check here if don't know.

S5a. Which fresh fruits (if any) were distributed to students as part of the FFVP at [SCHOOL NAME] during [REFERENCE WEEK]? Please check all fruits distributed, or “None” if no fruits were distributed during [REFERENCE WEEK].

- Apples
- Apricots, nectarines or peaches
- Bananas
- Blackberries or raspberries
- Blueberries
- Cantaloupe or honeydew
- Cherries
- Grapefruit
- Grapes
- Kiwis
- Mandarin oranges
- Mangoes
- Oranges
- Pears
- Pineapple
- Plums
- Strawberries
- Tangerines
- Watermelon
- Other fruit (Please specify: _____)
- None

S5b. Which fresh vegetables (if any) were distributed to students as part of the FFVP at [SCHOOL NAME] during [REFERENCE WEEK]? Please check all vegetables distributed, or “None” if no vegetables were distributed during [REFERENCE WEEK].

- Broccoli
- Carrots
- Cauliflower
- Celery
- Cucumber
- Lettuce or other leafy greens
- Peppers
- Snap peas
- Snow peas
- String/green beans
- Tomatoes
- Yellow summer squash
- Zucchini
- Other vegetable (Please specify: _____)
- None

S6. The list below includes all fresh fruits or vegetables that you reported were distributed in [SCHOOL NAME] during the week of [REFERENCE WEEK] as part of the FFVP. For each fresh fruit or vegetable that was distributed, please rate the overall **quality** of that fruit or vegetable.

Fruit or vegetable	Quality
Fruit 1	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality
Fruit 2	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality
...	
Fruit N	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality
Vegetable 1	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality
Vegetable 2	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality
...	
Vegetable N	<input type="checkbox"/> Very poor quality <input type="checkbox"/> Somewhat poor quality <input type="checkbox"/> Average quality <input type="checkbox"/> Somewhat high quality <input type="checkbox"/> Very high quality

S7. The list below includes some common fruits and vegetables that you reported were **not** distributed at [SCHOOL NAME] during [REFERENCE WEEK] as part of the FFVP. Please indicate below whether you **have already distributed** or currently **plan to distribute** these fruits and vegetables at any other time during the current 2010-2011 school year.

Fruit or vegetable	Have distributed during 2010-2011	Plan to distribute during 2010-2011
Fruit 1	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fruit 2	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
...		
Fruit N	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Vegetable 1	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Vegetable 2	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
...		
Vegetable N	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

S8. The list below includes the fruits or vegetables that you have **not** already distributed and are not planning to distribute in the current 2010-2011 school year as part of the FFVP. For each fruit or vegetable listed, please indicate the reason **why** you have not distributed and will not distribute that fruit or vegetable. (Check all that apply.)

Fruit or vegetable	Why not distributed in 2010-2011?
Fruit 1	<input type="checkbox"/> Too expensive <input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)
Fruit 2	<input type="checkbox"/> Too expensive <input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)
...	
Fruit N	<input type="checkbox"/> Too expensive <input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)
Vegetable 1	<input type="checkbox"/> Too expensive

Fruit or vegetable	Why not distributed in 2010-2011?
	<input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)
Vegetable 2	<input type="checkbox"/> Too expensive <input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)
...	
Vegetable N	<input type="checkbox"/> Too expensive <input type="checkbox"/> Too messy <input type="checkbox"/> Too much work to prepare <input type="checkbox"/> Out of season <input type="checkbox"/> Hard to obtain <input type="checkbox"/> Too easily damaged/spoiled <input type="checkbox"/> Unpopular with students <input type="checkbox"/> Poor quality <input type="checkbox"/> Other reason. (Please specify: _____)

S9. Looking at fresh fruit and vegetable distribution activities as part of the FFVP in [SCHOOL NAME] during the week of [REFERENCE WEEK], would you say this was a **typical** week for the program?

- Yes
- No

S9a. If no, how did this week differ? (Check all that apply.)

- Different school schedule** due to holiday or other event
- Fresh fruits and vegetables offered **more days** than usual
- Fresh fruits and vegetables offered **fewer days** than usual
- Greater variety** of fresh fruits and vegetables offered than usual
- Lesser variety** of fresh fruits and vegetables offered than usual
- Greater amount** of fresh fruits and vegetables offered than usual
- Lesser amount** of fresh fruits and vegetables offered than usual
- Other (Please specify _____.)

Thank you for completing this survey!

USDA FRESH FRUIT AND VEGETABLE PROGRAM EVALUATION
STATE CHILD NUTRITION AGENCY SURVEY

State:
Agency:
Child Nutrition Director:
Telephone Number:
E-mail address:

This survey of all State Child Nutrition Agencies is being conducted as part of the Evaluation of the Fresh Fruit and Vegetable Program (FFVP). We are interested in understanding the process of selecting schools for the FFVP, the guidance and oversight of the FFVP by your agency, the partnerships with non-Federal agencies at the State level, the data collected by your agency on FFVP costs and operations at the school level, and the costs and staffing of State-level FFVP administration.

The questions in this survey refer to FFVP operations in the current school year, SY 2010-2011. A follow-up survey in the fall of 2011 will collect final cost data for SY 2010-2011.

Your participation in this study is voluntary. There are no penalties if you do not participate. You can refuse to answer any question and may even stop the survey at any time. **The evaluation report may include individual State responses to this survey; data files provided to USDA will identify individual State responses.** However, the names and contact information of respondents will not be published.

Please correct the information above if needed. If someone other than the Child Nutrition Director completed this survey, please provide the respondent's name and contact information below.

Name of person completing survey (other than Child Nutrition Director):
Telephone Number:
E-mail address:

Thank you in advance for completing this survey. If you have any questions about the survey, please contact Abt Associates, Inc. at 1-855-757-0523 [toll-free number] or by e-mail (FFVP@abtassoc.com).

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

A. Selection of FFVP schools

The following questions are about the application and selection of schools to participate in the FFVP during the 2010-2011 school year (SY 2010-2011).

1. When did your State announce the availability of FFVP applications for SY 2010-2011?

Announcement date: ___/___/___

2. When were applications for the FFVP due? (If the due date was extended, specify the final date.)

Application due date: ___/___/___

3. What was the date when approved schools could begin spending funds allocated for the the 2010-2011 FFVP program year?

- July 1, 2010
- Other date (Please specify Start date __/__/2010)

4. How did your agency solicit applications from school food authorities (SFAs) for their schools to participate in the FFVP for SY 2010-2011? Please check all that apply:

- Announcement or invitation to apply on website
 - State Child Nutrition Agency website
 - General State Grants information website
 - Other (specify) _____
- Application form and instructions or on-line application made available on website
 - State Child Nutrition Agency website
 - General State Grants information website
 - Other (specify) _____
- E-mail or electronic newsletter announcement
 - All SFAs
 - SFAs meeting minimum FFVP eligibility requirements
 - SFAs targeted for recruiting to participate in the FFVP
 - School principals
 - Other interested parties (potential partners, advocates, etc.)
- Announcement or letter of invitation by mail
 - All SFAs
 - SFAs meeting minimum FFVP eligibility requirements
 - SFAs targeted for recruiting to participate in the FFVP
 - School principals
 - Other interested parties (potential partners, advocates, etc.)
- Application materials by mail
 - All SFAs
 - SFAs meeting minimum FFVP eligibility requirements
 - SFAs targeted for recruiting to participate in the FFVP
 - School principals

- Other interested parties (potential partners, advocates, etc.)
- Meeting where SFAs or others could learn about FFVP and get application materials
 - All SFAs
 - SFAs meeting minimum FFVP eligibility requirements
 - SFAs targeted for recruiting to participate in the FFVP
 - School principals
 - Other interested parties (potential partners, advocates, etc.)
- Visits by State personnel to SFAs or other locations
 - All SFAs
 - SFAs meeting minimum FFVP eligibility requirements
 - SFAs targeted for recruiting to participate in the FFVP
 - School principals
 - Other interested parties (potential partners, advocates, etc.)
- Other (specify below)

5. How did SFAs apply for their schools to participate in the FFVP? Please check all that apply:
- Paper application
 - Electronic application (such as Microsoft Word © or PDF form) submitted by e-mail or upload
 - On-line application
6. What was your Agency's approach to selecting schools to participate in the FFVP? Please check the response that fits best.
- All schools eligible under Federal rules that applied were approved. (Federal rules restrict the FFVP to elementary schools with NSLP and at least 50% of students approved for free/reduced-price (FRP) meals. (SKIP TO QUESTION 7.)
 - Eligible schools that applied were ranked by percentage of students approved for FRP meals, and schools were selected in this order until the expected allocation equaled the available funds.
 - Eligible schools that applied were ranked by score on their application, and schools were selected in order until the expected allocation equaled the available funds.
 - Other selection approach (please specify below)

6a. In addition to the Federal requirements, what other criteria were considered when selecting schools to participate in the FFVP? Please check all that apply.

- Percentage of students approved for free/reduced-price meals
- FFVP school in School Year 2009-2010
- Satisfactory performance if selected as FFVP school in prior year
- Number of schools applying from the same SFA
- Number of days per week/month for FFVP to be offered
- Quantity of nutrition education for FFVP
- Presence or number of partners
- Cash or in-kind contributions by SFA or partners
- Participates in Team Nutrition
- Has implemented a satisfactory school wellness policy
- Satisfactory Coordinated Review Effort/School Meals Initiative (CRE/SMI) review
- Grades served by school
- Geographic region
- Other (specify below)

6b. What did your State do if an eligible school submitted an application that could not be approved as submitted? Please check the response that fits best.

- Application was rejected, no opportunity to resubmit
- School or SFA was notified of the problem and give the opportunity to resubmit
- Other (specify below)

7. Did your agency have a target for the average dollar amount allocated per student for SY 2010-2011, based on the total FFVP funds available for distribution to schools?

- Yes
- No (SKIP TO 8)

7a. What was your agency's final target for the average FFVP dollar amount allocated per student for SY 2010-2011?

\$ _____ average per student

8. Did your agency make sure that each approved school had a minimum total amount of FFVP funds for SY 2010-2011?

- Yes
- No (SKIP TO 9)

8a. What was the minimum total FFVP funds per school?

\$ _____ minimum total for each school

Minimum total varied by school enrollment (e.g., minimum for schools under 500 students vs. 500-750 etc.)

9. Please enter the requested FFVP application statistics for SY 2010-2011.

<i>Category</i>	<i>Number of Schools in Category</i>	<i>Total Enrollment in These Schools</i>
a. Schools that applied for the FFVP and were eligible under Federal requirements		
b. Elementary schools approved to operate the FFVP		
c. Elementary schools operating the FFVP (any time in SY 2010-2011)		
d. Schools approved for FFVP with 60 to 75% of students approved for free/reduced-price		
e. Schools approved for FFVP with over 75% of students approved for free/reduced-price		

9f. What the smallest free/reduced percentage of students in schools approved for FFVP?
 _____ minimum free/reduced price percentage in FFVP-approved schools

10. For each of the following possible challenges for SFAs, please indicate whether, based on your communications with SFAs, it was not a problem, a minor problem, or a major problem *for the typical SFA* in the application process. Please explain if any of these challenges was a major problem.

	<i>Not a problem for SFAs</i>	<i>Minor problem for SFAs</i>	<i>Major problem for SFAs</i>
a. Having enough information about the application process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a1. Please explain this problem.			
b. Getting cooperation from principals or other officials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b1. Please explain this problem:			
c. Preparing implementation plans for the FFVP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c1. Please explain this problem:			
d. Submitting complete and accurate applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d1. Please explain this problem:			
e. Submitting applications on time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e1. Please explain this problem:			
f. Describe any major problem not specified above			

11. Was the number of schools applying for the FFVP for SY 2010-2011 less than, the same as, or more than your agency expected?

- Less than expected
 Same as expected (SKIP TO 13)
 More than expected
 Did not have an expectation (SKIP TO 13)

12. Why was the number of schools applying for the FFVP for SY 2010-2011 less than or more than your agency expected? Please explain below.

13. Within school districts operating the FFVP, what types of officials are the “champions”, that is, the people who lead the effort to get the FFVP going and sustain it? Check all that apply below and identify the type of official that is a “champion” for the FFVP in the most SFAs, that is, the most frequent type.

<i>Type of Official</i>	<i>Check all types of “champions” below</i>	<i>Which is the most frequent type of “champion”? Check one below</i>
District superintendent or other chief official	<input type="checkbox"/>	<input type="checkbox"/>
School district food service director	<input type="checkbox"/>	<input type="checkbox"/>
School principal	<input type="checkbox"/>	<input type="checkbox"/>
School-level food service manager	<input type="checkbox"/>	<input type="checkbox"/>
School-level health official (nurse, wellness coordinator, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Other district-level official (describe)	<input type="checkbox"/>	<input type="checkbox"/>
Other school-level official (describe)	<input type="checkbox"/>	<input type="checkbox"/>
Outside partner (such as local public health director) (describe)	<input type="checkbox"/>	<input type="checkbox"/>
Don’t know	<input type="checkbox"/>	<input type="checkbox"/>

B. State FFVP Guidance and Oversight

14. In which of the following areas did your agency establish **State-specific** guidance or recommended practices for the FFVP, **in addition to those established by FNS**? Please check all that apply.

- Implementation plans
- Partnerships
- Farm-to-cafeteria or farm-to-school projects
- Purchasing cooperatives
- Promoting the FFVP to students and parents
- Selecting and purchasing fruits and vegetables
- Serving fruits and vegetables (distribution methods, time of day, portion sizes)
- Role of teachers in FFVP
- Food safety
- Nutrition education and promotion in connection with the FFVP
- Performance and expenditure reporting
- Use of FFVP funds (allowable costs, portion spend on food, etc.)
- None of the above—only use FNS policies and recommended practices [SKIP TO 15]

14a. Please provide a copy of your agency's guidance or recommended practices or a link to the web page where they are available

- Hard copy submitted by mail (use reply envelope provided with your survey invitation)
- URL for policies: http:_____
- Electronic copy submitted by e-mail to [FFVP@abtassoc.com]
- Electronic copy uploaded here [link will appear]

15. What types of information on nutrition education curricula or materials did your agency provide to schools **specifically for use in conjunction with the FFVP** in the last 12 months?

- FNS FFVP handbook
- Other list of resources or links to websites
- Specific nutrition education curricula or materials [IF CHECKED, ANSWER 15a-b]
- None of the above

15a. Which of the following topics were included in these nutrition education curricula or materials? (Check all that apply)

- Role of fresh fruits and vegetables in a complete diet
- Where fresh fruits and vegetables come from, links to local farms
- Trying new foods, variety
- Healthy and less healthy snacks
- Cooking with fresh fruits and vegetables
- Eat lower fat foods more often
- Healthy weight and overweight
- Physical activity
- Other (Please specify:_____)

15b. What audiences were targeted by these nutrition education curricula or materials? (Check all that apply)

- Pre-school and kindergarten
- Grades 1-3
- Grades 4-8
- Older children
- Parents
- Teachers
- School food service personnel

16. What training, monitoring and technical assistance activities for the FFVP has your agency conducted in the last 12 months, either in-house or through partners? (Check all that apply)

- In-person orientation, training, or conference
- Web/conference-call orientation or training
- Periodic web meetings/conference calls
- Scheduled site visits
- Unannounced site visits
- Help line/assistance on-call from State agency
- Help line/assistance on-call from partners
- Review of financial records supporting claims
- None of the above

C. Non-Federal partnerships

17. Please check all types of non-Federal partners that work with your State agency to carry out the FFVP.

- Produce for Better Health
- Healthcare providers, including hospitals and clinics; doctors, nurses, nutritionists, dietitians/dietetic interns, or other clinicians
- State or Tribal government agency (e.g. health department, agriculture department, etc.)
- City, County, or other local government agency (e.g. health department, agriculture department, etc.)
- Cooperative Extension Service
- Supermarkets, grocery stores, or other retail stores
- Farmers' markets
- Food wholesalers or other food distributors
- Vocational clubs (e.g., Future Farmers of America, 4-H)
- Produce associations/commodity groups (e.g., United Fresh Produce Association)
- Nutrition trade associations (e.g. American Dietetic Association, School Nutrition Associations)
- Health associations (e.g. State or National affiliates of the American Cancer, Diabetes, or Heart Associations)
- Universities, colleges, or other higher education institutions
- Community action agency, food bank, or other community/faith-based organization
- Other partner type (specify): _____
- Other partner type (specify): _____
- Other partner type (specify): _____

17a. For each major type of partner that you have identified, please indicate the roles of the partner below, i.e., did the partner play the role for all FFVP schools, some FFVP schools, or no FFVP schools (i.e., the partner did not play the role). If there is more than one partner of a specified type, check the responses that represents the total scope of what all partners of this type contribute. For example, if two grocery chains are both partners, and together they provide supplies for all FFVP schools in the State, check “all FFVP schools.”.

[PARTNER TYPES CHECKED IN Q17 WILL APPEAR IN COLUMN HEADINGS ON WEB SURVEY.]

Role	Partner Type 1	Partner Type 2	...	Partner Type N
Encourage schools to participate in FFVP	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing educational materials (print, video, audio, etc.)	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing instruction or demonstrations for students	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing fresh fruits or vegetables	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing other foods or supplies	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing equipment	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Providing cash	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Advising on nutrition education	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Training teachers/staff	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Other role, specify:	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools

Role	Partner Type 1	Partner Type 2	...	Partner Type N
_____	<input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> Some schools <input type="checkbox"/> None
Other role, specify: _____	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None
Other role, specify: _____	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None	<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None		<input type="checkbox"/> All FFVP schools <input type="checkbox"/> Most schools <input type="checkbox"/> Some schools <input type="checkbox"/> None

D. FFVP Costs and Claiming

18. How often does your agency collect the following items of information (if at all) from FFVP schools? Which are available in a State electronic database? Check all that apply.

Q18 Item	How often collected?	In State electronic database?
Number of days that FFVP foods were offered	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Number of days that nutrition education was offered as part of FFVP	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Operating cost broken down between food, labor, and supplies	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Breakdown of food cost by broad category (fruits, vegetables)	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Food purchase cost detail by item (e.g., total spent on apples, bananas, kiwis etc.)	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Quantity purchased for each food item	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No

<i>Q18 Item</i>	<i>How often collected?</i>	<i>In State electronic database?</i>
	<input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	
Unit size (as purchased) and price for each food item	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No
Administrative cost broken down between labor, equipment, and other	<input type="checkbox"/> Not collected <input type="checkbox"/> Annual only <input type="checkbox"/> Twice a year only <input type="checkbox"/> Three or four times a year <input type="checkbox"/> Bimonthly <input type="checkbox"/> Monthly or more often	<input type="checkbox"/> Yes-all schools <input type="checkbox"/> Yes-most schools <input type="checkbox"/> Yes-some schools <input type="checkbox"/> No

18a. Please provide a copy of your agency's monthly FFVP claim form and instructions, or a link to the public web page (URL) where they are available

- Hard copy submitted by mail (use reply envelope provided with your survey invitation)
- URL of publicly accessible State web page for claim form and instructions:
http:_____
- Electronic copy submitted by e-mail to FFVP@abtassoc.com
- Electronic copy uploaded here [link will appear]

19. What are the minimum qualifications for the FFVP coordinator position in your agency?
Check all that apply.

- Bachelor's degree in nutrition, public health, or related field
- Any Bachelor's degree
- Master's degree in nutrition, public health, or related field
- Any Master's degree
- Ph.D or equivalent
- Registered dietitian or other professional certification
- Prior experience as school food authority director or assistant director
- Specified number of years of experience after obtaining required degree
Number of years of experience required: _____

USDA FRESH FRUIT AND VEGETABLE PROGRAM EVALUATION

STATE CHILD NUTRITION AGENCY SURVEY: FALL 2011 FOLLOWUP MODULE

State:
Agency:
Child Nutrition Director:
Telephone Number:
E-mail address:

This survey of all State Child Nutrition Agencies is being conducted as part of the Evaluation of the Fresh Fruit and Vegetable Program (FFVP). We are interested in understanding the process of selecting schools for the FFVP, the guidance and oversight of the FFVP by your agency, the partnerships with non-Federal agencies at the State level, the data collected by your agency on FFVP costs and operations at the school level, and the costs and staffing of State-level FFVP administration.

Your agency previously completed a survey about FFVP operations in school year (SY) 2010-2011. In this follow-up module, we ask you to provide final cost data for SY 2010-2011 and some data on FFVP school selection for SY 2011-2012.

Your participation in this study is voluntary. There are no penalties if you do not participate. You can refuse to answer any question and may even stop the survey at any time. **The evaluation report may include individual State responses to this survey; data files provided to USDA will identify individual State responses.** However, the names and contact information of respondents will not be published.

Please correct the information above if needed. If someone other than the Child Nutrition Director completed this survey, please provide the respondent's name and contact information below.

Name of person completing survey (other than Child Nutrition Director):

Telephone Number:
E-mail address:

Thank you in advance for completing this survey. If you have any questions about the survey, please contact Abt Associates, Inc. at 1-855-757-0523 [toll-free number] or by e-mail (FFVP@abtassoc.com).

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB number. The valid OMB control number for this information collection is 0584-0556. The time required to complete this information collection is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Food and Nutrition Service, Office of Research and Analysis, 3101 Park Center Drive, Alexandria, VA 22302.

F1. Please complete the table below summarizing (a) your State's expenditures from USDA FFVP funds in July 2010 through June 2011, and (b) other known FFVP expenses from other sources. Provide the level of detail that is readily available, and use the checkboxes to indicate any level of detail that you are unable to provide. If data are available, provide expenses from sources other than USDA FFVP funds, including any State appropriation or private grant for the FFVP, or other Federal or State sources.

	<i>a. 7/1/10-6/30/11 Total Expenses from USDA FFVP funds</i>		<i>b. 7/1/10-6/30/11 Total Expenses from other Federal, State, or private sources</i>	
	<i>Not available or not applicable</i>	<i>Total Expense (\$)</i>	<i>Not available or not applicable</i>	<i>Total Expense (\$)</i>
Expenses reimbursed to schools:				
Fresh fruits	<input type="checkbox"/>		<input type="checkbox"/>	
Fresh vegetables	<input type="checkbox"/>		<input type="checkbox"/>	
Subtotal: all food	<input type="checkbox"/>		<input type="checkbox"/>	
Other operating expenses (preparation labor, supplies)	<input type="checkbox"/>		<input type="checkbox"/>	
Administrative expenses (other labor, equipment, etc.)	<input type="checkbox"/>		<input type="checkbox"/>	
All expenses reimbursed to schools				
State administrative expenses	<input type="checkbox"/>		<input type="checkbox"/>	
Grand total				

F2. What was the total value of cash donations to the FFVP received from partners (not including USDA-FNS) between July 1, 2010 and June 30, 2011? (Enter 0 if no cash donations.)

\$ _____

Don't know

F3. What types of costs for State-level administration did your agency charge to the FFVP in SY 2010-2011? Check all that apply, considering both direct and indirect costs.

- State FFVP coordinator salary (or portion thereof) (**The State FFVP coordinator is the person who has the most responsibility for administering the FFVP at the State level.**)
- Other State Child Nutrition Agency personnel
- Fringe benefits for State Child Nutrition Agency personnel
- Travel for State Child Nutrition Agency personnel
- Training for SFA/school personnel (facilities, materials, audio-visual services etc.)
- Other services provided by another State agency
- Other services provided by private contractor (nonprofit or for-profit)
- Other (please specify): _____
- None of the above – no State-level administrative costs charged to the FFVP expenses (SKIP TO F4)

F3a. In SY 2010-2011, what percentage of a full-time position was charged to the FFVP for the FFVP coordinator's time and other State personnel?

_____ % of full-time position charged to FFVP for FFVP coordinator

_____ % of full-time position charged to FFVP for other State personnel

_____ total % of full-time position charged to FFVP

F4. As of June 30, 2011, what was the full-time annual salary range for the job classification of the person who was your State FFVP coordinator? This is the total amount paid, not just the amount charged to the FFVP.

\$ _____ minimum full-time annual salary for FFVP coordinator

\$ _____ maximum full-time annual salary for FFVP coordinator

F5. Did your agency incur any costs in SY 2010-2011 specifically to administer the FFVP that were not charged to the FFVP?

- Yes
- No (SKIP TO F6)

F5a. What types of State costs specific to FFVP administration were not charged to the FFVP? Check all that apply.

- State FFVP coordinator salary (or portion thereof)
- Other State Child Nutrition Agency personnel
- Fringe benefits for State Child Nutrition Agency personnel
- Travel for State Child Nutrition Agency personnel
- Training for SFA/school personnel (facilities, materials, audio-visual services etc.)
- Other services provided by another State agency
- Other services provided by private contractor (nonprofit or for-profit)
- Other (please specify): _____

F5b. How were these costs funded? (Check all that apply)

- State funds appropriated for the FFVP
Specify amount appropriated for July 2010-June 2011: \$ _____
- State funds for nutrition programs
- USDA funds other than FFVP
- Other Federal funds
- Private cash donations

F6. The following questions are about the application and selection of schools to participate in the FFVP during the 2011-2012 school year (SY 2011-2012).

F6a. When did your State announce the availability of FFVP applications for SY 2011-2012?

Announcement date: ___/___/___

F6b. When were applications for the FFVP due? (If the due date was extended, specify the final date.)

Application due date: ___/___/___

F6c. What was the date when approved schools could begin spending funds allocated for the 2011-2012 FFVP program year?

- July 1, 2011
- Other date (Please specify Start date ___/___/2011)

F7. Please enter the requested FFVP application statistics for SY 2011-2012.

<i>Category</i>	<i>Number of Schools in Category</i>	<i>Total Enrollment in These Schools</i>
a. Schools that applied for the FFVP and were eligible under Federal requirements		
b. Elementary schools approved to operate the FFVP		
c. Elementary schools operating the FFVP (any time in SY 2011-2012)		
d. Schools approved for FFVP with 60 to 75% of students approved for free/reduced-price		
e. Schools approved for FFVP with over 75% of students approved for free/reduced-price		

F7f. What the smallest free/reduced percentage of students in schools approved for FFVP?
_____ minimum free/reduced price percentage in FFVP-approved schools

F8. For each of the following possible challenges for SFAs, please indicate whether, based on your communications with SFAs, it was not a problem, a minor problem, or a major problem *for the typical SFA* in the application process. Please explain if any of these challenges was a major problem.

	<i>Not a problem for SFAs</i>	<i>Minor problem for SFAs</i>	<i>Major problem for SFAs</i>
a. Having enough information about the application process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a1. Please explain this problem.			
b. Getting cooperation from principals or other officials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b1. Please explain this problem:			
c. Preparing implementation plans for the FFVP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c1. Please explain this problem:			
d. Submitting complete and accurate applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d1. Please explain this problem:			
e. Submitting applications on time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e1. Please explain this problem:			
f. Describe any major problem not specified above			

F9. Was the number of schools applying for the FFVP for SY 2011-2012 less than, the same as, or more than your agency expected?

- Less than expected
- Same as expected (SKIP TO 10)
- More than expected
- Did not have an expectation (SKIP TO 10)

F9a. Why was the number of schools applying for the FFVP for SY 2011-2012 less than or more than your agency expected? Please explain below.