MATHEMATICA Policy Research

REPORT

FINAL EVALUATION REPORT

Evaluation of the Pilot Project for Canned, Frozen, or Dried Fruits and Vegetables in the Fresh Fruit and Vegetable Program (FFVP-CFD) Volume I: Appendices

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APPENDIX A

STUDY OBJECTIVES, RESEARCH QUESTIONS, OUTCOME MEASURES, DATA SOURCES, AND PLANNED ANALYSES

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Exhibit A.1. Study objectives, research questions, outcome measures, data sources, and planned analysis

Research questions	Unit of analysis	Outcome measures	Data sources	Analysis
Study Objective 1: Examine the impacts on students' fruit and vegetable consumption (and plate waste) at the schools participating in the pilot project				
1a. Do students eat comparable amounts of fruits and vegetables under the standard FFVP compared to the CFD pilot conditions?	Student	Total cup equivalents of fruits and vegetables consumed per FFVP day in school (from all sources) Mean and distribution of cup equivalents of fruits and vegetables consumed in school by type and form (fresh, canned, frozen, or dried) Regression coefficient for fall to spring difference in cup equivalents of fruits and vegetables consumed (from all sources) Mean usual in-school intakes of energy and key nutrients on FFVP snack days Mean Healthy Eating Index (HEI)-2010 scores (total) for in-school consumption	In-school diary/dietary recall Classroom and Student Fruit and Vegetable Snacks Observation Form	Regression analysis (fall vs. spring) controlling for student characteristics, portion size, days offered, and week collected Descriptive cross-tabulations (fall and spring) of mean energy, key nutrients, and HEI score for in-school consumption
1b. How do the foods (fruits and vegetables) offered in the pilot compare to those offered under standard FFVP conditions – what is offered; what is the nutrient profile of the average fruit/vegetable; how do fruit and vegetable selections in a typical week compare between the standard and pilot conditions for variety, nutritional value?	School (Daily/ weekly menu)	Percentage of daily meal and FFVP snack menus offering various fruits and vegetables by type and form (fresh, canned, frozen, or dried) Percentage of daily FFVP menus offering choices, median different items per day, and median different items per week Mean calorie and nutrient content of daily FFVP fruits and vegetables *offered* (including calorie-adjusted comparisons) on standard FFVP vs. pilot days Mean calorie and nutrient content of daily FFVP fruits and vegetables *served to/taken by* students on standard FFVP vs. pilot days	School-level Reimbursable Foods Forms	Descriptive cross-tabulations (fall and spring) Impact analysis (fall vs. spring)

Exhibit A.1. (*continued*)

Research questions	Unit of analysis	Outcome measures	Data sources	Analysis
Study Objective 1: Examine the impacts on students' fruit and vegetable consumption (and plate waste) at the schools participating in the pilot project				
1c. How does what is offered compare with what is taken and consumed? i. Average number of portions per student offered (on a program day)? ii. Average number of portions per student selected (on a program day)? iii. Average number of portions per student left over (on a program serving day)?	School (Daily menu, FFVP serving days)	Mean number of portions of fruits and vegetables per student in FFVP snacks *offered* and *served/taken* Mean number of portions per student of FFVP fruits and vegetables left over	Classroom and Student Fruit and Vegetable Snacks Observation Form	Descriptive cross-tabulations (fall and spring)
1d. What is the impact of the pilot on plate waste of FFVP fruits and vegetables?	Student Classroom	Percentage of fruits and vegetables wasted per FFVP day at-school (in cup equivalents, total and by form and minor food group) Percentage of fruits and vegetables wasted at FFVP snacks (in cup equivalents, total and by form and minor food group, by snack location, and by snack timing) Top 5 fruit and vegetables at FFVP snacks uneaten and with highest percentage plate waste (total and by form and minor food group, by snack location, and by snack timing) Mean and percentage of energy and key nutrients wasted relative to offered (total and by form and minor food group, by snack location, and by snack timing)	In-school diary/dietary recall Classroom and Student Fruit and Vegetable Snacks Observation Form	Impact analysis (fall vs. spring) Descriptive cross-tabulations
Study Objective 2. Describe the impacts of the pilot project on school participation in FFVP				
What is the impact of the CFD pilot on FFVP participation levels?	School Classroom Student	FFVP student participation rate (percentage of students who took a fruit and/or vegetable snack when it was offered) Frequency of FFVP program participation Usual proportion of fruits and vegetables eaten Reasons for not participating in FFVP	Classroom and Student Fruit and Vegetable Snacks Observation Form Student Survey Parent Survey	Impact analysis (fall vs. spring) Descriptive cross-tabulations (fall and spring)

Exhibit A.1. (*continued*)

Research questions	Unit of analysis	Outcome measures	Data sources	Analysis
Study Objective 3. Describe the implementation strategies used by the schools participating in the pilot project				
Contextual information on implementation of the pilot	States	Application process and decision-making Reasons for not applying to the FFVP pilot Past experience with the FFVP	CN Director Survey	Descriptive
3a. *Under the pilot conditions:* i. Are CFD options offered alone or in combination with each other? ii. Are CFD options offered alone or in combination with fresh options? iii. Is the number of items, variety, and/or nutrients available/offered affected? iv. What is offered, and what is the combination of CFD and fresh (all canned, all frozen, all dried, all fresh, mostly one or the other, another combination?) v. When are CFD items offered (regularly, only close to weekends and/or holidays, other) and how are schools making these decisions (price, convenience, school schedule, student preference, delivery schedule, storage, other)? vi. What is offered, and what is the combination of CFD (all canned, all frozen, all dried, mostly one or the other, another combination?)	School Daily/ weekly menu	Percentage of daily FFVP snack menus offering fruits and vegetables only in order of frequency by type and form, separately for CFD-only and CFD and fresh Percentage of daily FFVP menus offering choices, median different items per day, and median different items per week Daily mean calories and distribution of key nutrients offered of fruits and vegetables offered at FFVP snack Percentage of daily FFVP snack menus offering fresh and CFD fruits and vegetables by various combinations (all fresh, all canned, all frozen, all dried, and top 3 combinations) per day and per week Percentage of schools offering CFD fruits and vegetables by time of day (before lunch, after lunch, or both) Percentage of daily FFVP snack menus offering CFD fruits and vegetables only by various combinations (all canned, all frozen, all dried, and top 3 combinations) per day and per week	School-level Reimbursable Foods Forms School-level Reimbursable Foods Forms (Observations) FSM Survey	Descriptive cross-tabulations of spring pilot data

Exhibit A.1. (*continued*)

Research questions	Unit of analysis	Outcome measures	Data sources	Analysis
Study Objective 3. Describe the implementation strategies used by the schools participating in the pilot project				
3b. Comparing normal and pilot conditions: i. What is the average number of days FFVP snacks are offered per week? ii. How are foods (fruits and vegetables) prepared? iii. Are condiments added or offered with FFVP snacks? iv. What is the MyPlate cup equivalents serving size (on serving day)?	School Daily/ weekly menu	Percentage of schools daily meal and FFVP snack menus offering CFD fruits and vegetables by number of days per week Percentage of schools daily meal and FFVP snack menus offering CFD fruits and vegetables by preparation method (e.g., cooked vegetables from fresh or frozen) Percentage of schools' daily meal and FFVP snack menus offering CFD fruits and vegetables with condiments Mean cup equivalents of fruits and vegetables offered at daily meals and FFVP snack by type and form (fresh, canned, frozen, or dried)	School-level Reimbursable Foods Forms Reimbursable Foods Forms (Observations)	Descriptive cross-tabulations comparing fall vs. spring
Study Objective 4. Measure and describe the acceptance of the pilot project by key stakeholders[a]				
4a. What is the level of acceptance of the pilot?	Stake-holders	Acceptance measures comparable to those used in the prior FNS FFVP evaluation, for example, staff, parent, and student overall opinions of FFVP; staff and student opinions about quality of fruits and vegetables; and student satisfaction with FFVP Percentages of schools and districts that perceive fewer barriers to participation and access, for example, inadequate quality, variety, amounts, or storage space for fruits and vegetables; high prices, level of preparation effort; purchasing rules Percentages of schools and districts that perceive fewer costs with the pilot, overall and by reason	Surveys of: State CN Directors, SFA Directors, food service managers, school staff responsible for overseeing the FFVP, principals, parents, students, and teachers Qualitative interviews	Comparison of spring pilot data to FNS-published data Descriptive tabulations of spring pilot surveys

Source: Evaluation of the FFVP-CFD pilot project, Data Collection and Analysis Plan (Briefel et al. 2014).
[a]Students, school food service staff, school education staff, parents, State Child Nutrition Directors, SFA Directors, and community partners.
CFD = Canned, frozen, or dried; CN = Child Nutrition; FFVP = Fresh Fruit and Vegetable Program; FNS = Food and Nutrition Service; FSM = Food service manager; HEI= Healthy Eating Index; SFA = School Food Authority.

APPENDIX B

CREATION OF THE SAMPLING WEIGHTS

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I. INTRODUCTION

This appendix describes the weighting procedures for the fall and spring data collections for the evaluation of the pilot project for the Canned, Frozen, or Dried (CFD) Fruits and Vegetables (FVs) in the Fresh Fruit and Vegetable Program (FFVP). Among the schools that elected to participate in the program, the larger schools[1] often required the use of sampling to select classrooms and students. Likewise, the larger schools received on-site survey data collection and measurements of students' food consumption. In the smaller schools, a census limited to surveys of the school staff, parents, and teachers of 4th-6th grade classes was conducted. The weights account for the different stages of sample selection to obtain the survey and dietary data from the on-site schools, and to account for nonresponse to the surveys in both the on-site and off-site schools. The weighting methodology includes the computations for preparing the weights for the day one recall interviews, plate waste observations, student and parent surveys, and teacher surveys. The weighting method for the parent and teacher surveys is also described for the off-site schools. Since a census was conducted (i.e., all participating units were included) and a high level of response obtained for School Food Authority (SFA) Directors, school principals, food service managers (FSMs) and State Child Nutrition (CN) Directors associated with the FFVP-CFD participating schools, weights are not required for the analysis of their supplied data.

Section II presents the weighting procedures, their member components, and formulas. The final computations for all of the weights are included in this document. For these calculations, a summary of the values for each of the weight components and their distributions is provided.[2]

[1] To receive on-site data collection, the larger schools must have had at least 50 students (in all grades) at the start of the school year (SY) 2014–2015, which was determined to be a sufficient number of students to warrant the burden and travel costs associated with on-site collection.

[2] For the majority of the weights and weight components, the mean value, the minimum and maximum values, the sum of the values, and the coefficient of variation (CV), expressed as a percentage, of the values are presented. The CV of the final weights is an important metric as it may be converted to provide an estimate of the design effect (see Lohr 2010, section 7.5) associated with the final survey estimates, which in turn helps to judge whether the study will be able to achieve the planned expected level of statistical precision for measuring the pilot program impacts prior to the actual data analysis.

II. WEIGHTING METHODOLOGY

The weights for the on-site data collection components, day one dietary recall interviews, student plate waste observations, student and parent surveys, and teacher surveys are comprised of various components to be shown in the sections that follow. For most of the on-site school weights, there are components that account for the selection of classrooms within schools and students within classrooms, along with components that adjust for nonresponse for the particular type of data collection. A few other factors are included to account for special situations. For the off-site schools, since all of the classrooms with students in grades 4-6 were included and parent and teacher surveys were attempted for all those classrooms, the number of weighting components is smaller and likewise the formulas for the weights are abbreviated. The second day recalls are used with the day one recall data in the analysis of the adjusted fruit and vegetable intake distributions using the student day one recall weights; therefore, a separate weight for the day two recalls is not required. The spring sample consisted of all of the cases selected in the fall and as such, many of the weight components for the spring are based on the fall selection process.

A. On-site school day one dietary recall interviews

The recall interviews are one of the major components of the study that will be used to measure differences in intake between the fall and spring periods. Listed below are the components of the weights for each completed day one dietary recall interview during the on-site fall collection.

The weights for the day one student recall interviews given in equation (1) are the product of four separate components.

$$WT_RD1_{j,c,g} = wt(C)_{j,c} \times nr1(C)_j \times wt(ST)_{j,c} \times nr1(ST)_{j,c,g} \qquad (1)$$

Where

$wt(C)_{j,c}$ = classroom sampling weight for classroom c in school j (accounting for stage 1 of the sampling procedures).

$nr1(C)_j$ = school-level classroom nonresponse adjustment factor for the day 1 recalls for school j.

$wt(ST)_{j,c}$ = student sampling weight for students in classroom c in school j (accounting for stage 2 of the sampling procedures).

$nr1(ST)_{j,c,g}$ = classroom/gender-level student nonresponse adjustment factor for the day 1 recalls for classroom c in school j for a student of gender g.

Each component is described in the sections that follow.

1. Classroom sampling weight

In each on-site school, between two and four classrooms were randomly selected[3] to receive dietary recalls. Therefore, the sampling weight accounts for varying probabilities of selection across the classrooms within each on-site school, and is reflected in equation (2).

$$wt(C)_{j,c} = \frac{\sum_{c=1}^{N(C)_j} MOS(C)_{j,c}}{n(C)_j \, MOS(C)_{j,c}} \qquad (2)$$

Where

- $N(C)_j$ denotes the total number of classrooms with students in grades 4-6 in school j.
- $n(C)_j$ denotes the total number of classrooms selected with students in grades 4-6 in school j.
- $MOS(C)_{j,c}$ denotes the classroom measure of size (MOS), defined as the number of students in school j, classroom c. This value is taken from sampling frame data collected during initial contact with the pilot schools.

The ratio reflected in the classroom sampling weight in equation (2) equals the inverse of the probability of selecting the classroom in the designated on-site school. More than half (55 of 101) of the selected classrooms have a classroom sampling weight of one, indicating that all classrooms were selected from the school.

Exhibit B.1 below presents the distribution of the classroom sampling weight for the on-site selected classrooms.

Exhibit B.1. Distribution of the classroom level sampling weight for on-site schools

Data collection period	Participating on-site schools	Total 4th-6th grade classrooms	Total 4th-6th grade classrooms selected	Classroom sampling weight for selected classrooms				
				Mean	Min	Max	Sum	CV
Fall	34	131	101	1.29	1.00	2.96	131	34.79
Spring	34	132[a]	102	1.29	1.00	2.96	132	34.77

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom counts were obtained from the principal or school staff surveys. Tabulations prepared by Mathematica Policy Research.

[a] One of the fall classrooms split into two in the spring.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit B.1 shows that the sum of the classroom sampling weights for the selected classrooms aligns with the total number of 4th-6th grade classrooms across the on-site pilot schools (131 in the fall and 132 in the spring) to account for the sampling process.

[3] Using probability proportional to size (PPS) methods so that larger classrooms (those with a larger number of students) received a higher chance of selection than smaller classrooms.

2. Classroom nonresponse adjustment

Among the 101/102 classrooms selected in the fall/spring, day one recalls in four classrooms spread across three different schools were not completed due to logistical constraints. To account for this classroom nonresponse, in the overall day one recall weight given in equation (1) a school level nonresponse adjustment is included, equal to the weighted number of students in the classrooms selected in the school divided by the weighted number of students in the classrooms in the school for which day one recalls were collected, reflected in equation (3). The numerator of this adjustment is equal to the estimated number of eligible students in school j at the time of the study, which is computed by multiplying the number of eligible students in each selected classroom by the classroom's sampling weight and summing these weighted classroom counts by school. This approach accounts for the fact that the classrooms with no completed day one recalls may have different sampling weights (and represent a different number of students) than the responding classrooms.

$$nr1(C)_j = \frac{\sum_{c=1}^{n(C)_j} NE(ST)_{j,c} \times wt(C)_{j,c}}{\sum_{c \in ncr1(C)_j} NE(ST)_{j,c} \times wt(C)_{j,c}} \qquad (3)$$

where

- $n(C)_j$ denotes the number of selected classrooms with students in grades 4-6 in school j.
- $ncr1(C)_j$ denotes the selected classrooms with students in grades 4-6 in school j with at least one completed day one recall.
- $NE(ST)_{j,c}$ denotes the total number of eligible students in school j, classroom c (with parental consent or not, as provided by the classroom teacher on the first day of interviewing in the school). This will be close in value to the $MOS(C)_{j,c}$ estimate used in equation (2); the MOS may differ slightly from the actual number of students in the class on the day the FIs visited the school since it was obtained early in the school year from the school staff, and it does not account for ineligible students.
- $wt(C)_{j,c}$ denotes the classroom sampling weight for classroom c in school j given in equation (2).

Exhibit B.2 below presents the distribution of the classroom nonresponse adjustment among classrooms with completed day one recalls.

Exhibit B.2. Distribution of the classroom nonresponse adjustment for on-site schools

Data collection period	Participating on-site schools	Total 4th-6th grade classrooms	Total 4th-6th grade classrooms selected	Total 4th-6th grade classrooms with completed day one recalls	Mean	Min	Max	CV
Fall	34	131	101	97	1.04	1.00	2.08	17.43
Spring	34	132[a]	102	98	1.04	1.00	1.97	16.93

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom counts were obtained from the principal or school staff surveys. Tabulations prepared by Mathematica Policy Research.

[a] One of the fall classrooms split into two in the spring.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit B.3 below presents the distribution of the classroom sampling weight multiplied by the classroom nonresponse adjustment given in equations (2) and (3) for the on-site selected classrooms with completed day one recalls.

Exhibit B.3. Distribution of the classroom sampling weight times the classroom nonresponse adjustment for on-site schools

Data collection period	Participating on-site schools	Total 4th-6th grade classrooms	Total 4th-6th grade classrooms selected	Total 4th-6th grade classrooms with completed day one recalls	Product of the classroom sampling weight and the classroom nonresponse adjustment among classrooms with completed day one recalls				
					Mean	Min	Max	Sum	CV
Fall	34	131	101	97	1.35	1.00	3.36	131	42.34
Spring	34	132[a]	102	98	1.34	1.00	3.26	131	41.65

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom counts were obtained from the principal or school staff surveys. Tabulations prepared by Mathematica Policy Research.

[a] One of the fall classrooms split into two in the spring.

CFD = Canned, Frozen or Dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

3. Student sampling weight

Within each classroom, up to fifteen students were selected for day one recalls[4]. The student sampling weight is given in equation (4) and accounts for varying selection probabilities of students within selected and participating classrooms, as well as for parental non-consent, which was minimal (less than 1%).

$$wt(ST)_{j,c} = \frac{Ne(ST)_{j,c}}{ne1(ST)_{j,c}} \qquad (4)$$

where

[4] Students were selected within classrooms at random without regard to their gender.

- $Ne(ST)_{j,c}$ denotes the total number of eligible students in school j, classroom c (with parental consent or not, as provided by the classroom teacher on the first day of interviewing in the school).
- $ne1(ST)_{j,c}$ denotes the number of eligible parental-consented students for which a day one recall interview was attempted[5] in school j, classroom c.

The teacher indicated on the overall classroom list whether parental consent was obtained for each student. Sampling was conducted only among parental-consented students; therefore, the value of $ne1(ST)_{j,c}$ includes only students who had prior parental consent. As such, the adjustment as a whole jointly accounts for student selection within the classroom and for parental non-consent among the listed students. The numerator of this adjustment only includes eligible students to account for the fact that some of the students listed in the classroom were ineligible.

Exhibit B.4 below presents the distribution of the student sampling weights for the students in which a day one recall interview was attempted among the selected participating classrooms across the 34 on-site schools.

Exhibit B.4. Distribution of the student sampling weight for on-site schools

Data collection period	Total eligible students in selected and participating classrooms[a]	Total student recall day one interviews attempted (among consented and eligible students)	Student sampling weight among students in which a day one recall interview was attempted				
			Mean	Min	Max	Sum	CV
Fall	1,637	1,407	1.17	1.00	2.00	1,637	18.37
Spring	1,571	1,303	1.21	1.00	2.14	1,571	19.50

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Student lists were obtained for the selected classrooms from each classroom teacher. Tabulations prepared by Mathematica Policy Research.

Note: Attempted counts are based on the sample selection process and the field interviewer classroom reports.

[a] There were 97 and 98 selected and participating classrooms (i.e., day one recalls were conducted) in the fall and spring, respectively.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

4. Student nonresponse adjustment

Since some of the students for which a day one recall was attempted did not complete the recall (for instance, the student was absent or did not assent), student nonresponse is accounted for with the adjustment given in equation (5), which accounts for potential differences in the completion rates of students by gender.

$$nr1(ST)_{j,c,g} = \frac{ne1(ST)_{j,c,g}}{ncr1(ST)_{j,c,g}} \qquad (5)$$

[5] Throughout this appendix the term *attempted* is used to include eligible students who were sampled to receive an interview, as well as any eligible student who was selected as a backup in the case that a field interviewer tried to get an interview with that student to replace one of the initially sampled students.

where

- $ne1(ST)_{j,c,g}$ denotes the number of eligible parental-consented students for which a day one recall was attempted in school j, classroom c of gender g. Note that this component is the same as the denominator of equation (4), besides the fact that it is broken down by gender.
- $ncr1(ST)_{j,c.g}$ denotes the number of completed day one recalls among parental-consented, eligible, and assented students in school j, classroom c of gender g.

Exhibit B.5 below presents the distribution of the student day one recall nonresponse adjustment factor for the students in which a day one recall was completed.

Exhibit B.5. Distribution of the student nonresponse adjustment for on-site schools

Data collection period	Total student day one recall interviews completed	Student nonresponse adjustment among students with a completed day 1 recall			
		Mean	Min	Max	CV
Fall	1,255	1.12	1.00	3.00	18.62
Spring	1,236	1.05	1.00	2.00	10.96

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Completed interview counts are based on the field interviewer classroom and student reports and on the dietary data collected from each student.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

The results in Exhibit B.5 show that, on average, the day one recall completion rate[6] among the attempted students was 89% for the fall and 95% for the spring.

5. Day one recall weight

To produce the overall student day one recall weights, the classroom sampling weight in equation (2) is multiplied by the classroom nonresponse adjustment in equation (3) times the student sampling weight in equation (4) times the student nonresponse adjustment in equation (5) to obtain the values presented in Exhibit B.6, based on equation (1).

Exhibit B.6 shows that the sum of the overall day one recall weights aligns relatively closely with the estimated number of 4th-6th grade students in participating on-site schools. It is expected that the estimated eligible student populations of 2,275 and 2,197 for the fall and spring, respectively, to differ slightly from the sum of the weights because the weights are based on the actual number of eligible students residing in the selected classrooms during the week of the FI visit, whereas the estimates are based on principal and staff surveys conducted early in the school year and they include non-sampled classrooms.

The coefficients of variation (CVs) of the initial day one recall student weights are less than 50%; thus, the estimated design effect from the combined sampling and nonresponse process is currently less than 1.25, which is below the desired target of 2.0. While the true design effect may be higher or lower based on the actual relationships in the dietary data, this initial estimate

[6] Throughout this appendix, the completion rate is calculated by taking the reciprocal of the average of the nonresponse adjustments.

of the design effect suggests the study will be able to achieve the desired level of statistical precision in the estimates of the pilot impact.

Exhibit B.6. Distribution of the overall day one recall weight for on-site schools

Data collection period	Estimated number of 4th-6th grade eligible students in all participating on-site schools[a]	Total student day one recalls completed	Overall student day one recall weight among students with a completed day 1 recall				
			Mean	Min	Max	Sum	CV
Fall	2,275	1,255	1.81	1.00	6.23	2,277	49.83
Spring	2,197	1,236	1.76	1.00	6.18	2,181	48.58

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Estimated total 4th-6th grade student counts were obtained from the principal or school staff surveys. Completed interview counts are based on the field interviewer classroom and student reports and on the dietary data collected from each student. Tabulations prepared by Mathematica Policy Research.

Note: For the fall a student count of 2,284 was obtained from the principal and staff and multiplied this by 99.6% which is an estimate of the percentage of students in the fall that were eligible (attending the school) at the time of the fall visit. In the spring an estimated 96.2% of the original count of fall students were eligible in the spring based on the sampled classrooms.

[a] These values are an estimate of the number of students in the fall or spring that were eligible at the time of the visit.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

B. Plate waste observations

1. On-site school plate waste nonresponse adjustment

The plate waste observations were collected for the students who completed day one recall interviews occurring on program days. As such, the plate waste observation weights build on the day one recall weights produced in equation (1). The on-site plate waste observations are weighted by the product of the student's day one recall weight times a two factor non-response adjustment given in equation (6). The first factor is created at the school level to account for selected classrooms with no completed plate waste observations.[7] The second factor adjusts for the lack of complete information on the snack observations and nonresponse to the plate waste collection.[8] In particular, if the snacks were given out right before recess or the end of school, or if the interviewer was not able to watch all of the students selected, it could not be determined for every student with a completed day one recall whether they took the snack. As such, the percentage of *all* students in the class who took the snack (which was given on the classroom observation form) was used to estimate what proportion of the students who completed day 1 recalls took the snack to create the numerator value for the second term. With that, the second term weights the number of plate waste observations completed to the estimated number of students with day one recalls that took the snack.

[7] Limited to the classrooms with at least one completed day one recall on a program day. In some classrooms, no program day snacks were served during the week of observation; these classrooms are excluded from the first term.

[8] Note that the second factor at the classroom level in equation (6) only applies to classrooms with at least one completed plate waste observation.

$$nr(PW)_{j,c,g} = \frac{\sum_{c \in ncrpd(C)_j} NE(ST)_{j,c} \times wt(C)_{j,c}}{\sum_{c \in ncpw(C)_j} NE(ST)_{j,c} \times wt(C)_{j,c}} \times \frac{ndrp(PW)_{j,c,g} \times take(PW)_{j,c}}{nc(PW)_{j,c,g}} \quad (6)$$

where

- $NE(ST)_{j,c}$ denotes the number of eligible students in classroom c in school j.
- $wt(C)_{j,c}$ denotes the classroom sampling weight for classroom c in school j given in equation (2).
- $ncrpd(C)_j$ denotes the classrooms in on-site school j with at least one completed day one recall on a program day.
- $ncpw(C)_j$ denotes the classrooms in on-site school j with at least one completed plate waste observation.
- $ndrp(PW)_{j,c,g}$ denotes the number of students in school j, classroom c, of gender g, with a completed day one recall on a program day.
- $nc(PW)_{j,c,g}$ denotes the number of students in school j, classroom c, of gender g, that took the snack and for which a plate waste observation was completed.
- $take(PW)_{j,c}$ denotes the observed rate of students in school j and classroom c that took a snack on a program day, averaged across the program days during the week of observation. When multiplied by $ndrp(PW)_{j,c,g}$, the numerator of the second term in equation (6) reflects the estimated number of students with completed day one recalls on a program day that took the snack. In certain cases if it was known how many of the students with a completed recall on a program day took the snack, the second term in equation (6) becomes the number of students with completed day one recalls on a program that took the snack divided the number of students with a completed plate waste observation.

Exhibit B.7 below presents the distribution of the plate waste nonresponse adjustment among students with a completed plate waste observation.

Exhibit B.7. Distribution of the plate waste nonresponse adjustment for on-site schools

Data collection period	Total plate waste observations completed	Nonresponse adjustment for plate waste observations among students with a completed plate waste observation			
		Mean	Min	Max	CV
Fall	535	1.36	1.00	5.88	47.21
Spring	548	1.44	1.00	6.64	49.51

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.
CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

2. On-site school plate waste weights

To account for the selection of classrooms and students, the plate waste nonresponse adjustment in equation (6) is multiplied by the day one dietary recall weight from equation (1). The overall plate waste weight is reflected below in equation (7).

$$WT_PW_{j,c,g} = WT_RD1_{j,c,g} \times nr(PW)_{j,c,g} \quad (7)$$

Exhibit B.8 presents the distribution for the overall plate waste weights.

Exhibit B.8. Distribution of the overall plate waste weight for on-site schools

Data collection period	Total plate waste observations completed	Overall plate waste weights among students with a completed plate waste observation				
		Mean	Min	Max	Sum	CV
Fall	535	2.58	1.00	10.58	1379	68.03
Spring	548	2.53	1.00	24.21	1386	87.15

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Plate waste observations counts are based on the field interviewer classroom and student reports and on the dietary data collected from each student. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, Frozen or Dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

C. Teacher surveys

1. On-site teacher survey weight

The teacher survey weight accounts for the classrooms for which no teacher surveys were obtained, along with the classroom selection process.[9] In addition, although one teacher survey was provided to each classroom, there were a few classrooms that returned two completed teacher surveys if two teachers were working together to instruct the students. Therefore, a factor is included that accounts for multiple completed teacher surveys in a single classroom. The overall teacher survey weight is given in equation (8), which accounts for classroom selection, classroom nonresponse at the school level, and multiple teachers per classroom.

$$WT_T_{j,c} = \frac{\sum_{c=1}^{n(C)_j} wt(C)_{j,c}}{nct(C)_j} \times MT_{j,c} \quad (8)$$

where

- $n(C)_j$ denotes the number of selected 4th-6th grade classrooms in school j.
- $nct(C)_j$ denotes the number of selected 4th-6th grade classrooms in school j with one or more completed teacher surveys.
- $MT_{j,c}$ denotes a teacher adjustment in school j, classroom c, which is set to 1 if only one teacher survey was completed for classroom c; otherwise, it is set to $1/H$, where H denotes the number of teacher surveys completed for classroom c (at most, $H = 2$ across all on-site classrooms).

The first ratio in equation (8) weights the selected classrooms with completed teacher surveys up to the total number of classrooms in the school to account for classroom selection and teacher nonresponse.

[9] For the on-site schools at least one teacher survey was obtained from every school.

Exhibit B.9 below presents the distribution of the overall teacher survey weight for on-site schools.

Exhibit B.9. Distribution of the overall teacher survey weight for on-site schools

Data collection period	Estimated number of 4th-6th grade teachers in on-site schools	Total number of completed teacher surveys in on-site schools	Overall teacher survey weight among teachers with a completed survey				
			Mean	Min	Max	Sum	CV
Fall	131	104	1.26	0.50	2.75	131	39.69
Spring	132[a]	101	1.30	0.50	5.50	132	55.23

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom and teacher counts were obtained from the principal and school staff surveys in combination with the completed teacher surveys. Tabulations prepared by Mathematica Policy Research.

[a] One of the fall classrooms split into two in the spring.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

The sum of the final teacher survey weights closely aligns with the estimated number of teachers in the school as obtained from the school staff at the start of the survey.

2. Off-site teacher survey weight

In the off-site schools all of the eligible 4th-6th grade classroom teachers were asked to complete teacher surveys. As a result, classroom selection does not have to be accounted for in the weighting process. However, there were seven schools in the fall and five schools in the spring that did not submit any completed teacher surveys. To account for the omission of these teachers, a study level nonresponse adjustment factor is included, equal to the number of off-site classrooms divided by the number of off-site classrooms in schools that had at least one completed teacher survey, along with a school level factor to account for classrooms with no completed teacher survey.[10] The overall off-site teacher survey weight is reflected in equation (9).

$$WT_OT_{j,c} = \frac{No(C)}{\sum_{j \in noct(S)} no(C)_j} \times \frac{no(C)_j}{noc(C)_j} \times MT_{j,c} \quad (9)$$

where

- $No(C)$ denotes the number of classrooms across the off-site schools.
- $noct(S)$ denotes the off-site schools that had at least one completed teacher survey.
- $no(C)_j$ denotes the number of classrooms in off-site school j.
- $noc(C)_j$ denotes the number of classrooms with one or more completed teacher surveys in off-site school j.

[10] Note that the second factor at the school level only applies to schools with at least one completed teacher survey.

- $MT_{j,c}$ denotes a teacher adjustment in school j, classroom c, which is set to 1 if only one teacher survey was completed for classroom c; otherwise, it is set to $1/H$, where H denotes the number of teacher surveys completed for classroom c (at most, $H = 2$ across all off-site classrooms).

Exhibit B.10 shows that the sum of the off-site teacher survey weights aligns with the estimated number of teachers in the off-site schools as obtained from the school staff at the start of the survey.

Exhibit B.10. Distribution of the overall teacher survey weight for off-site schools

Data collection period	Total number of teacher surveys attempted in off-site schools	Total classrooms with at least one teacher survey completed	Total number of teacher surveys completed in off-site schools	Overall teacher survey weight among teachers with a completed survey				
				Mean	Min	Max	Sum	CV
Fall	26	17	18	1.44	0.68	2.74	26	35.92
Spring	26	18	18	1.44	1.24	2.48	26	32.87

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom counts were obtained from the principal and school staff surveys in combination with the completed teacher surveys. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

D. Parent surveys

Given the parent surveys experienced a response rate below 80% in the on-site schools, and given there were companion student survey responses for more than 90% of the parents for which parent surveys were attempted, a nonresponse bias study was conducted for the on-site parent surveys presented in Supplement B.2.1. As a result of the nonresponse bias analysis, the on-site parent survey weights received a calibration adjustment (see Deville and Sarndal (1992)) to further account for any potential biases due to survey nonresponse for the parent survey estimates.

1. On-site nonresponse adjustment

Parent surveys were distributed to the parents of all students in the selected classrooms, regardless of whether the student was selected for a dietary recall.[11] However, there were a few on-site schools where a classroom had no completed parent surveys (due to the teacher not distributing the surveys). Therefore, the nonresponse adjustment is composed of two factors, one at the school level to account for selected classrooms with no completed parent surveys, and a second factor at the classroom level (which was conducted by the gender of the parent's

[11] One parent survey was attempted for each child; there are no cases where a student returned two different parent surveys filled out by each parent. Throughout the weighting process students and parents are treated as having a one-to-one relationship.

student[12]) to account for nonresponse to the parent survey within each classroom.[13] The full nonresponse adjustment is reflected in equation (10).

$$nr(P)_{j,c,g} = \frac{\sum_{c=1}^{n(C)_j} Ne(ST)_{j,c} \times wt(C)_{j,c}}{\sum_{c \in ncp(C)_j} Ne(ST)_{j,c} \times wt(C)_{j,c}} \times \frac{ne(ST)_{j,c,g}}{ncp(ST)_{j,c,g}} \qquad (10)$$

where

- $n(C)_j$ denotes the number of classrooms in school j.
- $ncp(C)_j$ denotes the classrooms in school j with at least one completed parent survey.
- $Ne(ST)_{j,c}$ denotes the total number of eligible students in school j, classroom c.
- $wt(C)_{j,c}$ denotes the classroom sampling weight for classroom c in school j given in equation (2).
- $ne(ST)_{j,c,g}$ denotes the number of eligible students of gender g in school j, classroom c.
- $ncp(ST)_{j,c,g}$ denotes the number of students of gender g in school j, classroom c with a completed parent survey.

Exhibit B.11 below presents the distribution of the on-site parent survey nonresponse adjustment.

Exhibit B.11. Distribution of the parent survey nonresponse adjustment for on-site schools

Data collection period	Total parent surveys completed	Nonresponse adjustment for parent surveys among parents with a completed survey			
		Mean	Min	Max	CV
Fall	1,077	1.60	1.00	15.00	69.56
Spring	976	1.68	1.00	15.00	69.87

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Student counts were obtained from the teacher on the first day of interviewing, and survey counts were obtained from the completed parent surveys. Tabulations prepared by Mathematica Policy Research.

Note: There was one on-site school case in the fall where a parent completed the survey but the student is considered ineligible because he/she left the school before recalls were conducted. This parent survey is retained and thus this case needs to be treated as eligible for the parent survey, even though the student is ineligible.

CFD = Canned, Frozen or Dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

[12] In a few classrooms, the classroom nonresponse adjustment was not able to be split by gender because there were only completed parent surveys from students of one gender. In those cases, the total number of students in the classroom is summed without regard to gender for the nonresponse adjustment.

[13] Note that the second factor at the classroom level only applies to classrooms with at least one completed parent survey.

The results in Exhibit B.11 show that, on average, the unweighted completion rate for the parent survey in on-site schools was 63% in the fall, and 60% in the spring based on the inverse of the average adjustments of 1.60 and 1.68 respectively.

2. On-site overall parent survey weight (pre-calibration)

To account for the sampling of classrooms, the parent nonresponse adjustment from equation (10) is multiplied by the classroom sampling weight from equation (2) to produce a parent survey weight (pre-calibration) reflected in equation (11).

$$WT_P_{j,c,g} = wt(C)_{j,c} \times nr(P)_{j,c,g} \qquad (11)$$

Exhibit B.12 below presents the distribution of the on-site overall parent survey weight.

Exhibit B.12. Distribution of the overall parent survey weight for on-site schools (pre-calibration)

Data collection period	Estimated number of 4th-6th grade students in participating on-site schools[a]	Total number of parent surveys completed in on-site schools	Overall on-site parent survey weight (product of the classroom sampling weight and the parent nonresponse adjustment) among parents with a completed survey				
			Mean	Min	Max	Sum	CV
Fall	2,275	1,077	2.12	1.00	35.57	2,278	88.29
Spring	2,197	976	2.23	1.00	28.25	2,181	92.13

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Estimated total 4th-6th grade student counts were obtained from the principal or school staff surveys, and survey counts were obtained from the completed parent surveys. Tabulations prepared by Mathematica Policy Research.

[a] These values are an estimate of the number of students in the fall or spring that were eligible at the time of the visit. For the fall a student count of 2,284 was obtained from the principal and staff and multiplied this by 99.6% which is an estimate of the percentage of students in the fall that were eligible (attending the school) at the time of the fall visit. In the spring an estimated 96.2% of the original count of fall students were eligible in the spring based on the sampled classrooms.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

The sum of the parent survey weights in Exhibit B.12 for spring (2,181) matches the sum of the student day one recall weights in Exhibit B.6, by design of the weighting process. For fall, the sum of the parent survey weights for fall (2,278) is one higher than the sum of the student day one recall weights (2,277), due to the one student who is considered ineligible for the day one recall but eligible for the parent survey.

3. Off-site overall parent survey weight

In the off-site schools, parent surveys were given to all 4th-6th grade classrooms, so the final weights do not include a classroom sampling weight component. Furthermore, gender is not included in the nonresponse adjustment, as the gender of each student in the off-site schools was not available.

As with the on-site schools, there were multiple off-site schools that had one or more classrooms with no completed parent surveys. Therefore, in addition to a nonresponse adjustment at the classroom level,[14] a nonresponse adjustment at the school level is also included

[14] Note that the classroom nonresponse factor only applies to classrooms with at least one completed parent survey.

to account for classrooms with no completed parent surveys.[15] Furthermore, there were a few off-site schools that had no completed parent surveys from any 4th-6th grade classroom. Thus, a study-level nonresponse adjustment is needed, which is equal to the number of students in all off-site schools divided by the number of students in off-site schools that had one or more completed parent surveys. The overall parent survey weight for off-site school j, classroom c is reflected in equation (12).

$$WT_OP_{j,c} = \frac{\sum_{j=1}^{no(S)} Noe(ST)_j}{\sum_{j \in nocp(S)} Noe(ST)_j} \times \frac{\sum_{c=1}^{no(C)_j} Noe(ST)_{j,c}}{\sum_{c \in nocp(C)_j} Noe(ST)_{j,c}} \times \frac{Noe(ST)_{j,c}}{nocp(ST)_{j,c}} \qquad (12)$$

where

- $no(S)$ denotes the number of off-site schools.
- $nocp(S)$ denotes the off-site schools with at least one completed parent survey.
- $Noe(ST)_j$ denotes the total number of eligible students in off-site school j.
- $no(C)_j$ denotes the number of classrooms in off-site school j in which parent surveys were attempted.
- $nocp(C)_j$ denotes the classrooms in off-site school j with at least one completed parent survey.
- $Noe(ST)_{j,c}$ denotes the estimated[16] number of eligible students in off-site school j, classroom c.
- $nocp(ST)_{j,c}$ denotes the number of students in off-site school j, classroom c with a completed parent survey.

Exhibit B.13 below presents the distribution of the off-site parent survey weight.

[15] Note that the school nonresponse factor only applies to schools with at least one completed parent survey.

[16] In fall, the teacher rosters did not have eligibility information but the spring rosters did, so the ineligible students in the spring who had left the school were eliminated.

Exhibit B.13. Distribution of the overall parent survey weight for off-site schools

Data collection period	Total number of parent surveys attempted in off-site schools	Total number of parent surveys completed in off-site schools	Overall off-site parent survey weight among parents with a completed survey				
			Mean	Min	Max	Sum	CV
Fall	139	32	4.34	2.90	20.27	139	76.20
Spring	133[a]	71	1.87	1.22	8.24	133	85.77

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Student lists were obtained from the teacher on the first day of interviewing, and survey counts were obtained from the completed parent surveys. Tabulations prepared by Mathematica Policy Research.

[a] Six students from the fall were no longer attending the school in the spring.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit B.13 shows that the CVs of the weights are less than 100% as desired.

4. Calibration of the on-site parent survey weights

The fact that the on-site parent survey completion rate was below 80% while the corresponding student survey completion rate in the on-site schools was above 90% (see Exhibit B.16) allowed for the examination of how the parent survey respondents differed from their nonresponding counterparts based on the data provided by their children (the students). Accordingly, a nonresponse bias analysis was conducted for the on-site[17] parent surveys, which can be found later in this appendix as Supplement B.2.1. The nonresponse bias assessment identified six student survey attributes for which the parent survey respondents differed from the parent survey non-respondents based on their child's profile, including the student's 1) gender, 2) primary language at home, 3) appeal of fruits and vegetables served during snacks, 4) fondness for vegetables, and 5) frequency of consumption of the school breakfast and 6) lunch. To account for these differences, as a final step in the preparation of the on-site parent survey weights, a calibration or generalized raking procedure was conducted for the 1,077 and 976 fall and spring parent survey responses, respectively.[18]

The generalized raking method based on the work of Deville and Sarndal (1992) creates an adjustment to minimize the squared difference between each starting parent's survey weight, $WT_P_{j,c,g}$ (as given in equation (11)) and the resulting value of their adjusted/calibrated weight, $WCT_P_{j,c,g}$, subject to a set of constraints. For example, for the first constraint from Exhibit B.19 in Supplement B.2.1, the weighted parent survey data for the 1,040 (before imputation) fall parent survey respondents show that 52% of the parents' children were female children and 48% were male children. In contrast, the student survey data for 1,586 students that cover the majority of students in the study (and likewise their parents) shows that 50% of the parents'

[17] This was not possible for the off-site parent surveys as student surveys were not conducted in the off-site schools

[18] Of the total 1,077 fall parent survey responses, 37 did not have a completed student survey and only the 1,040 were used in the nonresponse bias analysis. Likewise, of the 976 spring parent survey respondents, 15 did not have a completed student survey and were excluded from the analysis in the supplement. For these cases the missing value was imputed to the most likely category so that the weights could be calibrated for all of the parent survey respondents.

children were female children. To account for this difference, the subset of 1,077 parent survey respondents associated with female children are weighted down slightly so that the final calibrated weights for the parent survey respondents of female children yield a rate of female children of 50% instead of 52%. This accounts for the higher parent survey response rate among parents of female children. Similarly, the parent survey respondents of male children are weighted up to align with the 50% rate of male children in the student survey population. The generalized raking method finds a solution that creates a new set of weights such that all six of the specified constraints (gender, language, etc.) are met simultaneously while minimizing the changes in the starting and final calibrated weights. This approach is a preferred methodology for conducting calibration compared to an iterative proportional fitting method (IPF) (see Deming, W. and Stephan, F. (1940)[19]), which adjusts the weights to meet each constraint one at a time, and then cycles back to repeat the process over and over until all the constraints are met to a specified level of tolerance. The IPF procedure may result in a higher rate of change in the final calibrated weights and as such may reduce the precision in the final survey estimates compared to the generalized raking method adopted.

Exhibit B.14 presents the distribution of the overall parent survey weights for the on-site schools post-calibration. Compared to the results in Exhibit B.12, the CV of the calibrated weights is only slightly higher for the fall (88.65 versus a pre-calibration value of 88.29) and is lower in the spring (85.03 versus 92.13).

Exhibit B.14. Distribution of the overall parent survey weight for on-site schools (post-calibration)

Site	Data collection period	Estimated number of 4th-6th grade students in participating schools	Total number of parent surveys completed	Overall calibrated parent survey weight				
				Mean	Min	Max	Sum	CV
On-site	Fall	2,275	1,077	2.11	0.86	36.46	2,277	88.65
	Spring	2,197	976	2.23	0.90	23.49	2,181	85.03

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.
CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit B.15 compares the weighted distribution for the six significant characteristics using the calibrated weights relative to the weighted student surveys responses to show that the discrepancies presented in Exhibit B.19 are eliminated (within 1% due to some rounding of the target values) to account for the potential nonresponse bias identified.

[19] Various other sources discuss this procedure. As an example see http://www.demog.berkeley.edu/~eddieh/IPFDescription/AKDOLWDIPFTWOD.pdf

Exhibit B.15. Post-calibration comparison of weighted parent survey respondents based on their student survey profiles to the profile of all weighted student survey respondents

	Fall 2014		Spring 2015	
Student survey characteristic	All students (n=1,586)	Calibrated parent[a] survey (n=1,077)	All students (n=1,576)	Calibrated parent[b] survey (n=976)
Gender				
Girls	50%	50%	51%	51%
Boys	50%	50%	49%	49%
Primary language spoken with parents				
English	75%	75%	76%	76%
Spanish	5%	5%	5%	5%
Other (including more than one language)	20%	20%	19%	19%
Usually eats school lunch				
Never / Less than once a week	10%	10%	9%	9%
1-4 times a week	19%	19%	20%	20%
Every day	71%	71%	71%	71%
Usually eats school breakfast				
Never / Less than once a week	31%	31%	31%	31%
1-4 times a week	30%	30%	33%	33%
Every day	38%	39%	36%	36%
Eats more F&V on days with free snacks				
Agree very much / a little	79%	79%	77%	77%
Disagree a lot / a little	21%	21%	23%	23%
Likes most vegetables				
Agree very much / a little	68%	69%	69%	69%
Disagree a lot / a little	32%	31%	31%	31%

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Weighted percentages are calculated from students who answered a question (with item non-response for 12-46 students) and may not sum to 100% due to rounding.

[a] 37 parent surveys had missing student survey data; missing responses were imputed to the most frequently occurring category.

[b] 15 parent surveys had missing student survey data; missing responses were imputed to the most frequently occurring category.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

E. On-site student surveys

1. Nonresponse adjustment

Student surveys were distributed to all consented students in the on-site classrooms, regardless of whether the student was selected for a dietary recall. However, there was one classroom with no completed student surveys in the fall (due to the teacher not distributing the surveys). Therefore, in addition to a nonresponse adjustment at the classroom level[20] (which was conducted by gender), a school-level nonresponse adjustment is included to account for this classroom. The full nonresponse adjustment is reflected in equation (13). There were no student surveys were conducted in the off-site schools.

$$nr(SS)_{j,c,g} = \frac{\sum_{c=1}^{n(C)_j} Ne(ST)_{j,c} \times wt(C)_{j,c}}{\sum_{c \in ncs(C)_j} Ne(ST)_{j,c} \times wt(C)_{j,c}} \times \frac{ne(ST)_{j,c,g}}{ncs(ST)_{j,c,g}} \qquad (13)$$

where

- $n(C)_j$ denotes the number of classrooms in school j.
- $ncs(C)_j$ denotes the classrooms in school j with at least one completed student survey.
- $Ne(ST)_{j,c}$ denotes the total number of eligible students (with or without consent) in school j, classroom c.
- $ne(ST)_{j,c,g}$ denotes the number of consented and eligible students of gender g in school j, classroom c.
- $ncs(ST)_{j,c,g}$ denotes the number of students of gender g in school j, classroom c with a completed student survey.

Exhibit B.16 below presents the distribution of the student survey nonresponse adjustment.

Exhibit B.16. Distribution of the student survey nonresponse adjustment for on-site schools

Data collection period	Total student surveys completed	Nonresponse adjustment for student surveys among students with a completed survey			
		Mean	Min	Max	CV
Fall	1,586	1.08	1.00	3.00	16.04
Spring	1,576	1.04	1.00	2.80	13.03

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Student lists were obtained from the teacher on the first day of interviewing, and survey counts were obtained from the completed student surveys. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

[20] Note that the nonresponse adjustment factor at the classroom level only applies to classrooms with at least one completed student survey.

The results in Exhibit B.16 show that, on average, the unweighted completion rate for the student survey was approximately 93% in the fall and 96% in the spring.

2. Overall student survey weight

To account for the selection of classrooms, the student survey nonresponse adjustment is multiplied by the classroom sampling weight from equation (2) to produce an overall student survey weight for on-site school j, classroom c, reflected in equation (14).

$$WT_SS_{j,c} = wt(C)_{j,c} \times nr(SS)_{j,c,g} \qquad (14)$$

Exhibit B.17 below presents the distribution of the overall student survey weight.

Exhibit B.17. Distribution of the overall student survey weight for on-site schools

Data collection period	Estimated number of 4th-6th grade students in participating on-site schools[a]	Total number of student surveys completed	Overall on-site student survey weight (product of the classroom sampling weight and the student nonresponse adjustment) among students with a completed survey				
			Mean	Min	Max	Sum	CV
Fall	2,275	1,586	1.44	1.00	5.66	2,277	40.92
Spring	2,197	1,576	1.38	1.00	4.53	2,181	37.47

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Classroom counts were obtained from the principal and school staff surveys and the completed student surveys. Tabulations prepared by Mathematica Policy Research.

[a] These values are an estimate of the number of students in the fall or spring that were eligible at the time of the visit. For the fall a student count of 2,284 was obtained from the principal and staff and multiplied this by 99.6% which is an estimate of the percentage of students in the fall that were eligible (attending the school) at the time of the fall visit. In the spring an estimated 96.2% of the original count of fall students were eligible (still at the school) in the spring based on the sampled classrooms.

CFD = Canned, frozen or dried; CV = coefficient of variation; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

The sum of the student survey weights in Exhibit B.17 for fall and spring (2,277 and 2,181) match the sum of the student day one recall weights in Exhibit B.6 by design of the weighting process. The CVs of the weights are less than 100% as desired.

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SUPPLEMENT B.2.1

NONRESPONSE BIAS ASSESSMENT OF FFVP-CFD PARENT SURVEY

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In the CFD pilot project of the Fresh Fruit and Vegetable Program (FFVP-CFD), survey completion rates among students and teachers were high (over 90%), but parent survey completion did not exceed the 80% benchmark, despite having offered a $5 gift card for all completed surveys. After observing a low fall 2014 parent survey completion rate, a *teacher motivator* incentive was added in spring 2015, whereby teachers in classrooms with at least a 70% or 80% parent survey completion rate would receive a $20 or $30 Amazon gift card, respectively, to purchase classroom books and supplies. However, even with this added incentive, the parent survey completion rate remained low in the spring. Altogether, 42% of parents completed both the fall and spring surveys, 18% completed the fall survey only, 15% completed the spring survey only, and 25% completed neither survey.

Given the relatively low parent survey completion rate, exploratory analyses were conducted to examine the representativeness of the parent reporting sample, and to identify student characteristics that were correlated with parent survey completion. Towards the first goal, the distribution of student race/ethnicity and receipt of free or reduced-price (FRP) meals was compared between the FFVP parent survey report and 2013-2014 school-level common core data (CCD), including schools in the pilot school districts[21], but excluding schools with no 4th, 5th, and/or 6th grade students,[22] as well as schools that did not participate in the National School Lunch Program. In total, 52 comparable CCD schools were identified. Prior to comparing FFVP parent survey responses with CCD data, the pre-calibrated parent survey weights were applied to the FFVP parent survey data to account for parent selection probabilities and parent survey non-response. Towards the second goal of identifying student characteristics that were significantly associated with parent survey completion (based on a 5% type I error rate), characteristics of surveyed students with and without a completed parent survey were compared. In these analyses, student survey weights were applied to the data to account for student selection probabilities and student survey non-response. The data were analyzed separately by fall and spring to better understand the nature of any bias in the parent reporting sample.

In determining the representativeness of the parent sample, the focus was placed on the distribution of gender, race/ethnicity, and FRP certification overall, because within-State CCD estimates were unstable due to the small number of schools included in some States. Overall, the proportion of males was fairly similar between students in the sample (49%) and comparable CCD students (51%), as seen in Exhibit B.18, with some variability in CCD estimates across States (ranging from 44-53%). The proportion of students who *received* FRP meals in the sample (76%) was similar to the proportion of students who were *eligible* for FRP meals based on CCD estimates (78%) overall; the sizeable differences in FRP certification estimates between CCD and FFVP students in Alaska and Delaware (which had the smallest sample sizes) may be due to factors other than survey completion status, including differences in the data source.[23]

[21] All school districts from the pilot sample but one were represented in the CCD data.

[22] Schools in Kansas and Maine were included only if they had students in all three grades, while those in Alaska and Delaware were included if they had students in at least one of these grades (to preserve a moderate sample size in these States).

[23] FRP eligibility determinations may vary across data sources: some analyzed CCD schools participated in Provision 2 and Provision 3 of the National School Lunch Program; other CCD estimates of FRP eligibility were

The racial/ethnic diversity in the sample was also similar to that of CCD students overall, although the sample had fewer non-Hispanic black students and slightly more non-Hispanic white students. Results did not substantially differ when based on students in on-site FFVP schools only (who comprised 94% of all surveyed FFVP students).

In the analysis examining student characteristics associated with parent survey completion (shown in Exhibit B.19), it was revealed that, in both fall and spring, girls were significantly more likely than boys to have a surveyed parent, as were children who found the fruits and vegetables served during free snacks appealing, compared with those who did not. Children who did not regularly eat school breakfast were significantly more likely than children who usually ate school breakfast daily to have a surveyed parent, as were children ate school lunch less than five times per week, compared with those who ate school lunch daily.[24] Additionally, in the fall, children who spoke English at home were significantly more likely than those who spoke a language other than English or Spanish (including those who spoke more than one language) to have a surveyed parent, as were children who liked most vegetables compared to those who disliked most vegetables. No other student survey characteristics analyzed differed significantly by parent survey completion status. The findings were similar when the analyses were conducted using unweighted data.

Taken together, the results indicate that children of parents who completed both the fall and spring surveys resembled children in nationally reported data within the pilot school districts with respect to gender, race/ethnicity, and FRP certification. Moreover, students whose parents completed a survey were similar to students whose parents did not complete a survey with respect to grade level, consumption of fruits and vegetables during free snack days, acceptability of fruit and vegetable types served during free snacks, and fondness for fruits. However, given the observed differences between students with and without a parent survey in gender, primary language, appeal of fruits and vegetables served during snacks, fondness for vegetables, and frequency of consumption of the school breakfast and lunch, the parent survey weights were calibrated to account for these characteristics in analyses of parent knowledge and acceptability of the FFVP pilot project.

based on all students in the school; and FRP meal participation in the FFVP-CFD study was based on parents' reports for 4th-6th graders only.

[24] While statistical comparisons were made between students with and without a parent survey, Exhibit B.19 reports student characteristics among students with a parent survey versus all surveyed students, in order to better examine the direction of bias in the reporting sample.

Exhibit B.18. Student characteristics (weighted) per FFVP-CFD parent survey versus common core data

Data source	FFVP student characteristic	Alaska	Delaware	Kansas	Maine	Overall
FFVP-CFD Parent Survey – Among all students (n=1,385)	Gender – Male	44%	52%	53%	49%	49%
	Receives Free or Reduced-Price Meals [a]	84%	86%	70%	71%	76%
	Race / Ethnicity [a]					
	American Indian or Alaska Native	58%	1%	<1%	1%	11%
	Asian	2%	1%	2%	<1%	1%
	Black (non-Hispanic)	<1%	22%	1%	13%	11%
	Native Hawaiian or other Pacific Islander	<1%	0%	0%	<1%	<1%
	White (non-Hispanic)	24%	29%	60%	72%	54%
	Multi-racial / Other	10%	5%	4%	6%	6%
	Hispanic	5%	41%	32%	8%	17%
Parent survey sample size		245	197	292	651	1,385
FFVP-CFD Parent Survey – Among students at on-site schools (n=1,304)	Gender – Male	44%	52%	53%	49%	49%
	Receives Free or Reduced-Price Meals [a]	81%	86%	70%	70%	75%
	Race / Ethnicity [a]					
	American Indian or Alaska Native	56%	1%	<1%	1%	8%
	Asian	4%	1%	2%	<1%	1%
	Black (non-Hispanic)	<1%	22%	1%	13%	12%
	Native Hawaiian or other Pacific Islander	<1%	0%	0%	<1%	<1%
	White (non-Hispanic)	24%	29%	60%	72%	56%
	Multi-racial / Other	9%	5%	4%	6%	6%
	Hispanic	6%	41%	32%	8%	18%
All CCD students[b] (n=13,559)	Gender – Male	50%	52%	51%	50%	51%
	Eligible for Free or Reduced-Price Meals	49%	99%	62%	72%	78%

Data source	FFVP student characteristic	Alaska	Delaware	Kansas	Maine	Overall
CCD 4th, 5th, and 6th grade students[b] (n=4,219)	Race / Ethnicity					
	American Indian or Alaska Native	84%	0%	<1%	<1%	11%
	Asian	5%	<1%	<1%	<1%	1%
	Black (non-Hispanic)	<1%	44%	1%	19%	25%
	Native Hawaiian or other Pacific Islander	2%	<1%	0%	0%	<1%
	White (non-Hispanic)	3%	16%	69%	75%	43%
	Multi-racial / Other	5%	<1%	3%	1%	2%
	Hispanic	<1%	38%	25%	3%	18%
CCD Sample size[b]		2,029	5,163	1,296	5,071	13,559

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Parent survey tabulations prepared by Mathematica Policy Research were weighted to be representative of 4th-6th grade classrooms in the pilot schools.

Note: Weighted percentages are out of the number of parents who answered each question (with item non-response ranging from 20-107 parents).

[a] Based on fall parent survey responses and weights, or if missing, spring parent survey responses and weights.

[b] 2013-2014 Common Core of Data (CCD), including 52 schools in the pilot districts that participated in the National School Lunch Program; schools in Kansas and Maine were included only if they had students in grades 4, 5, and 6, while schools in Alaska and Delaware were included if they had students in at least one of the three grades.

CFD = Canned, frozen or dried; CCD = Common Core of Data; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit B.19. Student characteristics (weighted) among all students versus those with a parent survey

Student survey characteristic	Fall 2014 All students (n=1,586)	Fall 2014 Students with parent survey (n=1,040)	Fall 2014 Increased chance of having a parent survey[a]	Spring 2015 All students (n=1,576)	Spring 2015 Students with parent survey (n=961)	Spring 2015 Increased chance of having a parent survey[a]
Gender						
Girls	50%	52%	24% *	51%	55%	54% *
Boys	50%	48%	referent	49%	45%	referent
Grade level						
4th	41%	39%	-27%	40%	39%	-3%
5th	38%	38%	-12%	37%	38%	12%
6th	21%	23%	referent	23%	22%	referent
Primary language spoken with parents						
English	75%	79%	72% *	76%	76%	4%
Spanish	5%	4%	45%	5%	5%	15%
Other (including more than one language)	20%	17%	referent	19%	19%	referent
Usually eats school lunch						
Never / Less than once a week	10%	10%	15%	9%	11%	98% *
1-4 times a week	19%	21%	30% *	20%	20%	13%
Every day	71%	70%	referent	71%	68%	referent
Usually eats school breakfast						
Never / Less than once a week	31%	33%	58% *	31%	37%	84% *
1-4 times a week	30%	31%	20%	33%	29%	-13%
Every day	38%	36%	referent	36%	34%	referent
Eats more F&V on days with free snacks						
Agree very much / a little	79%	80%	17%	76%	77%	12%
Disagree a lot / a little	21%	20%	referent	24%	23%	referent
F&V served during snacks look & taste good						
Agree very much / a little	79%	80%	30% *	77%	79%	46% *
Disagree a lot / a little	21%	20%	referent	23%	21%	referent
Wishes different F&V served during snacks						
Agree very much / a little	76%	75%	-18%	81%	81%	<-1%
Disagree a lot / a little	24%	25%	referent	19%	19%	referent
Likes most fruits						
Agree very much / a little	94%	94%	12%	94%	95%	35%
Disagree a lot / a little	6%	6%	referent	6%	5%	referent
Likes most vegetables						
Agree very much / a little	68%	70%	34% *	69%	70%	19%
Disagree a lot / a little	32%	30%	referent	31%	30%	referent

Source: Evaluation of the FFVP-CFD pilot project, SY 2014–2015. Parent survey tabulations prepared by Mathematica Policy Research were weighted to be representative of 4th-6th grade classrooms in the pilot schools.

Note: Weighted percentages are out of students who answered a question (with item non-response for 12-46 students) and may not sum to 100% due to rounding.

[a] From a logistic regression model of surveyed (vs. non-surveyed) parents of surveyed students; negative values reflect a lesser chance of survey completion.

* Change between surveyed vs. non-surveyed parents is significant at the 0.05 level.

CFD = Canned, frozen or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

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APPENDIX C

NUTRITION DATA COLLECTION IN SCHOOLS, CODING METHODS, AND FFVP SNACK OBSERVATIONS IN CLASSROOMS

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C.1.

DATA COLLECTION AND ILLUSTRATIVE SCHEDULE AT AN ELEMENTARY SCHOOL WITH GRADES 4-6

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APPENDIX C.1

Prior to making visits to schools to collect data, field interviewers (FIs) attended an in-person training for 4.5 days and were certified to the ASA24 software to collect dietary recalls. Following training, FIs continued to complete field exercises and practice sessions using the ASA24. Each field team had an in-person quality control visit by a member of the research team and received personalized feedback.[1]

The week before the scheduled target week, the FI team leader called the school liaison to confirm the visit. During that call, the team leader also confirmed the time that students were served breakfast to ensure that the site team would arrive at least 30 minutes beforehand. Upon arrival at the school on day 1, the FIs did the following:

- Collected the lists of students with consent in selected 4th–6th grade classrooms. All pilot schools used a passive consent process, whereby parents who did not want their child to participate in the study needed to contact the school or Mathematica to decline to participate.[2]
- Met with the teachers of selected classrooms and discussed the schedule and timing of data collection tasks for the week to ensure that they would minimize disruptions to instruction time and teachers' plans.
- Confirmed arrangements to interview students, including space to conduct the dietary recall interviews toward the end of the day (that is, library or multipurpose room).

FIs used laptops to (1) get school and classroom assignments, (2) verify the list of consented and assented students, (3) use the sampling program to select consented and assented students for a dietary recall interview on a given day, (4) access the software program to conduct the dietary recall interviews, (5) communicate with Mathematica survey headquarters, and (6) transmit daily logs and completed data to Mathematica daily.

[1]During their time in the field, FIs received weekly updates or reminders to enhance their work, and research staff were available to answer questions at any time. A telephone refresher training was held prior to the start of the spring data collection.

[2] Eleven parents (0.6% of 1,718 eligible students) declined participation for their student. Students also had to provide assent; in the fall 88 (5.2% of 1,707) consented students opted not to participate in the student survey or dietary recall portion of the study.

Exhibit C.1. Illustrative data collection schedule at an elementary school with grades 4-6

	Monday		Tuesday		Wednesday		Thursday		Friday	
	Program		Non-program		Program		Non-program		Program	
Day/Time	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity
8:00-9:15 a.m.	TL	Meet Principal. Meet with School Liaison to obtain classroom lists of consented students. Meet with Classroom Teachers to arrange orientation for sampled students for **Foods Eaten in School Today booklet**	TL	Make up time for recalls not completed on Monday			TL	Make up time for recalls not completed on Wednesday	TL	Make up time for recalls not completed on Thursday
	FI-1	Meet with FSM to confirm weekly menus for breakfast, lunch and snacks.	TL	Observe breakfast for **Reimbursable Foods Form;** leave with FSM to complete	FI-1	Observe breakfast for **Reimbursable Foods Form;** leave with FSM to complete	FI-1	Observe breakfast for **Reimbursable Foods Form;** leave with FSM to complete	FI-1	Observe breakfast for **Reimbursable Foods Form;** leave with FSM to complete
	FI-1	Observe breakfast for **Reimbursable Foods Form;** leave with FSM to complete								
	FI-2	Sample consented students for classroom observation. Inform classroom teachers.		Observe cafeteria/other food service areas for **Nutrition Education and Promotion Material Form**						
9:15-9:30 a.m.	TL, FI-1, FI-2	Team meeting								
9:30-10:00 a.m.	TL, FI-1, FI-2	**Foods Eaten in School Today** booklet orientation for sampled students			TL, FI-1, FI-2	**Foods Eaten in School Today** booklet orientation for sampled students	TL, FI-1, FI-2	**Foods Eaten in School Today** booklet orientation for sampled students	FI-1	Distribute **Foods Eaten in School Today** booklet to students sampled for second day recalls

	Monday		Tuesday		Wednesday		Thursday		Friday	
	Program		Non-program		Program		Non-program		Program	
Day/Time	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity
10:00-10:30 a.m.	TL, FI-1, FI-2	Observe AM snack distribution in 3 classrooms and 3 sampled students per classroom to complete **Classroom and Student FV Snacks Observation Forms**			TL, FI-1, FI-2	Observe AM snack distribution in 3 classrooms and 3 sampled students per classroom to complete **Classroom and Student FV Snacks Observation Forms**			TL	Observe AM snack distribution in 1 classroom with sampled students for second day recalls to complete **Classroom and Student-Level FV Snacks Observation Form**
10:30-11:30 a.m. 11:30 a.m.-1:00 p.m.	FI-2	Observe lunch for **Reimbursable Foods Form;** leave with FSM to complete	TL	Observe lunch for **Reimbursable Foods Form;** leave with FSM to complete	FI-2	Observe lunch for **Reimbursable Foods Form;** leave with FSM to complete	FI-2	Observe lunch for **Reimbursable Foods Form;** leave with FSM to complete	TL FI-1	Meet with FSM to complete **Daily Meal Counts Form** Observe lunch for **Reimbursable Foods Form;** leave with FSM to complete
1:00-2:00 p.m.	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast, lunch, and FFVP snacks	TL	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast and lunch	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast, lunch, and FFVP snacks	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast and lunch	TL	Closing meeting with Principal, FSM, liaison and teachers

	Monday		Tuesday		Wednesday		Thursday		Friday	
	Program		Non-program		Program		Non-program		Program	
Day/Time	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity	Staff	Activity
1:00-2:00 p.m.	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast, lunch, and FFVP snacks	TL	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast and lunch	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast, lunch, and FFVP snacks	FI-2	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast and lunch	FI-1	Meet with FSM to obtain completed **Reimbursable Foods Forms** with food descriptions, portion sizes, and preparation information for breakfast, lunch, and FFVP snacks
2:00-2:15 p.m.	TL, FI-1, FI-2	Observe PM snack distribution in 3 classrooms and 3 sampled students per classroom to complete **Classroom and Student FV Snacks Observation Forms**			TL, FI-1, FI-2	Observe PM snack distribution in 3 classrooms and 3 sampled students per classroom to complete **Classroom and Student FV Snacks Observation Forms**			FI-1	Observe PM snack distribution in 1 classrooms and sampled students for second day recalls to complete **Classroom and Student FV Snacks Observation Forms**
2:15-3:00 p.m.	TL, FI-1, FI-2	Conduct **In-School Dietary Recalls** with sampled and observed students			TL, FI-1, FI-2	Conduct **In-School Dietary Recalls** with sampled and observed students	TL, FI-1, FI-2	Conduct **In-School Dietary Recalls** with sampled students	TL, FI-1	Conduct second day **In-School Dietary Recalls** with sampled students
3:00-3:15 p.m.	TL, FI-1, FI-2	TL meet with FIs to review Monday activities			TL, FI-1, FI-2	TL meet with FIs to review Wednesday activities	TL, FI-1, FI-2	TL meet with FIs to review Thursday activities		

Source: Data Collection and Analysis Plan for the Evaluation of the FFVP-CFD Pilot Project (2014).

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FI = Field Interviewer; FSM = Food service manager; FV = Fruits and vegetables; TL = Team Leader.

C.2.

FOOD AND NUTRIENT CODING

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APPENDIX C.2.

A. School menu, student dietary intake, and FFVP observation data

This section describes the approach to processing and coding data to create the three most complex study databases for the FFVP-CFD: (1) fruit and vegetable snack and school menu data,[1] (2) FFVP snack observation data, and (3) in-school dietary recall data. The dietary data was processed in Mathematica's Cambridge, Massachusetts office. A team of qualified nutrition coders and a coding supervisor were recruited and hired locally for coding school menus. The coders and the supervisor were thoroughly trained using detailed training manuals and support materials that build on those developed for previous studies, including the School Nutrition and Meals Cost Study (SNMCS) and the fourth School Nutrition and Dietary Assessment Study (SNDA-IV).

1. Menu data from School-level Reimbursable Foods Form

Data collected on the School-Level Reimbursable Foods Form (RFF) were used to answer research questions about the types, forms, variety, and nutritional value of fruits and vegetables offered in FFVP snacks and reimbursable meals by pilot schools. These data were also used to standardize the food codes and provide more accurate portion size information for the in-school dietary intake and plate waste analyses.

Data from these forms were converted into electronic data files that provide, for every food, information about the nutrient content and food group content. The approach to developing the menu database builds on the approach that Mathematica has used in processing similar data for SNDA-III, SNDA-IV, and SNMCS. USDA's Survey Net system (version 4.0) was used to code all FFVP snacks (fruits, vegetables, and condiments offered with these items) as well as school lunch and breakfast items (including fruits, vegetables, entrees, bread/grains, etc.) reported on the RFF. Survey Net is linked to the **Food and Nutrient Database for Dietary Studies (FNDDS) (version 2011-2012)**—the same database that was used to analyze the dietary recalls—and provides food codes, descriptions, gram weights, and nutrient values for each food.

Survey Net Coding. Coding the menu data from the RFF in Survey Net was the first critical step in the data development process. Trained nutrition coders used Survey Net to match all foods reported on the School-Level Reimbursable Foods Forms to food codes in the FNDDS. Building on the SNDA-IV and SNMCS studies, coders followed standardized procedures and coding guidelines. As in prior studies, procedures and coding guidelines were periodically updated throughout the data processing period.

Coders were assigned to individual schools and responsible for entering menu data for each day of the target week. Unused fields in Survey Net were used to enter additional data needed for the analysis—for example, school ID, day of week, date, and meal or snack type (AM or PM). The coding supervisor, available at every shift to answer questions, provided feedback to coders, and monitored progress and productivity.

[1] Data from the School-Level RFF is referred to as "menu data," which include both FFVP snacks and school lunches and breakfasts.

Default food codes and forms were established for fruits and vegetables on the RFF form. For example, if fresh grapes were reported on the RFF and no further details were provided, the default food code and form used was 'seedless grapes, not specified to color'. The defaults established were based on those used in the SNDA-IV and SNMCS studies.

Creation of raw menu data files. Once the coding process was completed, menu and snack data were reviewed for missing data, duplicate entries, valid values, and nutrient outliers. Once the detailed checks were completed, menu and snack data was processed through Survey Net's analysis system, which performs systematic checks of data integrity and generates nutrient values for each menu item. The data files include one record per food, along with the reported portion size and associated gram weights, nutrient values, and other variables that were entered in Survey Net.

To obtain data on the food group content of FFVP snacks and school meal items (for example, cup equivalents of fruits and vegetables and HEI-2010 scores), FNDDS food codes were linked to the **Food Pattern Equivalents Database (FPED)**. The FPED contains data on the number of equivalents (in cups, ounces, grams or teaspoons) in a food for 37 USDA Food Pattern components (for example, whole fruit, grains, whole grains, oils). The food pattern equivalents included in the FPED were appended onto the menu file by merging on a common food code in the menu file.

2. Dietary recall data

The dietary recall database is constructed from two data sources: (1) the in-school dietary recall (collected using the diary- and interviewer-administered ASA24-2014[2]) and (2) the menu data. The menu data provided standardized food codes and portion size information for foods that students obtained from school breakfasts and lunches.

In-school dietary recalls were collected using ASA24; all foods are automatically coded with FNDDS food codes and MyPlate food groups and there is no manual coding in Survey Net, as needed with the USDA Automated Multiple-Pass Method. For foods obtained at school and coded in the menu data file, the portion size from the food diary was manually entered and matched by food coders to the food code and description of each food on the menu. Coders were assigned recalls for all students from the same classroom to streamline the review and entry of portion size information from the food diary for foods obtained at school. Coders reviewed each dietary recall to ensure that foods reported as obtained at school had a corresponding food code in the menu data. To calculate the amount consumed, coders also entered the number of portions each student reported and the percent that they consumed. Once the dietary recall data were coded and cleaned using detailed checks similar to those performed on the menu survey (recall files were reviewed for missing data, duplicate entries, valid values and nutrient outliers), the final steps to create the recall database were as follows:

- **Merge data from the menu database and student-level observation database onto the recall data file.** The menu data provides a food code, portion size, and associated nutrient and food group values that correspond to the foods reported by the FSM on the RFF. This

[2] Available at: https://asa24.nci.nih.gov/.

merge ensures that all foods reported in dietary recalls that were obtained from school lunches and breakfasts have consistent nutrient and food group values in the dietary recalls.

- **Use the portion sizes (and gram weights) from the menu data file to adjust the portion sizes reported by the student in the recall data for school breakfast and lunch items.**

3. Observation data from the Classroom and Student-Level Fruit and Vegetable Snacks Observation Form

Observation data were collected at the classroom and student level using the Classroom and Student-Level Fruit and Vegetables Snacks Observation Form. The data from classroom-level observations of FFVP snacks were used to assess average rates of student participation in the pilot. The student-level observation data were used to create the database needed for the plate waste analysis. After the raw observation data files were created, several data processing steps to create the final observation database were completed:

- **Merged the classroom- and student-level data files with the menu data file** using the date the snack was served and the type of snack. This step added to the observation databases a food code, detailed food description, portion size, gram weight, and associated nutrient and food group values for foods that were observed during FFVP snacks.
- **Computed the amounts of fruits and vegetables consumed and wasted** using (1) the portion size (and gram weight) served that was merged onto the observation data file from the menu data file, and (2) the percent leftover from the student-level observation data file.
- **Computed the corresponding amounts of nutrients and food groups that were consumed and wasted** for each snack observed.

The amounts of nutrients and food groups *wasted* were used (together with the amounts *served*) for the plate waste analysis.

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C.3.

CLASSROOM-LEVEL SNACK OBSERVATIONS

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APPENDIX C.3.

Trained observers (that is, the FIs) completed the Classroom and Student Fruit and Vegetable Snacks Observation Form for sampled classrooms. On each day of the target week, FIs reported whether an FFVP snack was provided to the classroom; the location, time, and type of snack provided; the number of portions offered to the classroom; the number of portions leftover in the classroom; and the number of portions taken by teachers or aides.[1]

1. Frequency of offering FFVP snacks

FFVP snacks may be offered on one or more days per school week, or not at all in a given week. For the 102 sampled classrooms in the pilot schools with on-site data collection, the number of program days during the target week observations varied from none (8% of classrooms in fall and 3% in spring) to five (11% of classrooms in fall and 25% in spring) (Exhibits C.3.a/b). In both fall and spring, most classrooms provided FFVP snacks on three or more days during the target week (75 and 80%, respectively), with three days per week being most common.[2] Snacks were offered more frequently in spring due to more classrooms providing snacks on four and five days of the week in the schools with on-site data collection, which included 92% of students in the pilot schools.

Exhibit C.3.a. Distribution of classrooms by number of days per week when FFVP snacks were offered

	Fall		Spring	
	Number	Percentage	Number	Percentage
Classrooms				
Number of days FFVP snack was offered				
None	8	8	3	3
1	2	2	0	0
2	16	16	17	17
3	46	45	35	34
4	19	19	22	22
5	11	11	25	25
Total number of classrooms	**102**	**100**	**102**	**100**
Classrooms offering FFVP snacks on three or more days per school week	76	75	82	80
Observations[a]	304	100	352	100
Observations missed by FIs[b]	23	8	26	8
Incomplete observations[c]	30	10	67	19
Number of snack observations[d]	251	83	259	74

[1] A snack is considered to be one portion as defined by the school menu for that program day.

[2] The pattern in the off-site small schools, based on SFA Directors' reports for a month in each season, indicated little change between fall and spring. Some schools (7 of 24 or 29%) did not offer FFVP snacks during the month reported for either season, some (10 of 24 or 42%) provided snacks on all school days during the month in both seasons, and some (7 of 24 or 29%) provided snacks on one or two days a week on average over the month. Of the latter category, one school increased snacks by one day weekly over the month, two schools decreased snacks by one day over the entire month, two schools increased snacks by one day over the entire month, and two were unchanged.

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Percentages may not sum to 100% due to rounding.

[a] The total number of classroom days with a snack offered is equal to the sum of (number days snack was offered) x (number of classrooms) from top panel of table. On one day, a classroom offered a snack in both the morning and afternoon, resulting in snacks being offered a total of 303 days, with 304 total observations.

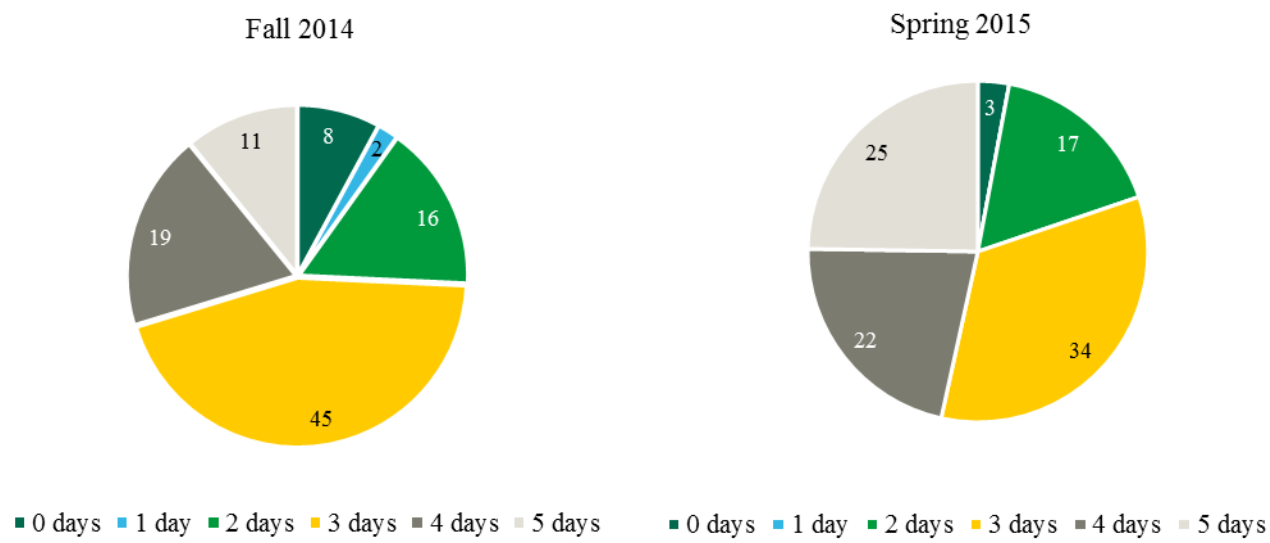
[b] Observations were missed if the FFVP snack was offered at a different time than anticipated due to classroom schedule changes, or if the observation was not feasible due to logistics (for example, classroom went on a field trip or FI was not available at the time the FFVP snack was offered due to other data collection needs).

[c] Observations were incomplete if data were missing for the number of snacks offered or the number of snacks leftover.

[d] Observations were complete if data were available for both the number of snacks offered and the number of snacks leftover.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FI = field interviewer; SY = school year.

Exhibit C.3.b. Distribution of classrooms by number of days per week when FFVP snacks were offered (percentage of classrooms)



Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form (fall n = p102, spring n = 102), SY 2014–2015. Tabulations prepared by Mathematica Policy Research. See Appendix Exhibit C.3.a.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

FIs missed some snack observations in classrooms (8% in fall and spring) due to last-minute changes in the scheduled snack time or venue, or because FIs could not be on-site due to changes in travel arrangements.[3] In addition, incomplete observations were obtained when FIs observed the type of snack served, but not the number of portions provided and/or leftover (10% in fall and 19% in spring), generally due to the method or timing of snack provision (for example, when snacks were provided from a cart in the hallway or when the snack was available for students to

[3] Travel arrangements/weather conditions accounted for only 10 missed observations.

take throughout the day or as they left the classroom).[4] Overall, observers provided counts of portions provided and leftover in classrooms for 83% of FFVP snacks served in fall and 74% served in spring.

2. FFVP snack observations in classrooms

An FFVP snack is considered to be one portion as defined by the school menu for that program day. Most snacks included a single type of fruit or vegetable. A small number of snacks (11 in spring) included more than one type served together (for example, carrots and celery).[5] In addition, a small number of classrooms (five in fall and nine in spring) provided students with a choice of snacks (for example, apple or banana).[6] Snacks that contained multiple foods as one snack were counted in the "All fruits and vegetables" row of Exhibits C.3.c/d and once in subsequent rows of the exhibit, except for two snacks. One snack in fall provided students with a choice of fruit or vegetable, so those were counted separately on the fruit and vegetables rows of Exhibit C.3.c; one snack in spring provided students with a choice of dried or fresh fruit; those were counted separately on the dried and fresh rows of Exhibit C.3.d.

The second column of Exhibit C.3.c shows the number of complete observations of FFVP snacks on program days. A complete observation is one in which observers provided the count of portions provided and left over. In spring, the rate of complete observations was comparable for fresh fruits and vegetables (73%) and CFD fruits and vegetables (75%).

Exhibit C.3.c. Mean percentage of FFVP snacks offered, served/taken, and left over per classroom, fall 2014

	Total classroom observations of FFVP snacks	Number of complete classroom observations of FFVP snacks	Mean number offered per classroom	Mean number served to/ taken by students	Mean number left over	Mean percentage of portions left over	SE
All fruits and vegetables	304	251	19.0	12.5	5.6	27.3	1.66
Fruits	220	187	18.7	12.7	5.0	24.5	2.18
Vegetables	85	65	19.4	11.6	7.5	36.9	1.38
Number of FFVP snacks across all classrooms	**304**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th–6th grade students at pilot schools with a total enrollment of 50 or more students.

[4] It was often possible to obtain student-level observations of snacks taken and plate waste, even when classroom counts of portions and/or leftovers were not obtained. Classroom observations depended on the method and timing of distribution; observation of students depended on whether individual students remained in the classroom.

[5] An identical number of portions was reported for both foods and counted once; if the number of leftovers varied (because students could pick out one type of food), then the number of leftovers was measured by the mean value.

[6] When students were offered a choice, the number of portions and leftovers was measured by the sum across foods.

Note: An FFVP snack was provided in 304 classrooms on a program day. The sum of the number of fruit and vegetable observations is 305, exceeding the total because one classroom provided students a choice of fruit or vegetables; the fruit and vegetable portions and leftovers were tabulated separately. Complete classroom observations were obtained for 251 FFVP snacks, providing the number of snacks offered, taken, and left over. A snack is considered to be one portion as defined by the menu data for that program day. This exhibit shows the mean number of FFVP snacks offered, served to students, and left over across all observed snacks. Because teachers and aides are allowed to take an FFVP snack, the mean number left over may not exactly equal the difference between the mean number offered minus the mean number taken. Analysis of offered, taken, and left over excludes one case of canned fruit being offered in one school.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

Exhibit C.3.d. Mean number of FFVP snacks offered, served/taken, and left over per classroom, spring 2015

	Total classroom observations of FFVP snacks	Number of complete classroom observations of FFVP snacks	Mean number offered per class-room	Mean number served to/taken by students	Mean number left over	Mean percentage of portions left over	SE
All fruits and vegetables	**352**	**259**	**18.4**	**13.3**	**4.2**	**21.9**	**1.83**
All fruits	**286**	**214**	**18.2**	**13.4**	**4.0**	**21.2**	**1.91**
Fresh	201	149	18.3	13.3	4.1	22.2	2.22
Canned	28	22	17.3	13.5	2.8	15.5	1.48
Frozen	5	5	9.0	8.8	0.0	0.0	0.00
Dried	53	39	18.8	14.3	4.3	21.5	2.56
All vegetables	**66**	**45**	**19.1**	**13.0**	**5.1**	**25.2**	**3.14**
Fresh	63	44	19.1	13.1	5.0	24.4	3.19
Canned	3	1	18.0	3.2	14.0	77.8	0.00
Number of FFVP snacks across all classrooms	**352**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th–6th grade classroom at pilot schools with a total enrollment of 50 or more students.

Note: An FFVP snack was provided in 352 classrooms on a program day. The sum of the number of fruit and vegetable observations is 353, exceeding the total because one classroom provided students a choice of fresh or dried fruit; the fresh and dried fruit portions and leftovers were tabulated separately. Complete classroom observations were obtained for 259 FFVP snacks, providing the number of snacks offered, taken, and left over. A snack is considered to be one portion as defined by the menu data for that program day. This exhibit shows the mean number of FFVP snacks offered, served to students, and left over across all observed snacks. Because teachers and aides are allowed to take an FFVP snack, the mean number left over may not exactly equal the difference between the mean number offered minus the mean number taken.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

For snacks with complete observations, the mean number of snacks offered per classroom depends on the number of students per classroom and the method of providing snacks. Most classrooms provided enough snacks for all students plus teachers/aides. In a small number of schools, staff obtained a count in advance of the number of students who wanted a snack each day. In the pilot, it was observed that the lowest mean number of snacks offered per classroom was frozen fruit, which was offered in one school that followed the practice of obtaining an advance count of students who wanted the snack.

The number of portions taken by students was calculated from the number provided, less the number taken by teachers/aides (not shown in exhibits), less the number left over. Teachers who are directly responsible for serving the fruit or vegetable to their students also may eat the FFVP snack and thus provide valuable role modeling.[7, 8]

3. Forms of FFVP snacks offered

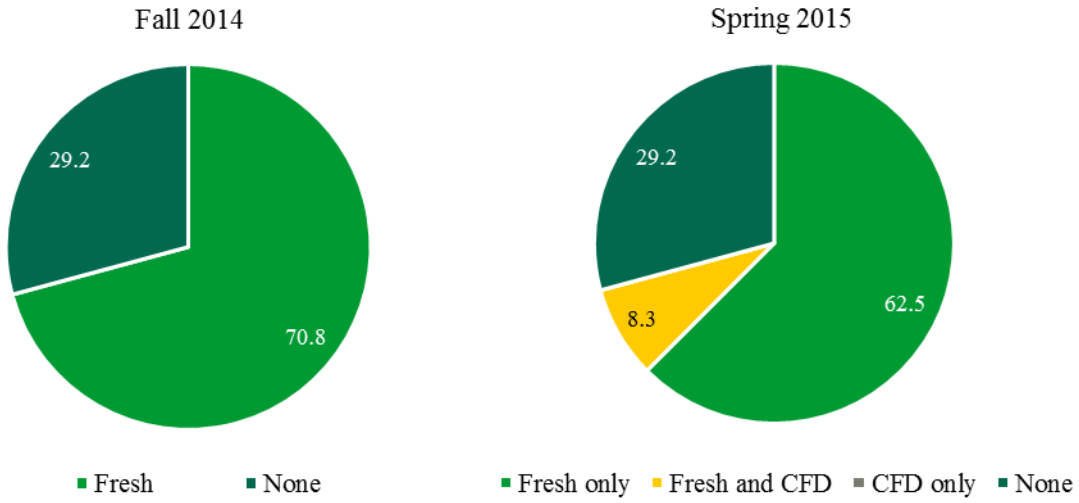
In spring, FFVP snacks included 286 fruit and 66 vegetable snacks (81% and 19%, respectively), compared with 220 fruit and 85 vegetable snacks in fall (72% and 28%, respectively). CFD snacks were provided in 89 of 352 snacks in spring (25%). As noted in Chapter 4, the CFD pilot introduced a large number of CFD fruits (86 of 286 fruit snacks, or 30%) but only three offerings of CFD vegetables.

In the small schools with off-site data collection, FFVP snacks were not offered in 71% percent in fall and 29% in spring in an average month (Exhibit C.3.e). In spring 2015, 63% of the small schools served only fresh fruits and vegetables and 8% percent served a combination of fresh and CFD items in an average month.

[7] USDA, Food and Nutrition Service. Fresh Fruit and Vegetable Program: A Handbook for Schools. December 2010. http://www.fns.usda.gov/sites/default/files/handbook.pdf.

[8] The number of portions taken by teachers or aides was missing for 132 observed snack days. Missing values were imputed using the mean value for that classroom for the given term (fall or spring) (n = 36). If the value was missing for a classroom for all days in the term, it was imputed using the mean across the school for the term (n = 90); if the value was missing for all classrooms in the school for all days in the term, it was imputed using the mean across all classrooms for the term (n = 6).

Exhibit C.3.e. Percentage of small schools' offering FFVP snacks by form



Source: Evaluation of the FFVP-CFD pilot project, FFVP Calendar (n=24), SY 2014–2015. Tabulations prepared by Mathematica Policy Research based on information provided by SFA Directors for one month for schools with a total student enrollment of less than 50.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

C. 4.

STUDENT-LEVEL SNACK AND PLATE WASTE OBSERVATIONS

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APPENDIX C.4.

Exhibit C.4. Observations of student FFVP snacks and plate waste

	Fall		Spring	
	Number	Percentage	Number	Percentage
Number of students served FFVP snacks on program days				
Total students with completed day 1 recalls	1,255	100	1,236	100
Student reported snack on recall	616	49	590	48
Students observed to be served a snack	552	44	576	47
Among students observed to take a snack	552	100	576	100
Plate waste observed	535	96	548	95
Plate waste not observed	17	4	28	5
Among those with plate waste observed	535	100	548	100
Students took additional serving of snack	69	13	56	10
Did not take additional serving of snack	432	81	476	87
Not observed if took additional serving of snack	34	6	16	3

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Percentages are unweighted.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

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APPENDIX D

SURVEY DATA

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Exhibit D.1. Factors influencing Child Nutrition Director decisions to apply or not apply to the FFVP-CFD pilot project

	States that applied to FFVP-CFD	States that did not apply to FFVP-CFD
School access to fresh fruits and vegetables through distribution/delivery		
Percentage indicating major factor	100.0	59.1
Percentage indicating minor factor	0.0	15.9
Percentage indicating not a factor	0.0	25.0
Total n	**4**	**44**
School facilities to store fresh fruits and vegetables		
Percentage indicating major factor	25.0	45.5
Percentage indicating minor factor	25.0	22.7
Percentage indicating not a factor	50.0	31.8
Total n	**4**	**44**
School ability to afford to obtain fresh fruits and vegetables		
Percentage indicating major factor	50.0	38.6
Percentage indicating minor factor	25.0	25.0
Percentage indicating not a factor	25.0	36.4
Total n	**4**	**44**
Food service staff skills to prepare fresh fruits and vegetables for use in the FFVP		
Percentage indicating major factor	25.0	34.1
Percentage indicating minor factor	25.0	29.5
Percentage indicating not a factor	50.0	36.4
Total n	**4**	**44**

Source: Evaluation of the FFVP-CFD pilot project, State Child Nutrition Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.2. Child Nutrition Director reasons for not applying to the FFVP-CFD pilot project

	Percentage indicating reason as a major factor	Percentage indicating reason as a minor factor	Percentage indicating reason was not a factor
Reasons related to the application process			
The timeline to submit applications was too short	20.9	16.3	62.8
No SFAs in the State applied for the FFVP-CFD	11.4	6.8	81.8
The State did not have cooperation from SFAs, principals, or other officials	9.1	6.8	84.1
The State did not have enough information about the application process	4.5	18.2	77.3
The State did not receive complete and accurate applications	2.3	4.7	93.0
SFAs did not prepare adequate implementation plans for the FFVP-CFD	2.3	11.4	86.4
Total n	**44**	**44**	**44**
Reasons related to the requirements of the FFVP-CFD pilot project			
Schools have adequate access to fresh fruits and vegetables through distribution/delivery and do not need the pilot project	59.1	15.9	25.0
Schools have adequate facilities to store fresh fruits and vegetables and do not need the pilot project	45.5	22.7	31.8
Requirements of participation in the pilot project were not appealing	43.2	22.7	34.1
Schools can afford to obtain fresh fruits and vegetables and do not need the pilot project	38.6	25.0	36.4
Food service staff have the skills to prepare fresh fruits and vegetables for use in the FFVP and do not need the pilot project	34.1	29.5	36.4
The State prefers to serve fresh fruits and vegetables only[a]	25.0	0.0	75.0
The State lacked staff capacity to participate in the pilot[a]	20.5	0.0	79.5
The State prefers to use local or farm-to-school produce for the FFVP snacks[a]	9.1	0.0	90.9
Other[b]	13.6	0.0	86.4
Total n	**44**	**44**	**44**

Source: Evaluation of the FFVP-CFD pilot project, State Child Nutrition Director Survey, nonpilot States, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

[a] Indicates reasons consolidated from write-in responses. Respondents who did not select each reason were coded as not citing it as a factor.

[b] Indicates write-in responses that did not fit into other categories. Examples include lack of interest among SFAs, uncertainty about the availability of vendors for CFD items, and concern about causing confusion among staff regarding what items would be allowable under the pilot.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit D.3. Characteristics of FFVP-CFD pilot and non-pilot States

	States that applied to FFVP-CFD	States that did not apply to FFVP-CFD	All States
Number of SFAs that submitted applications to FFVP for SY 2014	364	4,179	4,543
Number of States with a target for average dollar amount allocated per student for SY 2014	3	43	46
Average dollar amount allocated per student for SY 2014	50	55	54
Total n	**4**	**45**	**49**
Characteristics of the largest SFAs with elementary schools that applied for FFVP in SY 2014–2015			
Average number of elementary schools	51	125	118
Average number of schools that applied for the FFVP	21	35	34
Average number of students in largest school	646	850[a]	831[a]
Average number of students in smallest school	226	488	463
Average number of years SFA participated in FFVP prior to SY 2014–2015	5	6	5
Total n	**4**	**43**	**47**
Characteristics of the smallest SFAs with elementary schools that applied for FFVP in SY 2014–2015			
Average number of elementary schools	1	5	5
Average number of schools that applied for the FFVP	1	3	3
Average number of students in largest school	107	185	177
Average number of students in smallest school	107	108	108
Average number of years SFA participated in FFVP prior to SY 2014–2015	3	2	2
Total n	**4**	**43**	**47**
State practices to determine SFA eligibility for the FFVP-CFD pilot project			
Number that reviewed SFA data	3	n.a.	n.a.
Number that reviewed FFVP claims from previous year(s)	3	n.a.	n.a.
Number that reviewed other State level data	3	n.a.	n.a.
Number that discussed with SFA Directors	3	n.a.	n.a.
Number that discussed with other State partners	1	n.a.	n.a.
Number that did not engage in any practices	0	n.a.	n.a.
Total n	**4**	n.a	n.a

Source: Evaluation of the FFVP-CFD pilot project, State Child Nutrition Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

[a] Excludes two States that did not apply to the FFVP-CFD pilot because their responses were extreme outliers and suggested that the reported number of students was for the largest SFA, not the largest school within the largest SFA.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; n.a. = not applicable; SFA = School Food Authority; SY = school year.

Exhibit D.4. State criteria for selecting schools to apply for the FFVP-CFD pilot project

	States that applied to pilot			
	Alaska	Delaware	Kansas	Maine
Number of schools applying from the same SFA				
School size (enrollment)				
Operates under Provision 1, 2, 3 or Community Eligibility Provision				
Grades served by school				
Lack of on-site kitchen				
Lack of on-site refrigerator suitable for FFVP use				
Percentage of students approved for free/reduced price meals			✓	
Satisfactory performance in operating FFVP in the previous school year	✓		✓	✓
Number of days per week/month for FFVP to be offered				
Geographic isolation	✓		✓	✓

Source: Evaluation of the FFVP-CFD pilot project, State Child Nutrition Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: In addition to State criteria, schools needed to meet Federal eligibility requirements to apply for the pilot. Delaware and Maine considered only the federally required criteria.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit D.5. Principal reports of FFVP promotional activities

Nutrition education or promotional activities or displays within the previous four weeks	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Schools with any nutrition education or promotion activities about fruits and vegetables during the past four weeks	52.9	53.7	0.7
n	**34**	**41**	**-**
Among schools with nutrition education or promotion activities, the activities were led by (multiple answers allowed):			
Classroom teacher	72.2	59.1	-13.1
Principal or administrator	16.7	13.6	-3.0
School or district food service staff	50.0	31.8	-18.2
Nutritionist or dietitian	16.7	27.3	10.6
Doctor, nurse, or other health professional	11.1	13.6	2.5
Trained non-professional	16.7	18.2	1.5
Other[a]	0.0	22.7	22.7
n	**18**	**22**	**-**
Schools with displays, such as posters or banners that conveyed nutrition education or promotion messages during the past four weeks	82.4	73.2	-9.2
n	**34**	**41**	**-**
Among schools with displays, specific messages conveyed were (multiple answers allowed):			
Role of fruits and vegetables in a healthy diet	85.2	93.1	7.9
Where fresh fruits and vegetables come from, links to local farms	25.9	24.1	-1.8
Trying new fruit and vegetable snacks	37.0	31.0	-6.0
Cooking with fruits and vegetables	18.5	20.7	2.2
Other[b]	11.1	20.7	9.6
n	**27**	**29**	**-**
Since January 1, 2015, is the average time spent on fruit and vegetable nutrition education more than, less than, or the same as in the fall 2014?			
More time per week than in fall 2014	n.a.	12.2	n.a.
Less time per week than in fall 2014	n.a.	4.9	n.a.
Same amount of time per week as in fall 2014	n.a.	70.7	n.a.
Don't know	n.a.	12.2	n.a.
n	**-**	**41**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Principal Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Change between fall and spring is significant at the 0.05 level.

[a] Examples of responses in spring include: farmer's market, food corporation, community agency, health teacher, and extension agents.

[b] Examples of responses include: information on a balanced diet, encouraging parents to cook healthy with children, the sugar in soda/sweets, how a healthy diet affects how children sleep, and sports figure eating healthy foods.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; n.a. = not applicable; SY = school year.

Exhibit D.6. Food service manager reports of FFVP promotional activities

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Promotional activities engaged in (multiple answers allowed):				
Fliers sent home		37.8	27.9	-9.9
Taste tests for students		27.0	41.9	14.8
Nutrition education classes/instruction to students		27.8	48.8	21.1
Verbal encouragement to students to eat the fruit and vegetable snacks		86.5	84.1	-2.4
Loudspeaker announcements		13.5	25.6	12.1
Information to teachers on fruits and vegetables		62.2	54.5	-7.6
How often do you change posters or displays in the cafeteria or other food service area to promote fruits and vegetables?	Daily or weekly	5.6	5.0	-0.6
	Monthly	36.1	42.5	6.4
	Less frequently	27.8	45.0	17.2
	Don't use displays	30.6	7.5	-23.1
Significance				
Total n		**37**	**44**	**-**

Source: Evaluation of the FFVP-CFD pilot project, FSM Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100% due to rounding.

*Change between fall and spring is significant at the 0.05 level. For questions with multiple answers allowed, significance testing was conducted at the individual category level. Otherwise, significance testing was conducted on the distribution.

[a]Multiple responses were allowed.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SY = school year.

Exhibit D.7. School Food Authority Director reports of fruit and vegetable forms served in CFD pilot schools, spring 2015

Did the FFVP-CFD pilot help…	Response	Percentage
What forms of fruits have the CFD pilot schools within your district offered through the FFVP since January 1, 2015?	Mainly fresh	22.6
	Mainly canned, frozen, or dried	6.5
	Mix of fresh and canned, frozen, or dried	71.0
What forms of vegetables have the CFD pilot schools within your district offered through the FFVP since January 1, 2015?	Mainly fresh	77.4
	Mainly canned, frozen, or dried	6.5
	Mix of fresh and canned, frozen, or dried	16.1
Total n		**31**

Source: Evaluation of the FFVP-CFD pilot project, SFA Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.8. Student knowledge of the FFVP

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Have you heard or seen any information around school about the free fruit and vegetable snacks?	Yes	60.2	56.8	-3.3
	No	39.8	43.2	3.3
Significance				
	n	**1,572**	**1,533**	**-**
If yes, where did you see or hear the information?[a] (Multiple answers allowed)	School cafeteria staff	43.7	39.8	-3.9
	Announcement over the loud speaker	18.2	18.9	0.7
	Poster around school	25.5	22.5	-3.0
	Teacher/classroom	38.7	41.7	3.0
	Other[b]	18.4	12.8	-5.6 *
	n	**936**	**914**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Student Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

*Change between fall and spring is significant at the 0.05 level.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

[a]Multiple responses were allowed.

[b]Other responses given include assembly, home/parents, school staff, students/friends, cafeteria/lunch line, hallways, newsletter. All responses were 2% or less.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.9. Student participation in FFVP, usual proportion of fruit and vegetable snacks consumed, and reasons for non-participation, by student report

	Response	Fall 2014 (Percentage)	Spring 2015 (Percentage)	Change
When they are offered, how often do you usually take the free fruit snack?	Every time offered	34.6	27.4	-7.3
	Most times offered	43.8	47.9	4.1
	Occasionally	17.4	19.9	2.6
	Never	3.5	4.0	0.5
	Haven't seen it offered	0.7	0.8	0.1
	n	**1,578**	**1,568**	**-**
Significance				
If you take the free fruit snack when it is offered, how much of it do you usually eat?	I usually eat all of it	50.5	49.2	-1.4
	I usually eat most of it	28.7	30.0	1.3
	I usually eat some of it	14.2	13.8	-0.4
	I don't usually eat any of it	3.1	2.4	-0.7
	I don't usually take the free fruit	3.5	4.7	1.3
	n	**1,579**	**1,568**	**-**
Significance				
If you usually eat some or you usually don't eat any or take the fruit snack, why don't you eat or take it? (Multiple answers allowed)	Don't like the kind of fruit	47.0	45.0	-2.1
	Don't like the taste of fruit	33.2	38.4	5.3
	Don't like the way it looks	13.4	14.3	0.9
	Don't have time to eat it	17.4	21.5	4.1
	Other reason[a]	20.4	17.0	-3.3
	n	**292**	**300**	**-**
When they are offered, how often do you usually take the free vegetable snack?	Every time offered	19.5	16.8	-2.7
	Most times offered	37.2	34.9	-2.3
	Occasionally	25.9	32.1	6.2
	Never	14.7	14.8	0.1
	Haven't seen it offered	2.7	1.5	-1.2
	n	**1,581**	**1,568**	**-**
Significance				†
If you take the free vegetable snack when it is offered, how much of it do you usually eat?	I usually eat all of it	30.2	26.2	-4.0
	I usually eat most of it	30.3	31.6	1.3
	I usually eat some of it	19.0	21.2	2.2
	I don't usually eat any of it	7.7	6.8	-1.0
	I don't usually take the free vegetable	12.7	14.2	1.5
	n	**1,553**	**1,564**	**-**
Significance				

EXHIBIT D.9. *(continued)*

	Response	Fall 2014 (Percentage)	Spring 2015 (Percentage)	Change
If you usually eat some or you usually don't eat any or take the vegetable snack, why don't you eat or take it? (Multiple answers allowed)	Don't like the kind of vegetable	52.3	55.2	2.8
	Don't like the taste of vegetables	51.3	47.7	-3.6
	Don't like the way it looks	10.3	10.0	-0.3
	Don't have time to eat it	8.9	12.9	4.0*
	Other reason[a]	10.4	9.6	-0.8
	n	**548**	**624**	**-**
If you do not take the fruit or vegetable snacks when they are offered, why not? (Multiple answers allowed)	I already take them every time they are offered	56.9	50.0	-6.9*
	I don't like fruits	5.8	6.4	0.6
	I don't like vegetables	22.8	22.1	-0.7
	I'm not hungry when they are offered	18.9	23.0	4.1*
	I don't like the look of the fruits and vegetables offered	6.8	13.4	6.7*
	I'm not in class during snack time	3.1	2.8	-0.4
	n	**1,506**	**1,502**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Student Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade students in pilot schools with a total enrollment of 50 or more students.

Note: Totals may not sum to 100 percent due to rounding.

*Change between fall and spring is significant at the 0.05 level.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

[a]Other reasons students cited included bringing snacks from home, the poor quality of the snacks, not being hungry at snack time, and not seeing snacks offered.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.10. Student participation in FFVP based on parent report

	Response	Fall 2014 (Percentage)	Spring 2015 (Percentage)	Change
My child eats the free fruit and vegetable snacks offered at school.	All of the time	34.0	34.0	0.0
	Most of the time	35.0	37.2	2.2
	Some of the time	25.1	22.7	-2.3
	Rarely or never	4.4	5.1	0.7
	Don't know	1.5	1.0	-0.5
Significance				
Total n		**1,102**	**1,045**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Parent Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of parents of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.11. Food service managers' perceptions of student consumption of FFVP snacks

		Quantity consumed of FFVP snacks served in cafeteria (food service manager observation)		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
How much of the fruits provided in the FFVP do students usually eat?	All or most (>75%)	56.7	59.1	2.4
	Much (50-75%)	6.7	15.9	9.2
	Some (25-49%)	0.0	2.3	2.3
	Little or none (<25%)	0.0	0.0	0.0
	Don't know or not applicable	36.7	22.7	-13.9
Significance				
How much of the vegetables provided in the FFVP do students usually eat?	All or most (>75%)	23.3	29.5	6.2
	Much (50-75%)	23.3	25.0	1.7
	Some (25-49%)	13.3	20.5	7.1
	Little or none (<25%)	0.0	2.3	2.3
	Don't know or not applicable	40.0	22.7	-17.3
Significance				
Total n		**30**	**44**	**-**

Source: Evaluation of the FFVP-CFD pilot project, FSM Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SY = school year.

Exhibit D.12. Teachers' perceptions of student consumption of FFVP snacks

		Quantity consumed of FFVP snacks served in classroom (teacher observation)		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
How much of the fruits provided in the FFVP do students usually eat?[a]	More than half	95.7	94.8	-0.8
	Some	3.4	4.1	0.7
	Little or none	0.0	0.0	0.0
	Don't know or not applicable	0.9	1.0	0.1
Significance				
How much of the vegetables provided in the FFVP do students usually eat?[a]	More than half	64.5	75.9	11.4
	Some	28.6	12.9	-15.7
	Little or none	4.0	1.6	-2.4
	Don't know or not applicable	2.9	9.6	6.7
Significance				
Total n		**87**	**118**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Teacher Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

[a]The survey question was asked slightly differently in the fall and spring surveys. The responses options have been collapsed to be compatible with both versions of the question.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.13. Nutrition staff's perceptions of student acceptance of the FFVP

		School Food Authority Director			Food service manager		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students like the free fruit snacks	Agree strongly	n.a.	n.a.	n.a.	92.3	88.6	-3.7
	Agree somewhat	n.a.	n.a.	n.a.	7.7	11.4	3.7
	Disagree somewhat	n.a.	n.a.	n.a.	0.0	0.0	0.0
	Disagree strongly	n.a.	n.a.	n.a.	0.0	0.0	0.0
	Don't know or not applicable	n.a.	n.a.	n.a.	0.0	0.0	0.0
Significance							
Students like the free vegetable snacks	Agree strongly	n.a.	n.a.	n.a.	34.6	45.5	10.8
	Agree somewhat	n.a.	n.a.	n.a.	57.7	43.2	-14.5
	Disagree somewhat	n.a.	n.a.	n.a.	3.8	2.3	-1.6
	Disagree strongly	n.a.	n.a.	n.a.	3.8	6.8	3.0
	Don't know or not applicable	n.a	n.a.	n.a.	0.0	2.3	2.3
Significance							
I wish more students took the free fruit snacks	Agree strongly	29.6	29.0	-0.6	38.2	36.4	-1.9
	Agree somewhat	29.6	25.8	-3.8	23.5	31.8	8.3
	Disagree somewhat	11.1	16.1	5.0	2.9	4.5	1.6
	Disagree strongly	7.4	6.5	-1.0	2.9	4.5	1.6
	Don't know or not applicable	22.2	22.6	0.4	32.4	22.7	-9.6
Significance							
I wish more students took the free vegetable snacks	Agree strongly	48.1	41.9	-6.2	47.1	47.7	0.7
	Agree somewhat	22.2	19.4	-2.9	23.5	22.7	-0.8
	Disagree somewhat	3.7	9.7	6.0	0.0	4.5	4.5
	Disagree strongly	14.8	6.5	-8.4	2.9	4.5	1.6
	Don't know or not applicable	11.1	22.6	11.5	26.5	20.5	-6.0
Significance							
	Agree strongly	n.a.	n.a.	n.a.	42.3	54.5	12.2

EXHIBIT D.13. *(CONTINUED)*

		School Food Authority Director			Food service manager		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students eat more FV on program days	Agree somewhat	n.a.	n.a.	n.a.	42.3	31.8	-10.5
	Disagree somewhat	n.a.	n.a.	n.a.	7.7	9.1	1.4
	Disagree strongly	n.a.	n.a.	n.a.	0.0	0.0	0.0
	Don't know or not applicable	n.a	n.a	n.a.	7.7	4.5	-3.1
Significance							
Total n		**27**	**31**	**-**	**35**	**44**	**-**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director and FSM Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FSM = Food service manager; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; n.a. = not applicable; SFA = School Food Authority; SY = school year.

Exhibit D.14. Education staff's perceptions of student acceptance of the FFVP

		Principal			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students like the FFVP fruits	Agree strongly	n.a.	n.a.	n.a.	74.8	68.6	-6.3
	Agree somewhat	n.a.	n.a.	n.a.	23.9	29.9	6.0
	Disagree somewhat	n.a.	n.a.	n.a.	0.6	1.6	0.9
	Disagree strongly	n.a.	n.a.	n.a.	0.0	0.0	0.0
	Don't know or not applicable	n.a.	n.a.	n.a.	0.6	0.0	-0.6
Significance							
Students like the FFVP fruits vegetables	Agree strongly	n.a.	n.a.	n.a.	37.1	24.8	-12.3
	Agree somewhat	n.a.	n.a.	n.a.	51.3	58.3	7.0
	Disagree somewhat	n.a.	n.a.	n.a.	7.0	7.1	0.1
	Disagree strongly	n.a.	n.a.	n.a.	2.1	1.3	-0.9
	Don't know or not applicable	n.a.	n.a.	n.a.	2.6	8.6	6.0
Significance							
I wish more students took the fruit snacks	Agree strongly	26.5	19.5	-7.0	26.7	27.6	0.9
	Agree somewhat	38.2	53.7	15.4	31.7	37.0	5.3
	Disagree somewhat	5.9	7.3	1.4	17.0	15.5	-1.5
	Disagree strongly	8.8	12.2	3.4	12.2	12.3	0.2
	Don't know or not applicable	20.6	7.3	-13.3	12.4	7.5	-4.9
Significance							
I wish more students took the vegetable snacks	Agree strongly	29.4	24.4	-5.0	37.1	35.2	-2.0
	Agree somewhat	44.1	51.2	7.1	35.9	36.1	0.2
	Disagree somewhat	5.9	4.9	-1.0	9.5	14.0	4.6
	Disagree strongly	2.9	9.8	6.8	6.0	5.9	-0.1
	Don't know or not applicable	17.6	9.8	-7.9	11.5	8.8	-2.7
Significance							

EXHIBIT D.14. *(continued)*

		Principal			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students eat more FV on program days	Agree strongly	n.a.	n.a.	n.a.	68.0	58.2	-9.9
	Agree somewhat	n.a.	n.a.	n.a.	25.5	27.6	2.1
	Disagree somewhat	n.a.	n.a.	n.a.	0.0	5.8	5.8
	Disagree strongly	n.a.	n.a.	n.a.	0.0	0.6	0.6
	Don't know or not applicable	n.a.	n.a.	n.a.	6.4	7.7	1.3
Significance							†
Total n		**34**	**41**	**-**	**122**	**118**	**-**

Sources: Evaluation of the FFVP-CFD pilot project, Principal and Teacher Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; n.a. = not applicable; SY = school year.

Exhibit D.15. Students' reported interest in and consumption of fruits and vegetables

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
I eat more fruits and vegetables on days when free fruit and vegetable snacks are given at school than on other days.	I agree very much	37.1	31.9	-5.3
	I agree a little	41.4	43.9	2.4
	I disagree a little	13.1	14.5	1.4
	I disagree a lot	8.4	9.8	1.5
Significance				†
The free fruits and vegetables they give us for school snacks look good and taste good.	I agree very much	38.8	34.7	-4.2
	I agree a little	40.0	42.1	2.1
	I disagree a little	15.7	16.9	1.2
	I disagree a lot	5.4	6.3	0.9
Significance				
I wish they would give us different kinds of fruits and vegetables to eat for school snacks.	I agree very much	51.3	52.0	0.7
	I agree a little	24.7	29.0	4.4
	I disagree a little	12.5	9.8	-2.7
	I disagree a lot	11.6	9.2	-2.4
Significance				†
On days when I eat a free fruit or vegetable snack at school, I don't eat other kinds of snacks.	I agree very much	17.5	14.2	-3.3
	I agree a little	24.0	21.4	-2.6
	I disagree a little	25.6	28.8	3.1
	I disagree a lot	32.8	35.7	2.8
Significance				†
I hope the free fruit and vegetable snacks continue at our school.	I agree very much	76.8	71.9	-4.9
	I agree a little	14.3	19.0	4.7
	I disagree a little	5.3	4.5	-0.8
	I disagree a lot	3.6	4.5	1.0
Significance				†
I like most fruits.	I agree very much	76.6	76.4	-0.1
	I agree a little	17.6	17.7	0.1
	I disagree a little	3.6	3.6	0.0
	I disagree a lot	2.3	2.4	0.1
Significance				
I like most vegetables.	I agree very much	36.6	35.0	-1.6
	I agree a little	31.5	33.4	1.9
	I disagree a little	19.0	19.2	0.2
	I disagree a lot	12.9	12.4	-0.5
Significance				
I like to try new kinds of fruits	I agree very much	67.4	63.4	-4.0
	I agree a little	21.9	24.1	2.3
	I disagree a little	5.6	7.1	1.5
	I disagree a lot	5.2	5.4	0.2
Significance				
I like to try new kinds of vegetables	I agree very much	42.3	39.8	-2.5
	I agree a little	27.5	27.9	0.5
	I disagree a little	15.2	16.3	1.1
	I disagree a lot	15.1	16.0	0.9
Significance				

EXHIBIT D.15. *(continued)*

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Total n		**1,575**	**1,565**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Student Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SY = school year.

Exhibit D.16. Food service managers' and teachers' perceptions of benefits of FFVP

		Food service manager			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students eat more fruits and vegetables	Major benefit	89.2	88.6	-0.6	91.9	92.3	0.4
	Minor benefit	10.8	11.4	0.6	5.8	5.8	-0.1
	Not a benefit	0.0	0.0	0.0	1.0	1.3	0.3
	Don't know	0.0	0.0	0.0	1.3	0.6	-0.6
Significance							
Students are more willing to try new foods[a]	Major benefit	75.7	75.0	-0.7	60.5	66.0	5.5
	Minor benefit	18.9	15.9	-3.0	33.3	28.2	-5.0
	Not a benefit	5.4	6.8	1.4	2.6	5.2	2.6
	Don't know	0.0	2.3	2.3	3.7	0.6	-3.0
Significance							
Students learn about healthy foods	Major benefit	78.4	79.5	1.2	61.1	60.8	-0.3
	Minor benefit	16.2	11.4	-4.9	28.5	27.6	-0.9
	Not a benefit	0.0	2.3	2.3	4.7	9.6	5.0
	Don't know	5.4	6.8	1.4	5.7	1.9	-3.8
Significance							
Students eat fewer unhealthy foods	Major benefit	43.2	47.7	4.5	37.1	44.8	7.8
	Minor benefit	27.0	27.3	0.2	26.9	26.8	-0.1
	Not a benefit	8.1	6.8	-1.3	20.6	13.7	-6.9
	Don't know	21.6	18.2	-3.4	15.4	14.6	-0.9
Significance							
Improved student behavior	Major benefit	29.7	25.0	-4.7	22.2	22.3	0.0
	Minor benefit	27.0	43.2	16.2	26.7	22.9	-3.8
	Not a benefit	8.1	2.3	-5.8	32.4	33.7	1.3
	Don't know	35.1	29.5	-5.6	18.7	21.1	2.5
Significance							
Total n		**37**	**44**	**-**	**122**	**118**	**-**

Sources: Evaluation of the FFVP-CFD pilot project, FSM and Teacher Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

[a]In the teacher survey, the question was, "Students are more willing to try new fruits and vegetables."

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SY = school year.

Exhibit D.17. Principals' and food service managers' perceptions of benefits of FFVP-pilot, spring 2015

Did the FFVP-CFD pilot help…	Response	Principal (percentage)	Food Service Manager (percentage)
Increase how often your school offers fruit and vegetable snacks?	Yes	52.5	50.0
	No	27.5	43.2
	Don't know	20.0	6.8
Improve students' acceptance of and satisfaction with the program?	Yes	56.1	75.0
	No	17.1	6.8
	Don't know	26.8	18.2
Improve the overall FFVP program?	Yes	65.9	77.3
	No	17.1	11.4
	Don't know	17.1	11.4
Manage your school's cost of offering the FFVP?	Yes	n.a.	45.5
	No	n.a.	15.9
	Don't know	n.a.	38.6
Improve the quality of fruit and vegetable snacks?	Yes	n.a.	70.5
	No	n.a.	29.5
	Don't know	n.a.	0.0
Improve the quantity of fruit and vegetable snacks?	Yes	n.a.	63.6
	No	n.a.	34.1
	Don't know	n.a.	2.3
Improve the variety of fruits and vegetable snacks?	Yes	n.a.	81.8
	No	n.a.	15.9
	Don't know	n.a.	2.3
What would you like to see happen in the FFVP for the next school year?	I think the FFVP should offer only fresh fruit and vegetables	14.6	n.a.
	I think the FFVP should offer only canned, frozen, and dried fruit and vegetables	0.0	n.a.
	I think schools should serve a mix of fresh, canned, frozen, dried fruits and vegetables as snacks	80.5	n.a.
	I do not have an opinion on the types of fruits and vegetables offered, but want to see the program continue	4.9	n.a.
	I have no opinion on the FFVP	0.0	n.a.
Total n		**41**	**44**

Source: Evaluation of the FFVP-CFD pilot project, Principal and FSM Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; n.a. = not applicable; SY = school year.

Exhibit D.18. Parents' knowledge and acceptance of the FFVP-CFD pilot, spring 2015

	Response	Percentage
Has anything changed in the free fruit and vegetable snacks since January 1, 2015?	Yes	20.8
	No	29.5
	Don't know	49.7
	n	**1,030**
If yes, what has changed in the free fruit and vegetable snack program? (Multiple answers allowed)	Free snacks on more days of the week	33.6
	Fresh fruits and vegetables less often	18.2
	No fresh fruit at all	6.6
	No fresh vegetables at all	5.8
	Other[a]	38.2
	Added different fruit, vegetables, or other items	28.5
	Added canned, frozen, or dried fruits or vegetables	7.8
	Don't know	13.8
	n	**204**
Which of the following types of fruit and vegetable snacks do you prefer for your child to be served in school?	Fresh fruit and vegetable snacks	66.5
	Canned, frozen, or dried fruit and vegetable snacks	1.4
	A mix of fresh, canned, frozen, or dried fruit and vegetable snacks	21.7
	No preference	10.4
	n	**1,020**

Source: Evaluation of the FFVP-CFD pilot project, Parent Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of parents of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

[a]All written responses were reviewed and coded to an existing category or to a new category.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.19. Parents' acceptance of the FFVP

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
My child likes the free fruit and vegetable snacks offered at school.	All of the time	35.4	33.6	-1.9
	Most of the time	36.0	40.3	4.3
	Some of the time	23.6	20.5	-3.1
	Rarely or never	3.7	4.7	1.0
	Don't know	1.3	1.0	-0.4
Significance				
My child complains about the quality of the free fruit and vegetable snacks offered at school.	All of the time	0.9	3.2	2.3
	Most of the time	2.1	3.2	1.1
	Some of the time	16.6	15.8	-0.8
	Rarely or never	76.8	73.1	-3.7
	Don't know	3.6	4.7	1.0
Significance				†
My child gets tired of the same free fruit and vegetable snacks that are offered at school.	All of the time	4.6	6.1	1.5
	Most of the time	7.8	7.3	-0.5
	Some of the time	31.3	29.7	-1.6
	Rarely or never	50.5	49.5	-1.0
	Don't know	5.8	7.4	1.6
Significance				
My child eats more fruits and vegetables since they have been offered as a free snack at school.	Agree strongly	25.1	28.6	3.4
	Agree somewhat	41.7	42.7	1.0
	Disagree somewhat	16.5	14.6	-1.9
	Disagree strongly	11.7	8.9	-2.8
	Don't know	5.0	5.3	0.3
Significance				
My child eats fewer unhealthy foods on days when fruits and vegetables are offered as a free snack at school.	Agree strongly	20.1	18.7	-1.4
	Agree somewhat	35.2	32.0	-3.2
	Disagree somewhat	20.9	23.3	2.4
	Disagree strongly	16.4	19.5	3.1
	Don't know	7.5	6.6	-0.9
Significance				
My child has asked for fruits and vegetables at home more often since they have been offered as a free snack at school.	Agree strongly	21.3	21.6	0.3
	Agree somewhat	35.3	38.4	3.0
	Disagree somewhat	25.0	22.6	-2.3
	Disagree strongly	14.6	14.1	-0.5
	Don't know	3.8	3.3	-0.5
Significance				
I encourage my child to eat the free fruit and vegetable snacks offered at school.	Agree strongly	60.0	71.2	11.1
	Agree somewhat	21.3	20.1	-1.1
	Disagree somewhat	6.2	3.7	-2.5
	Disagree strongly	10.2	3.1	-7.0
	Don't know	2.3	1.8	-0.5
Significance				†

EXHIBIT D.19. *(continued)*

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
I don't like it when teachers take time away from class to give out the free fruit and vegetable snacks to children.	Agree strongly	17.4	3.8	-13.7
	Agree somewhat	3.7	2.7	-1.0
	Disagree somewhat	9.1	12.4	3.2
	Disagree strongly	63.5	73.0	9.6
	Don’t know	6.3	8.1	1.9
Significance				†
The fruit and vegetable snacks should be offered more frequently.	Agree strongly	45.8	51.7	5.9
	Agree somewhat	26.3	28.7	2.3
	Disagree somewhat	10.4	8.1	-2.3
	Disagree strongly	11.2	4.1	-7.1
	Don’t know	6.3	7.4	1.1
Significance				†
Overall, I think the fruit and vegetable snack program at school is good.	Agree strongly	71.0	81.4	10.4
	Agree somewhat	11.9	15.3	3.4
	Disagree somewhat	2.8	1.3	-1.5
	Disagree strongly	12.7	1.5	-11.2
	Don’t know	1.5	0.5	-1.0
Significance				†
Total n		**1,103**	**1,046**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Parent Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of parents of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.20. School Food Authority Director opinions of FFVP program frequency and operations

		School Food Authority Director		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
If not offered daily, the FFVP should be offered more days during the week	Agree strongly	33.3	19.4	-14.0
	Agree somewhat	29.6	32.3	2.6
	Disagree somewhat	7.4	6.5	-1.0
	Disagree strongly	7.4	6.5	-1.0
	Don't know or not applicable	22.2	35.5	13.3
Significance				
The FFVP should be offered at least two times a day	Agree strongly	7.4	22.6	15.2
	Agree somewhat	14.8	19.4	4.5
	Disagree somewhat	22.2	32.3	10.0
	Disagree strongly	51.9	19.4	-32.5
	Don't know or not applicable	3.7	6.5	2.7
Significance				
I would like the FFVP to expand to other schools in my district	Agree strongly	55.6	58.1	2.5
	Agree somewhat	7.4	3.2	-4.2
	Disagree somewhat	3.7	0.0	-3.7
	Disagree strongly	3.7	0.0	-3.7
	Don't know or not applicable	29.6	38.7	9.1
Significance				
My overall opinion of the FFVP is favorable	Agree strongly	92.6	90.3	-2.3
	Agree somewhat	0.0	9.7	9.7
	Disagree somewhat	0.0	0.0	0.0
	Disagree strongly	0.0	0.0	0.0
	Don't know or not applicable	7.4	0.0	-7.4
Significance				
Total n		**27**	**31**	**-**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

FV = Fruits and vegetables; CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit D.21. Food service manager opinions of FFVP program frequency and operations

		Food service manager		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
I am satisfied with how we distribute FV snacks	Agree strongly	80.8	77.3	-3.5
	Agree somewhat	19.2	18.2	-1.0
	Disagree somewhat	0.0	2.3	2.3
	Disagree strongly	0.0	2.3	2.3
	Don't know or not applicable	0.0	0.0	0.0
Significance				
I think FFVP is not worth the effort	Agree strongly	0.0	2.3	2.3
	Agree somewhat	0.0	0.0	0.0
	Disagree somewhat	5.9	4.5	-1.3
	Disagree strongly	94.1	88.6	-5.5
	Don't know or not applicable	0.0	4.5	4.5
Significance				
I would like FFVP to continue in my school	Agree strongly	97.1	88.4	-8.7
	Agree somewhat	2.9	9.3	6.4
	Disagree somewhat	0.0	0.0	0.0
	Disagree strongly	0.0	2.3	2.3
	Don't know or not applicable	0.0	0.0	0.0
Significance				
Total n		**34**	**44**	**-**

Source: Evaluation of the FFVP-CFD pilot project, FSM Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; FV = Fruits and vegetables; SFA = School Food Authority; SY = school year.

Exhibit D.22. Education staff's opinions of FFVP program frequency and operations

		Principal			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
If not offered daily, the FFVP should be offered more days during the week	Agree strongly	53.1	43.6	-9.5	55.3	46.8	-8.6
	Agree somewhat	12.5	25.6	13.1	12.6	16.5	3.9
	Disagree somewhat	9.4	5.1	-4.2	3.6	6.9	3.2
	Disagree strongly	0.0	0.0	0.0	2.6	2.6	0.0
	Don't know or not applicable	25.0	25.6	0.6	25.8	27.2	1.5
Significance							
The FFVP should be offered more times a day	Agree strongly	15.2	10.0	-5.2	13.2	17.6	4.4
	Agree somewhat	36.4	30.0	-6.4	33.5	23.7	-9.8
	Disagree somewhat	27.3	15.0	-12.3	28.4	30.2	1.9
	Disagree strongly	15.2	32.5	17.3	20.9	24.2	3.3
	Don't know or not applicable	6.1	12.5	6.4	3.9	4.3	0.3
Significance							
I am satisfied with how we distribute FV snacks	Agree strongly	52.9	65.9	12.9	n.a.	n.a.	n.a.
	Agree somewhat	32.4	29.3	-3.1	n.a.	n.a.	n.a.
	Disagree somewhat	8.8	2.4	-6.4	n.a.	n.a.	n.a.
	Disagree strongly	5.9	0.0	-5.9	n.a.	n.a.	n.a.
	Don't know or not applicable	0.0	2.4	2.4	n.a	n.a.	n.a.
Significance							
I think FFVP is not worth the effort	Agree strongly	0.0	2.4	2.4	2.2	1.3	-1.0
	Agree somewhat	3.0	0.0	-3.0	3.3	4.0	0.7
	Disagree somewhat	9.1	9.8	0.7	8.5	8.2	-0.3
	Disagree strongly	87.9	87.8	-0.1	75.2	84.0	8.8
	Don't know or not applicable	0.0	0.0	0.0	10.7	2.5	-8.2
Significance							
Total n		**34**	**41**	**-**	**122**	**118**	**-**

Sources: Evaluation of the FFVP-CFD pilot project, Principal and Teacher Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; n.a. = not applicable; SY = school year.

Exhibit D.23. Education staff's perception of snack quality and overall opinion of program

		Principal			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
I wish the fruits were better quality	Agree strongly	n.a.	n.a.	n.a.	9.2	12.7	3.6
	Agree somewhat	n.a.	n.a.	n.a.	34.5	40.6	6.1
	Disagree somewhat	n.a.	n.a.	n.a.	29.6	21.0	-8.6
	Disagree strongly	n.a.	n.a.	n.a.	21.5	20.9	-0.6
	Don't know or not applicable	n.a	n.a.	n.a.	5.3	4.8	-0.5
Significance							
I wish the vegetables were better quality	Agree strongly	n.a.	n.a.	n.a.	6.4	10.6	4.2
	Agree somewhat	n.a.	n.a.	n.a.	37.2	36.3	-1.0
	Disagree somewhat	n.a.	n.a.	n.a.	26.7	21.4	-5.2
	Disagree strongly	n.a.	n.a.	n.a.	21.4	21.5	0.1
	Don't know or not applicable	n.a.	n.a.	n.a.	8.3	10.2	1.9
Significance							
I think the variety of fruits is good[a]	Agree strongly	n.a.	n.a.	n.a.	36.2	39.5	3.3
	Agree somewhat	n.a.	n.a.	n.a.	50.3	48.0	-2.2
	Disagree somewhat	n.a.	n.a.	n.a.	12.2	8.1	-4.2
	Disagree strongly	n.a.	n.a.	n.a.	1.3	3.7	2.4
	Don't know or not applicable	n.a.	n.a.	n.a.	0.0	0.6	0.6
Significance							
I think the variety of vegetables is good	Agree strongly	n.a.	n.a.	n.a.	31.8	33.3	1.4
	Agree somewhat	n.a.	n.a.	n.a.	45.1	42.9	-2.2
	Disagree somewhat	n.a.	n.a.	n.a.	16.5	11.9	-4.5
	Disagree strongly	n.a.	n.a.	n.a.	2.8	5.8	3.0
	Don't know or not applicable	n.a.	n.a.	n.a.	3.8	6.1	2.3
Significance							
I think students benefit from the FFVP[a]	Agree strongly	91.2	82.9	-8.2	88.7	83.5	-5.2
	Agree somewhat	5.9	14.6	8.8	8.4	14.2	5.8
	Disagree somewhat	0.0	0.0	0.0	1.6	2.3	0.7

EXHIBIT D.23. *(continued)*

		Principal			Teacher		
	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
	Disagree strongly	2.9	0.0	-2.9	0.6	0.0	-0.6
Significance							
I think students benefit from the FFVP[a]	Agree strongly	91.2	82.9	-8.2	88.7	83.5	-5.2
	Agree somewhat	5.9	14.6	8.8	8.4	14.2	5.8
	Disagree somewhat	0.0	0.0	0.0	1.6	2.3	0.7
	Disagree strongly	2.9	0.0	-2.9	0.6	0.0	-0.6
	Don't know or not applicable	0.0	2.4	2.4	0.6	0.0	-0.6
Significance							
I would like FFVP to continue in my school	Agree strongly	91.2	87.8	-3.4	86.2	87.2	1.1
	Agree somewhat	5.9	7.3	1.4	13.2	12.2	-1.1
	Disagree somewhat	0.0	0.0	0.0	0.6	0.6	0.0
	Disagree strongly	2.9	2.4	-0.5	0.0	0.0	0.0
	Don't know or not applicable	0.0	2.4	2.4	0.0	0.0	0.0
Significance							
My overall opinion of the FFVP is favorable[a]	Agree strongly	82.4	87.8	5.5	78.3	82.5	4.2
	Agree somewhat	8.8	9.8	0.9	19.5	16.8	-2.7
	Disagree somewhat	5.9	0.0	-5.9	1.5	0.6	-0.9
	Disagree strongly	2.9	2.4	-0.5	0.6	0.0	-0.6
	Don't know or not applicable	0.0	0.0	0.0	0.0	0.0	0.0
Significance							
Total n		**34**	**41**	**-**	**122**	**118**	**-**

Sources: Evaluation of the FFVP-CFD pilot project, Principal and Teacher Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

[a]The preferred significance testing for the teacher analysis required that each question category contained at least one teacher response. When this requirement was not met, a simplified approach was used for significance testing that did not fully account for the classroom sample design. As a result, the significance testing conducted for these questions tends to be conservative: it may fail to find statistical significance in some cases where our preferred method would have.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; n.a. = not applicable; SY = school year.

Exhibit D.24. School Food Authority Directors' acceptance of FFVP

	Response	Fall 2014	Spring 2015
I think the FFVP is not worth the effort it takes	Agree strongly	0.0	n.a.
	Agree somewhat	3.7	n.a.
	Disagree somewhat	7.4	n.a.
	Disagree strongly	88.9	n.a.
	Don't know or not applicable	0.0	n.a.
I think the standard FFVP is not worth the effort it takes	Agree strongly	n.a.	0.0
	Agree somewhat	n.a.	9.7
	Disagree somewhat	n.a.	9.7
	Disagree strongly	n.a.	77.4
	Don't know or not applicable	n.a.	3.2
I think students benefit from the FFVP	Agree strongly	96.3	n.a.
	Agree somewhat	3.7	n.a.
	Disagree somewhat	0.0	n.a.
	Disagree strongly	0.0	n.a.
	Don't know or not applicable	0.0	n.a.
I think students benefit from the standard FFVP	Agree strongly	n.a.	74.2
	Agree somewhat	n.a.	22.6
	Disagree somewhat	n.a.	0.0
	Disagree strongly	n.a.	3.2
	Don't know or not applicable	n.a.	0.0
I would like the FFVP to continue in my district	Agree strongly	96.3	n.a.
	Agree somewhat	3.7	n.a.
	Disagree somewhat	0.0	n.a.
	Disagree strongly	0.0	n.a.
	Don't know or not applicable	0.0	n.a.
I would like the standard FFVP to continue in my district	Agree strongly	n.a.	58.1
	Agree somewhat	n.a.	22.6
	Disagree somewhat	n.a.	9.7
	Disagree strongly	n.a.	9.7
	Don't know or not applicable	n.a.	0.0
I think the FFVP-CFD is not worth the effort it takes	Agree strongly	n.a.	3.2
	Agree somewhat	n.a.	0.0
	Disagree somewhat	n.a.	6.5
	Disagree strongly	n.a.	87.1
	Don't know or not applicable	n.a.	3.2
I would like the FFVP-CFD to continue in my district	Agree strongly	n.a.	90.3
	Agree somewhat	n.a.	3.2
	Disagree somewhat	n.a.	3.2
	Disagree strongly	n.a.	0.0
	Don't know or not applicable	n.a.	3.2
Total n		**27**	**31**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; n.a. = not applicable; SFA = School Food Authority; SY = school year.

Exhibit D.25. School staff's acceptance of FFVP, spring 2015

	Response	Food service manager (percentage)	Teacher (percentage)
I wish the FFVP offered fresh FV only.	Agree strongly	18.2	20.3
	Agree somewhat	13.6	27.2
	Disagree somewhat	29.5	21.1
	Disagree strongly	31.8	11.6
	Don't know or not applicable	6.8	19.8
Students generally like the fresh FV snacks rather than the CFD snacks.	Agree strongly	36.4	32.4
	Agree somewhat	25.0	34.9
	Disagree somewhat	13.6	18.6
	Disagree strongly	18.2	5.3
	Don't know or not applicable	6.8	8.8
Students generally like the canned FV snacks rather than the fresh, frozen, or dried.	Agree strongly	2.3	4.9
	Agree somewhat	13.6	10.0
	Disagree somewhat	38.6	46.6
	Disagree strongly	36.4	21.3
	Don't know or not applicable	9.1	17.3
Students generally like a mix of fresh, canned, frozen, or dried FV snacks.	Agree strongly	45.5	23.3
	Agree somewhat	22.7	44.1
	Disagree somewhat	13.6	14.0
	Disagree strongly	11.4	0.8
	Don't know or not applicable	6.8	17.8
I would like the changes made in the spring to continue in my school.	Agree strongly	65.9	36.1
	Agree somewhat	18.2	32.0
	Disagree somewhat	4.5	3.7
	Disagree strongly	6.8	3.2
	Don't know or not applicable	4.5	25.0
Total n		**44**	**118**

Source: Evaluation of the FFVP-CFD pilot project, FSM and Teacher Surveys, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; FV = Fruits and vegetables; SFA = School Food Authority; SY = school year.

Exhibit D.26. School Food Authority Directors' perceptions of benefits of FFVP-pilot, spring 2015

	Response	Percentage
Easier to purchase, transport; fewer deliveries needed	Major benefit	51.6
	Minor benefit	25.8
	Not a benefit	16.1
	Don't know	6.5
Greater variety of FV available	Major benefit	64.5
	Minor benefit	29.0
	Not a benefit	3.2
	Don't know	3.2
Easier to store than fresh	Major benefit	83.9
	Minor benefit	9.7
	Not a benefit	6.5
	Don't know	0.0
More affordable	Major benefit	38.7
	Minor benefit	32.3
	Not a benefit	22.6
	Don't know	6.5
Better/more consistent quality of fresh fruits	Major benefit	40.0
	Minor benefit	46.7
	Not a benefit	10.0
	Don't know	3.3
Better/more consistent quality of fresh vegetables	Major benefit	29.0
	Minor benefit	29.0
	Not a benefit	29.0
	Don't know	12.9
Less likely to run out of FV snacks	Major benefit	54.8
	Minor benefit	29.0
	Not a benefit	12.9
	Don't know	3.2
Less waste	Major benefit	45.2
	Minor benefit	35.5
	Not a benefit	12.9
	Don't know	6.5
Student acceptance	Major benefit	32.3
	Minor benefit	29.0
	Not a benefit	22.6
	Don't know	16.1
Seasonality is less of an issue	Major benefit	77.4
	Minor benefit	19.4
	Not a benefit	0.0
	Don't know	3.2
Less preparation time	Major benefit	51.6
	Minor benefit	38.7
	Not a benefit	6.5
	Don't know	3.2
Total n		**31**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; SFA = School Food Authority; SY = school year.

Exhibit D.27. Food service managers' perceptions of FFVP barriers

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Student don't like fruits and vegetables	Major challenge	3.8	2.3	-1.6
	Minor challenge	30.8	40.9	10.1
	Not a challenge	65.4	56.8	-8.6
	Don't know	0.0	0.0	0.0
Significance				
Students waste too much	Major challenge	15.4	13.6	-1.7
	Minor challenge	34.6	43.2	8.6
	Not a challenge	50.0	43.2	-6.8
	Don't know	0.0	0.0	0.0
Significance				
Students don't like to try new fruits and vegetables	Major challenge	11.8	15.9	4.1
	Minor challenge	64.7	45.5	-19.3
	Not a challenge	23.5	36.4	12.8
	Don't know	0.0	2.3	2.3
Significance				
Class time interrupted or taken away from student learning	Major challenge	0.0	6.8	6.8
	Minor challenge	19.2	20.5	1.2
	Not a challenge	73.1	59.1	-14.0
	Don't know	7.7	13.6	5.9
Significance				
Messy to distribute and clean up fruit and vegetable snacks	Major challenge	0.0	0.0	0.0
	Minor challenge	0.0	25.0	25.0
	Not a challenge	96.2	72.7	-23.4
	Don't know	3.8	2.3	-1.6
Significance				
Inadequate food service staff training or information	Major challenge	3.0	4.5	1.5
	Minor challenge	6.1	6.8	0.8
	Not a challenge	87.9	86.4	-1.5
	Don't know	3.0	2.3	-0.8
Significance				
Inadequate food service staff time	Major challenge	11.8	4.7	-7.1
	Minor challenge	23.5	16.3	-7.3
	Not a challenge	64.7	79.1	14.4
	Don't know	0.0	0.0	0.0
Significance				
Inadequate kitchen facilities/storage space	Major challenge	23.5	4.5	-19.0
	Minor challenge	29.4	25.0	-4.4
	Not a challenge	47.1	70.5	23.4
	Don't know	0.0	0.0	0.0
Significance				†
Inadequate quality of produce	Major challenge	32.4	7.0	-25.4
	Minor challenge	32.4	51.2	18.8
	Not a challenge	35.3	41.9	6.6
	Don't know	0.0	0.0	0.0
Significance				

EXHIBIT D.27. *(continued)*

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Inadequate variety of fruits and vegetables offered	Major challenge	44.1	9.3	-34.8
	Minor challenge	26.5	48.8	22.4
	Not a challenge	29.4	41.9	12.4
	Don't know	0.0	0.0	0.0
Significance				
Inadequate amounts of fruit and vegetable snacks (for example, running out of servings for students, offering smaller portions or tastes instead of a larger portion size).	Major challenge	11.8	0.0	-11.8
	Minor challenge	17.6	13.6	-4.0
	Not a challenge	70.6	86.4	15.8
	Don't know	0.0	0.0	0.0
Significance				†
Perishability of fresh produce	Major challenge	35.3	27.3	-8.0
	Minor challenge	38.2	40.9	2.7
	Not a challenge	26.5	31.8	5.3
	Don't know	0.0	0.0	0.0
Significance				
Program requirements/regulations	Major challenge	2.9	2.3	-0.7
	Minor challenge	32.4	13.6	-18.7
	Not a challenge	61.8	79.5	17.8
	Don't know	2.9	4.5	1.6
Significance				
Total n		**34**	**44**	**-**

Source: Evaluation of the FFVP-CFD pilot project, FSM Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FSM = Food service manager; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.28. School Food Authority Directors' perceptions of FFVP barriers

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Student acceptance of fruits or vegetables	Major challenge	11.1	12.9	1.8
	Minor challenge	63.0	64.5	1.6
	Not a challenge	25.9	22.6	-3.3
Significance				
Inadequate training or information for food service staff	Major challenge	3.7	3.2	-0.5
	Minor challenge	25.9	29.0	3.1
	Not a challenge	70.4	67.7	-2.6
Significance				
Inadequate food service staff time	Major challenge	22.2	12.9	-9.3
	Minor challenge	44.4	61.3	16.8
	Not a challenge	33.3	25.8	-7.5
Significance				
Perishability of FFVP fresh produce	Major challenge	51.9	51.6	-0.2
	Minor challenge	48.1	38.7	-9.4
	Not a challenge	0.0	9.7	9.7
Significance				
Inconsistent quality of fruits and vegetables for FFVP	Major challenge	33.3	29.0	-4.3
	Minor challenge	59.3	61.3	2.0
	Not a challenge	7.4	9.7	2.3
Significance				
Inadequate variety of fruits and vegetables for FFVP	Major challenge	51.9	32.3	-19.6
	Minor challenge	40.7	51.6	10.9
	Not a challenge	7.4	16.1	8.7
Significance				
Inadequate amounts of fruits and vegetables for FFVP	Major challenge	29.6	22.6	-7.0
	Minor challenge	48.1	54.8	6.7
	Not a challenge	22.2	22.6	0.4
Significance				
Lack of storage space/facilities	Major challenge	37.0	33.3	-3.7
	Minor challenge	48.1	43.3	-4.8
	Not a challenge	14.8	23.3	8.5
Significance				
Rules for purchasing fruits and vegetables for FFVP	Major challenge	7.4	6.5	-1.0
	Minor challenge	55.6	58.1	2.5
	Not a challenge	37.0	35.5	-1.6
Significance				
Restrictions on administrative cost for FFVP	Major challenge	14.8	3.2	-11.6
	Minor challenge	33.3	29.0	-4.3
	Not a challenge	51.9	67.7	15.9
Significance				
Amount of paperwork/documentation for FFVP	Major challenge	19.2	12.9	-6.3
	Minor challenge	38.5	48.4	9.9
	Not a challenge	42.3	38.7	-3.6
Significance				

EXHIBIT D.28. *(continued)*

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Other program requirements/regulations for FFVP	Major challenge	7.4	10.3	2.9
	Minor challenge	44.4	48.3	3.8
	Not a challenge	48.1	41.4	-6.8
Significance				
Total n		**27**	**31**	**-**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.29. Principals' perceptions of FFVP barriers

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Student acceptance of the FFVP fruits and vegetables	Major challenge	0.0	4.9	4.9
	Minor challenge	47.1	31.7	-15.4
	Not a challenge	52.9	63.4	10.5
Significance				
Program requirements/regulations	Major challenge	3.0	7.3	4.3
	Minor challenge	69.7	53.7	-16.0
	Not a challenge	27.3	39.0	11.8
Significance				
Too much paperwork/documentation	Major challenge	12.9	12.5	-0.4
	Minor challenge	51.6	42.5	-9.1
	Not a challenge	35.5	45.0	9.5
Significance				
Inadequate staff training	Major challenge	3.0	0.0	-3.0
	Minor challenge	30.3	29.3	-1.0
	Not a challenge	66.7	70.7	4.1
Significance				
Inadequate staff time	Major challenge	14.7	4.9	-9.8
	Minor challenge	44.1	58.5	14.4
	Not a challenge	41.2	36.6	-4.6
Significance				
Inadequate kitchen facilities	Major challenge	8.8	0.0	-8.8
	Minor challenge	14.7	17.1	2.4
	Not a challenge	76.5	82.9	6.5
Significance				
Lack of storage space/facilities	Major challenge	14.7	4.9	-9.8
	Minor challenge	29.4	43.9	14.5
	Not a challenge	55.9	51.2	-4.7
Significance				
Disruption to class schedules	Major challenge	0.0	0.0	0.0
	Minor challenge	35.3	36.6	1.3
	Not a challenge	64.7	63.4	-1.3
Significance				
Increased burden on school maintenance staff	Major challenge	0.0	0.0	0.0
	Minor challenge	21.2	36.6	15.4
	Not a challenge	78.8	63.4	-15.4
Significance				
Total n		**34**	**41**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Principal Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.30. Teachers' perceptions of FFVP barriers

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Students don't like fruits and vegetables	Major challenge	7.2	8.3	1.2
	Minor challenge	52.7	52.1	-0.6
	Not a challenge	39.2	39.6	0.4
	Don't know	1.0	0.0	-1.0
Significance				
Students waste too much	Major challenge	8.8	7.0	-1.8
	Minor challenge	46.5	48.0	1.5
	Not a challenge	44.7	45.0	0.3
	Don't know	0.0	0.0	0.0
Significance				
Messy to distribute and clean up	Major challenge	5.9	4.4	-1.5
	Minor challenge	39.6	44.8	5.1
	Not a challenge	54.5	50.9	-3.6
	Don't know	0.0	0.0	0.0
Significance				
Inadequate teacher training or information	Major challenge	7.5	3.8	-3.6
	Minor challenge	21.2	21.2	0.0
	Not a challenge	63.9	68.0	4.1
	Don't know	7.5	7.0	-0.5
Significance				
Inadequate teacher time	Major challenge	15.3	10.2	-5.1
	Minor challenge	25.9	32.5	6.7
	Not a challenge	53.2	56.7	3.5
	Don't know	5.7	0.6	-5.0
Significance				
Class time interrupted or taken away from student learning	Major challenge	9.1	6.3	-2.8
	Minor challenge	29.9	24.7	-5.3
	Not a challenge	59.2	67.4	8.2
	Don't know	1.7	1.7	-0.1
Significance				
Students don't like to try new fruits and vegetables	Major challenge	14.0	11.5	-2.5
	Minor challenge	48.6	47.7	-0.8
	Not a challenge	35.3	38.6	3.3
	Don't know	2.1	2.2	0.1
Significance				
Inadequate quality of FFVP produce	Major challenge	7.4	4.4	-3.0
	Minor challenge	38.3	43.3	5.0
	Not a challenge	53.6	51.6	-2.0
	Don't know	0.6	0.6	0.0
Significance				
Inadequate variety of FFVP produce	Major challenge	4.9	7.0	2.1
	Minor challenge	46.2	45.3	-1.0
	Not a challenge	48.3	46.5	-1.8
	Don't know	0.6	1.3	0.6
Significance				
Inadequate amounts of FFVP produce	Major challenge	10.3	5.4	-4.9
	Minor challenge	17.5	22.5	5.0
	Not a challenge	69.9	71.4	1.5
	Don't know	2.2	0.6	-1.6
Significance				
Total n		**122**	**118**	**-**

Source: Evaluation of the FFVP-CFD pilot project, Teacher Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade classrooms in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit D.31. School Food Authority Directors' perceptions of cost implications of FFVP pilot

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
High prices for fruits and vegetables	Major challenge	74.1	58.1	-16.0
	Minor challenge	25.9	32.3	6.3
	Not a challenge	0.0	9.7	9.7
Significance				
Cost of non-food supplies such as bowls and utensils for students' snacks	Major challenge	11.1	6.5	-4.7
	Minor challenge	48.1	64.5	16.4
	Not a challenge	40.7	29.0	-11.7
Significance				
Effort or cost of preparing fruits and vegetables	Major challenge	14.8	19.4	4.5
	Minor challenge	63.0	51.6	-11.4
	Not a challenge	22.2	29.0	6.8
Significance				
Total n		**27**	**31**	**-**

Source: Evaluation of the FFVP-CFD pilot project, SFA Director Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FSM = Food service manager; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit D.32 Principals' perceptions of FFVP costs

	Response	Fall 2014 (percentage)	Spring 2015 (percentage)	Change
Do you think the $50-$75 per student allotment for the FFVP is too low, too high, or just about right?	Too low	42.4	33.3	-9.1
	Too high	3.0	2.6	-0.5
	About right	54.5	64.1	9.6
Significance				
How difficult is it to obtain fresh fruits and vegetables for the FFVP at a reasonable cost in your area?	Very difficult	45.5	35.9	-9.6
	Somewhat difficult	45.5	46.2	0.7
	Not difficult at all	9.1	17.9	8.9
Significance				
How big a consideration was the cost of fruit and vegetables as well as the cost of staff time in the school's decision to participate in the CFD pilot?	Major consideration	47.1	n.a.	n.a.
	Minor consideration	41.2	n.a.	n.a.
	Not a consideration	11.8	n.a.	n.a.
How big a consideration was limitations of fresh fruit and vegetable availability in the school's decision to participate in the CFD pilot?	Major consideration	54.5	n.a.	n.a.
	Minor consideration	36.4	n.a.	n.a.
	Not a consideration	9.1	n.a.	n.a.
How big a consideration was the limitations of food service staff time in the school's decision to participate in the CFD pilot?	Major consideration	26.5	n.a.	n.a.
	Minor consideration	50.0	n.a.	n.a.
	Not a consideration	23.5	n.a.	n.a.
How big a consideration was the limitations of kitchen facilities in the school's decision to participate in the CFD pilot?	Major consideration	5.9	n.a.	n.a.
	Minor consideration	23.5	n.a.	n.a.
	Not a consideration	70.6	n.a.	n.a.
How big a consideration was limitations in storage space/facilities in the school's decision to participate in the CFD pilot?	Major consideration	17.6	n.a.	n.a.
	Minor consideration	35.3	n.a.	n.a.
	Not a consideration	47.1	n.a.	n.a.
Do you think the CFD pilot has helped reduce school costs?	Yes	n.a.	52.5	n.a.
	No	n.a.	17.5	n.a.
	Not sure/don't know	n.a.	30.0	n.a.
Total n		**34**	**40**	**-**

Source: FFVP-CFD Principal Survey, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Totals may not sum to 100 percent due to rounding.

†Shift in responses from fall to spring is significantly different at the 0.05 level.

CFD = Canned, frozen, or dried; FSM = Food service manager; FFVP = Fresh Fruit and Vegetable Program; n.a. = not applicable; SY = school year.

D.33 Students' fresh fruit and vegetable preferences, fall 2014

Fruit or vegetable	Like a lot	Like a little	Don't like it	Don't know or never tasted
Apples	80.5	15.7	3.6	0.2
Bananas	73.1	17.3	8.8	0.8
Blueberries	66.7	16.0	13.9	3.5
Cantaloupe	52.4	16.5	16.7	14.4
Grapes	78.8	14.1	5.8	1.2
Kiwi fruits	53.4	19.7	16.4	10.5
Nectarines	36.4	16.1	11.2	36.3
Oranges	64.4	22.3	10.3	0.9
Peaches	65.2	17.4	11.0	6.4
Pears	57.7	21.0	17.1	4.2
Pineapple	68.0	14.3	13.0	4.7
Plums	57.1	16.7	16.2	10.0
Strawberries	84.1	9.5	5.2	1.3
Watermelon	84.6	8.5	5.3	1.6
Bell peppers	28.3	16.3	27.5	28.0
Broccoli	42.9	24.1	26.2	6.8
Carrots	60.4	23.5	13.4	2.7
Cauliflower	31.0	16.2	30.1	22.7
Celery	37.1	23.1	29.7	10.1
Cucumbers	55.9	17.8	16.6	9.7
Lettuce	53.0	25.5	15.2	6.2
Snow peas	25.5	11.9	20.8	41.8
Tomatoes	29.2	19.0	43.2	8.6
Zucchini	22.0	14.9	30.1	33.0
Total n	**1,575**			

Source: Evaluation of the FFVP-CFD pilot project, Student Survey (n=1,586), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

D.34 Students' canned, frozen, or dried fruit and vegetable preferences, spring 2015

Fruit or vegetable	Like a lot	Like a little	Don't like it	Don't know or never tasted
Applesauce	66.7	20.2	10.6	2.6
Canned oranges	53.6	21.9	11.9	12.5
Canned peaches	54.9	21.9	14.1	9.1
Canned pears	47.4	20.3	20.5	11.9
Canned pineapple	57.4	19.3	14.1	9.2
Dates	9.3	10.5	17.4	62.8
Dried apples	26.6	19.5	24.1	29.8
Dried apricots	12.4	12.0	26.5	49.1
Dried plums	18.4	13.8	27.8	39.9
Raisins	36.0	25.6	32.6	5.7
Cooked carrots	32.6	20.8	34.2	12.3
Cooked zucchini	16.4	11.1	30.8	41.8
Cooked broccoli	38.6	18.3	30.6	12.5
Cooked cauliflower	23.8	12.7	31.1	32.4
Roasted peppers	16.4	13.2	33.4	37.1
Total n	**1,557**			

Source: Evaluation of the FFVP-CFD pilot project, Student Survey (n=1,576), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of 4th–6th grade students in the pilot schools.

Note: Totals may not sum to 100 percent due to rounding.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

APPENDIX E

DIETARY DATA: SCHOOL MENUS AND DIETARY RECALLS

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Exhibit E.1. Types and forms of fruits and vegetables offered in FFVP snacks

	Percentage of FFVP snacks		
Food item	Fall 2014	Spring 2015	Change
Fresh fruits	**71.9**	**57.6**	**-14.2**
Apples	20.8	13.6	-7.3
Bananas	10.4	6.8	-3.6
Grapes	9.4	5.9	-3.4
Oranges	13.5	10.2	-3.4
Pineapple	4.2	0.8	-3.3
Pomegranates	3.1	0.0	-3.1
Pears	5.2	2.5	-2.7
Blueberries	2.1	0.8	-1.2
Grapefruit	2.1	0.8	-1.2
Peaches	1.0	0.0	-1.0
Kiwis	3.1	2.5	-0.6
Honeydew melon	1.0	0.8	-0.2
Plums	1.0	0.8	-0.2
Cantaloupe	1.0	1.7	0.7
Cherries	0.0	0.8	0.8
Mixtures (without citrus)	0.0	0.8	0.8
Raspberries	0.0	0.8	0.8
Watermelon	0.0	0.8	0.8
Tangerines	3.1	4.2	1.1
Strawberries	1.0	6.8	5.7
Canned fruits	**1.0**	**9.3**	**8.3**
Applesauce	--	1.7	--
Apricots	--	0.8	--
Cranberries	--	1.7	--
Mandarin oranges	--	3.4	--
Mixtures	--	1.7	--
Peaches[a]	1.0	0.0	-1.0
Dried fruits	**--**	**17.8**	**--**
Apples	--	0.8	--
Cranberries	--	6.8	--
Mangoes	--	2.5	--
Mixtures	--	4.2	--
Papayas	--	2.5	--
Peaches	--	0.8	--
Pineapple	--	0.8	--
Raisins	--	4.2	--
Frozen fruits	**--**	**0.8**	**--**
Blueberries	--	0.8	--
Fresh vegetables	**28.1**	**16.1**	**-12.0**
Carrots	10.4	2.5	-7.9
Peppers	4.2	0.8	-3.3
Green peas	2.1	0.0	-2.1
Summer squash	2.1	0.0	-2.1
Beets	1.0	0.0	-1.0
Broccoli	1.0	0.0	-1.0
Brussels sprouts	1.0	0.0	-1.0

EXHIBIT E.1. *(continued)*

Food item	Percentage of FFVP snacks		Change
	Fall 2014	Spring 2015	
Cauliflower	1.0	0.0	-1.0
Green beans	1.0	0.0	-1.0
Jicama	1.0	0.0	-1.0
Spinach	1.0	0.0	-1.0
Snow peas	2.1	1.7	-0.4
Tomatoes	1.0	0.8	-0.2
Cucumber	2.1	2.5	0.5
Sweet potatoes (cooked)	0.0	0.8	0.8
Salad[b]	2.1	3.4	1.3
Celery	2.1	5.1	3.0
Canned vegetables	**--**	**0.8**	**--**
Corn	--	0.8	--
Number of FFVP snacks	**96**	**118**	
Number of schools[c]	**31**	**33**	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form, (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Canned peaches were reported as being offered in one school during the fall semester.

[b] Salad includes tossed salad and raw mixed vegetables with or without lettuce.

[c] Excludes three schools in the fall and one school in the spring that did not offer FFVP snacks during their target week for data collection.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.2. Types and forms of fruits and vegetables offered in FFVP snacks, spring 2015

	Percentage of FFVP snacks			
Food Item	**CFD only**	**CFD and fresh**	**Fresh only**	**All schools**
Fresh fruits	**--**	**47.8**	**78.3**	**57.6**
Blueberries	--	1.5	0.0	0.8
Cherries	--	1.5	0.0	0.8
Grapefruit	--	1.5	0.0	0.8
Honeydew melon	--	1.5	0.0	0.8
Mixtures (without citrus)	--	0.0	2.2	0.8
Pineapple	--	0.0	2.2	0.8
Plums	--	1.5	0.0	0.8
Raspberries	--	0.0	2.2	0.8
Watermelon	--	0.0	2.2	0.8
Cantaloupe	--	3.0	0.0	1.7
Kiwis	--	1.5	4.3	2.5
Pears	--	0.0	6.5	2.5
Tangerines	--	3.0	6.5	4.2
Grapes	--	6.0	6.5	5.9
Bananas	--	3.0	13.0	6.8
Strawberries	--	6.0	8.7	6.8
Oranges	--	9.0	13.0	10.2
Apples	--	11.9	17.4	13.6
Canned fruits	**40.0**	**13.4**	**--**	**9.3**
Apricots	0.0	1.5	--	0.8
Applesauce	0.0	3.0	--	1.7
Cranberries	0.0	3.0	--	1.7
Mixtures	0.0	3.0	--	1.7
Mandarin oranges	40.0	3.0	--	3.4
Dried fruits	**60.0**	**26.9**	**--**	**17.8**
Apples	0.0	1.5	--	0.8
Peaches	20.0	0.0	--	0.8
Pineapple	0.0	1.5	--	0.8
Mangoes	40.0	1.5	--	2.5
Papayas	40.0	1.5	--	2.5
Mixtures	40.0	4.5	--	4.2
Raisins	0.0	7.5	--	4.2
Cranberries	0.0	11.9	--	6.8
Frozen fruits	**0.0**	**1.5**	**--**	**0.8**
Blueberries	0.0	1.5	--	0.8
Fresh vegetables	**--**	**13.4**	**21.7**	**16.1**
Peppers	--	1.5	0.0	0.8
Sweet potatoes	--	1.5	0.0	0.8
Tomatoes	--	0.0	2.2	0.8
Snow peas	--	0.0	4.3	1.7
Carrots	--	4.5	0.0	2.5
Cucumber	--	0.0	6.5	2.5
Salad[a]	--	3.0	4.3	3.4
Celery	--	3.0	8.7	5.1
Canned vegetables	**0.0**	**1.5**	**--**	**0.8**
Corn	0.0	1.5	--	0.8

EXHIBIT E.2. *(continued)*

	Percentage of FFVP snacks			
Food Item	**CFD only**	**CFD and fresh**	**Fresh only**	**All schools**
Number of FFVP snacks	**5**	**67**	**46**	**118**
Number of schools[b]	**2**	**17**	**14**	**33**

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Salad includes tossed salad and raw mixed vegetables with or without lettuce.

[b] Excludes one school that did not offer FFVP snacks during their target week for data collection.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.3. Number and variety of fruits and vegetables offered in FFVP snacks, spring 2015

	Percentage of FFVP snacks			
	CFD only	CFD and fresh	Fresh only	All schools
Number of fruits or vegetables per snack				
1	60.0	89.6	91.3	89.0
2 or 3	40.0	10.4	8.7	11.0
Mean number of different items per week	1.8	1.1	1.1	1.1
Median number of different items per week	1.0	1.0	1.0	1.0
Number of fruits per snack				
None	0.0	14.9	21.7	16.9
1	60.0	74.6	73.9	73.7
2 or 3	40.0	10.4	4.3	9.3
Mean number of different items per week	1.8	1.0	0.8	0.9
Median number of different items per week	1.0	1.0	1.0	1.0
Number of vegetables per snack				
None	100.0	85.1	78.3	83.1
1	0.0	14.9	17.4	15.3
2	0.0	0.0	4.3	1.7
Mean number of different items per week	0.0	0.1	0.3	0.2
Median number of different items per week	0.0	0.0	0.0	0.0
Number of FFVP snacks	**5**	**67**	**46**	**118**
Number of schools[a]	**2**	**17**	**14**	**33**

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form, (spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Excludes one school that did not offer FFVP snacks during their target week.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.4. Mean cup equivalents per serving of fruits and vegetables offered in FFVP snacks and reimbursable school meals

	Fall 2014			Spring 2015			
Food group	Number of items	Mean amount (cup equivalents)	SE	Number of items	Mean amount (cup equivalents)	SE	Change
FFVP snack							
All fruits and vegetables	114	0.60	0.04	134	0.63	0.04	0.03
Fresh	113	0.60	0.04	94	0.68	0.05	0.07
Canned[a]	1	0.29	--	12	0.37	0.04	0.08
Frozen	--	--	--	1	0.26	--	--
Dried	--	--	--	27	0.58	0.07	--
All fruits	80	0.73	0.05	112	0.67	0.04	-0.06
Fresh	79	0.74	0.05	73	0.75	0.06	0.01
Canned[a]	1	0.29	--	11	0.38	0.04	0.09
Frozen	--	--	--	1	0.26	--	--
Dried	--	--	--	27	0.58	0.07	--
All vegetables	34	0.29	0.04	22	0.41	0.03	0.13
Fresh	34	0.29	0.04	21	0.42	0.03	0.13
Canned	--	--	--	1	0.25	--	--
Frozen	--	--	--	--	--	--	--
Dried	--	--	--	--	--	--	--
Number of FFVP snacks	**96**			**118**			
Number of schools[b]	**31**			**33**			
Breakfast							
All fruits and vegetables	197	0.61	0.03	223	0.57	0.03	-0.04
Fresh	96	0.75	0.05	92	0.77	0.05	0.03
Canned	70	0.41	0.02	82	0.41	0.02	0.00^
Frozen	4	0.40	0.05	9	0.49	0.06	0.09
Dried	26	0.65	0.12	40	0.45	0.03	-0.20
Form not specified	1	0.74	--	--	--	--	--
All fruits	193	0.61	0.03	216	0.58	0.03	-0.03
Fresh	96	0.75	0.05	91	0.78	0.05	0.03
Canned	70	0.41	0.02	81	0.41	0.02	0.00^
Frozen	1	0.38	--	4	0.58	0.08	0.20
Dried	26	0.65	0.12	40	0.45	0.03	-0.20
All vegetables	4	0.49	0.10	7	0.39	0.07	-0.10
Fresh	--	--	--	1	0.37	--	--
Canned	--	--	--	1	0.26	--	--
Frozen	3	0.40	0.06	5	0.41	0.09	0.01
Dried	--	--	--	--	--	--	--
Form not specified	1	0.74	--	--	--	--	--
Number of breakfasts	**134**			**143**			
Number of schools[c]	**33**			**34**			

EXHIBIT E.4. *(continued)*

Food group	Fall 2014 Number of items	Fall 2014 Mean amount (cup equivalents)	Fall 2014 SE	Spring 2015 Number of items	Spring 2015 Mean amount (cup equivalents)	Spring 2015 SE	Change
Lunch							
All fruits and vegetables	564	0.60	0.02	581	0.58	0.01	-0.02
Fresh[d]	306	0.68	0.03	304	0.66	0.02	-0.02
Canned	157	0.44	0.01	174	0.42	0.01	-0.02
Frozen	43	0.52	0.04	54	0.50	0.03	-0.03
Dried	25	0.53	0.03	23	0.58	0.06	0.05
Salad bar, mixed forms	23	0.94	0.04	23	0.95	0.04	0.02
Form not specified	10	0.44	0.05	3	0.51	0.13	0.08
All fruits	233	0.66	0.03	260	0.60	0.02	-0.06
Fresh	123	0.85	0.05	121	0.82	0.04	-0.03
Canned	98	0.41	0.01	123	0.37	0.01	-0.04
Frozen	3	0.95	0.31	7	0.61	0.07	-0.34
Dried	9	0.57	0.01	9	0.54	0.03	-0.03
All vegetables	281	0.53	0.02	272	0.53	0.02	0.00^
Fresh	156	0.57	0.03	157	0.55	0.02	-0.03
Canned	59	0.47	0.02	51	0.52	0.04	0.05
Frozen	40	0.49	0.04	47	0.48	0.03	-0.01
Dried	16	0.51	0.04	14	0.61	0.09	0.09
Form not specified	10	0.44	0.05	3	0.51	0.13	0.08
Salad bar	50	0.72	0.04	49	0.76	0.04	0.05
Fresh only	27	0.54	0.02	26	0.60	0.05	0.06
Mixed forms	23	0.94	0.04	23	0.95	0.04	0.02
Number of lunches	**145**			**150**			
Number of schools	**34**			**34**			

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research. Data on cup equivalents of fruit and vegetables were obtained from the Food Patterns Equivalents Database 2011-12.

Notes: Exhibit includes whole fruits and vegetables offered at FFVP snacks, breakfast, and lunch. Excludes fruits and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) and 100% fruit and vegetable juices. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Canned peaches were reported as being offered for an FFVP snack in one school during the fall semester.

[b] Excludes three schools in the fall and one school in the spring that did not offer FFVP snacks during their target week for data collection.

[c] Excludes one school in the fall that offered only 100% fruit juice at breakfast (no whole fruits or vegetables).

[d] Includes salad bars that offered only fresh items.

[e] Includes salad bars that offered a combination of fresh, canned, and dried items.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program. RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.5. Mean and distribution of cup equivalents for FFVP snacks offered, fall 2014

				Percentiles						
Food group	Number of items	Mean	SE	5th	10th	25th	50th	75th	90th	95th
All fruits and vegetables	**114**	**0.60**	**0.04**	**0.07**	**0.15**	**0.28**	**0.50**	**0.79**	**1.36**	**1.66**
Fresh	113	0.60	0.04	0.07	0.15	0.28	0.50	0.79	1.36	1.66
All fruits	**80**	**0.73**	**0.05**	**0.25**	**0.28**	**0.39**	**0.62**	**0.91**	**1.66**	**1.66**
Fresh	79	0.74	0.05	0.25	0.28	0.39	0.62	0.98	1.66	1.66
All fresh vegetables	**34**	**0.29**	**0.04**	**0.03**	**0.06**	**0.10**	**0.24**	**0.42**	**0.57**	**0.89**
Number of FFVP snacks	**96**									
Number of schools[a]	**31**									

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34), SY 2014–2015. Data on cup equivalents of fruit and vegetables were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research.

Notes: Exhibit includes whole fruits and vegetables offered at FFVP snacks. Canned peaches were reported as being offered in one school during the fall semester. They are included in the total rows. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a]Excludes three schools that did not offer FFVP snacks during their target week for data collection.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form;; SE = Standard error; SY = school year.

Exhibit E.6. Mean and distribution of cup equivalents for FFVP snacks offered, spring 2015

Food group	Number of items	Mean	SE	Percentiles 5th	10th	25th	50th	75th	90th	95th
All fruits and vegetables	**134**	**0.63**	**0.04**	**0.17**	**0.25**	**0.38**	**0.51**	**0.71**	**1.66**	**1.66**
Fresh	94	0.68	0.05	0.21	0.25	0.38	0.51	0.75	1.66	1.66
Canned	12	0.37	0.04	0.15	0.23	0.27	0.32	0.51	0.51	0.58
Frozen	1	0.26	--	--	--	--	--	--	--	--
Dried	27	0.58	0.07	0.11	0.28	0.41	0.57	0.59	0.72	1.51
All fruits	**112**	**0.67**	**0.04**	**0.17**	**0.26**	**0.39**	**0.51**	**0.71**	**1.66**	**1.66**
Fresh	73	0.75	0.06	0.21	0.28	0.39	0.52	0.79	1.66	1.66
Canned	11	0.38	0.04	0.15	0.23	0.29	0.32	0.51	0.51	0.58
Frozen	1	0.26	--	--	--	--	--	--	--	--
Dried	27	0.58	0.07	0.11	0.28	0.41	0.57	0.59	0.72	1.51
All vegetables	**22**	**0.41**	**0.03**	**0.23**	**0.23**	**0.28**	**0.43**	**0.51**	**0.51**	**0.73**
Fresh	21	0.42	0.03	0.23	0.23	0.28	0.45	0.51	0.51	0.73
Canned	1	0.25	--	--	--	--	--	--	--	--
Frozen	0	--	--	--	--	--	--	--	--	--
Dried	0	--	--	--	--	--	--	--	--	--
Number of FFVP snacks	**118**									
Number of schools[a]	**33**									

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (spring n = 34), SY 2014–2015. Data on cup equivalents of fruits and vegetables were obtained from the Food Patterns Equivalents Database 2011-12.Tabulations prepared by Mathematica Policy Research.

Notes: Exhibit includes whole fruits and vegetables offered at FFVP snacks. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Excludes one school that did not offer FFVP snacks during their target week for data collection.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.7. Mean energy and key nutrient content of FFVP snacks

	Fall 2014		Spring 2015		
Dietary component	Mean	SE	Mean	SE	Change
Calories	45	3.2	65	5.0	20
Macronutrients					
Total fat (g)	0^	0.0^	0^	0.2	0^
Saturated fat (g)	0^	0.0^	0^	0.0^	0^
Monounsaturated fat (g)	0^	0.0^	0^	0.1	0^
Polyunsaturated fat (g)	0^	0.0^	0^	0.1	0^
Linoleic acid (g)	0^	0.0^	0^	0.1	0^
Alpha–linolenic acid (g)	0^	0.0^	0^	0.0^	0^
Carbohydrate (g)	11	0.8	16	1.2	5
Protein (g)	1	0.0^	1	0.1	0^
Percentage of calories from:					
Total fat	4.9	0.33	4.8	0.52	-0.1
Saturated fat	0.8	0.07	0.7	0.08	-0.1
Vitamins					
Vitamin A (mcg RAE)	31	7.6	27	6.9	-4
Vitamin C (mg)	16	1.9	15	1.6	-1
Vitamin D (mcg)	0	0.0	0	0.0	0
Vitamin E (mg AT)	0^	0.0^	0^	0.0^	0^
Vitamin B_6 (mg)	0.1	0.01	0.1	0.01	-0.0^
Vitamin B_{12} (mcg)	0.0	0.00	0.0	0.00	0.0
Folate (mcg DFE)	12.7	1.14	12.5	1.10	-0.2
Niacin (mg)	0.3	0.02	0.4	0.03	0.1
Riboflavin (mg)	0.0^	0.00^	0.0^	0.00^	0.0^
Thiamin (mg)	0.0^	0.00^	0.0^	0.00^	0.0^
Minerals					
Calcium (mg)	13	1.1	15	1.2	2
Iron (mg)	0.2	0.02	0.3	0.03	0.1
Magnesium (mg)	9	0.7	11	1.0	2
Phosphorus (mg)	15	0.9	18	2.4	4
Potassium (mg)	153	9.8	166	10.9	13
Sodium (mg)	7	2.4	10	2.6	3
Zinc (mg)	0.1	0.01	0.1	0.02	0.0^
Other dietary components					
Cholesterol (mg)	0	0.0	0	0.0	0
Dietary fiber (g)	2	0.1	2	0.1	0^
Added sugar (teaspoons)	0.0^	0.02	0.6	0.17	0.6
Number of FFVP snack items	**114**		**134**		
Number of schools[a]	**31**		**33**		

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: The estimates exclude spreads and condiments, such as peanut butter and "light" Ranch dressing. Approximately 18 percent (n=17) and 8 percent (n=10) of FFVP snacks were offered with a spread/condiment in the fall and spring, respectively. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary. The nutrient estimates are calculated at the snack item level for 96 fall and 118 spring FFVP snack occasions.

^ Rounds to, but different from, zero.

EXHIBIT E.7. *(continued)*

[a] Excludes three schools in the fall and one school in the spring that did not offer FFVP snacks during their target week for data collection.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.8. Mean energy and key nutrient content of FFVP snacks offered, spring 2015

	CFD only		CFD and fresh		Fresh only		All schools	
Dietary component	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Calories	71	6.5	73	8.1	52	5.4	65	5.0
Macronutrients								
Total fat (g)	0^	0.1	1	0.3	0^	0.0^	0^	0.2
Saturated fat (g)	0^	0.0^	0^	0.0^	0^	0.0^	0^	0.0^
Monounsaturated fat (g)	0^	0.0^	0^	0.1	0^	0.0^	0^	0.1
Polyunsaturated fat (g)	0^	0.0^	0^	0.1	0^	0.0^	0^	0.1
Linoleic acid (g)	0^	0.0^	0^	0.1	0^	0.0^	0^	0.1
Alpha–linolenic acid (g)	0^	0.0^	0^	0.0^	0^	0.0^	0^	0.0^
Carbohydrate (g)	18	1.6	18	1.9	13	1.4	16	1.2
Protein (g)	1	0.1	1	0.2	1	0.1	1	0.1
Percentage of calories from:								
Total fat	3.0	0.54	4.8	0.89	5.3	0.46	4.8	0.52
Saturated fat	0.7	0.21	0.7	0.13	0.8	0.08	0.7	0.08
Vitamins								
Vitamin A (mcg RAE)	30	5.9	37	12.3	11	2.1	27	6.9
Vitamin C (mg)	12	3.6	13	2.1	19	2.8	15	1.6
Vitamin D (mcg)	0	0.0	0	0.0	0	0.0	0	0.0
Vitamin E (mg AT)	0^	0.1	0^	0.1	0^	0.0^	0^	0.0^
Vitamin B_6 (mg)	0.1	0.01	0.1	0.01	0.1	0.02	0.1	0.01
Vitamin B_{12} (mcg)	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00
Folate (mcg DFE)	13.2	4.62	10.9	1.64	14.5	1.41	12.5	1.10
Niacin (mg)	0.5	0.02	0.4	0.06	0.3	0.03	0.4	0.03
Riboflavin (mg)	0.0^	0.00^	0.0^	0.00^	0.0^	0.00^	0.0^	0.00^
Thiamin (mg)	0.0^	0.01	0.0^	0.00^	0.0^	0.00^	0.0^	0.00^
Minerals								
Calcium (mg)	15	4.3	14	1.7	16	1.8	15	1.2
Iron (mg)	0.4	0.05	0.3	0.04	0.3	0.04	0.3	0.03
Magnesium (mg)	15	4.6	10	1.5	12	1.3	11	1.0
Phosphorus (mg)	15	1.2	19	4.3	17	1.2	18	2.4
Potassium (mg)	184	33.5	153	15.8	182	15.8	166	10.9
Sodium (mg)	6	1.9	10	3.0	12	5.3	10	2.6
Zinc (mg)	0.1	0.03	0.1	0.03	0.1	0.01	0.1	0.02
Other dietary components								
Cholesterol (mg)	0	0.0	0	0.0	0	0.0	0	0.0
Dietary fiber (g)	2	0.3	2	0.2	2	0.2	2	0.1
Added sugar (teaspoons)	0.8	0.33	1.1	0.30	0.0	0.00	0.6	0.17
Number of FFVP snack items	**9**		**74**		**51**		**134**	
Number of schools[a]	**2**		**17**		**14**		**33**	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Nutrient estimates are calculated at the snack item level for 118 spring FFVP snacks. See Appendix E Exhibit E.2 for number of snack occasions by form.

[a] Excludes one school that did not offer FFVP snacks during their target week for data collection.

EXHIBIT E.8. *(continued)*

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable program; RAE = Retinol activity equivalents; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.9. Mean and distribution of energy and key nutrient content of FFVP snacks offered: canned, frozen, or dried only, spring 2015

			Percentiles						
Dietary Component	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	71	6.5	--	--	--	76	--	--	
Macronutrients									
Total fat (g)	0^	0.1	--	--	--	0^	--	--	--
Saturated fat (g)	0^	0.0^	--	--	--	0^	--	--	--
Monounsaturated fat (g)	0^	0.0^	--	--	--	0^	--	--	--
Polyunsaturated fat (g)	0^	0.0^	--	--	--	0^	--	--	--
Carbohydrate (g)	18	1.6	--	--	--	20	--	--	--
Protein (g)	1	0.1	--	--	--	1	--	--	--
Percentage of calories from:			--	--	--		--	--	--
Total fat	3.0	0.54	--	--	--	2.9	--	--	--
Saturated fat	0.7	0.21	--	--	--	0.3	--	--	--
Vitamins									
Vitamin A (mcg RAE)	30	5.9	--	--	--	22	--	--	--
Vitamin C (mg)	12	3.6	--	--	--	6	--	--	--
Vitamin D (mcg)	0	0.0	--	--	--	0	--	--	--
Vitamin E (mg AT)	0^	0.1	--	--	--	0^	--	--	--
Vitamin B_6 (mg)	0.1	0.01	--	--	--	0.1	--	--	--
Vitamin B_{12} (mcg)	0.0	0.00	--	--	--	0.0	--	--	--
Folate (mcg DFE)	13.2	4.62	--	--	--	6.2	--	--	--
Niacin (mg)	0.5	0.02	--	--	--	0.5	--	--	--
Riboflavin (mg)	0.0^	0.00^	--	--	--	0.0^	--	--	--
Thiamin (mg)	0.0^	0.01	--	--	--	0.0^	--	--	--
Minerals									
Calcium (mg)	15	4.3	--	--	--	9	--	--	--
Iron (mg)	0.4	0.05	--	--	--	0.4	--	--	--
Magnesium (mg)	15	4.6	--	--	--	10	--	--	--
Phosphorus (mg)	15	1.2	--	--	--	12	--	--	--
Potassium (mg)	184	33.5	--	--	--	138	--	--	--
Sodium (mg)	6	1.9	--	--	--	5	--	--	--
Zinc (mg)	0.1	0.03	--	--	--	0.1	--	--	--
Other dietary components									
Cholesterol (mg)	0	0.0	--	--	--	0	--	--	--
Dietary fiber (g)	2	0.3	--	--	--	1	--	--	--
Added sugar (teaspoons)	0.8	0.33	--	--	--	0.0	--	--	--
Number of FFVP snack items	**9**								•
Number of schools[a]	**2**								•

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form, SY 2014–2015 (spring n = 34). Tabulations prepared by Mathematica Policy Research.

Note: No condiments or spreads were offered with CFD snacks. Dashes (--) indicate that the sample size is too small to estimate percentiles. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary. Nutrient estimates are calculated for 5 CFD snack occasions in the spring.

[a] Excludes one school that did not offer FFVP snacks during their target week for data collection.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.10. Mean and distribution of energy and key nutrient content of FFVP snacks offered: fresh only, spring 2015

			Percentiles						
Dietary Component	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	52	5.4	5	7	21	42	95	105	116
Macronutrients									
Total fat (g)	0^	0.0^	0^	0^	0^	0^	0^	0^	0^
Saturated fat (g)	0^	0.0^	0^	0^	0^	0^	0^	0^	0^
Monounsaturated fat (g)	0^	0.0^	0^	0^	0^	0^	0^	0^	0^
Polyunsaturated fat (g)	0^	0.0^	0^	0^	0^	0^	0^	0^	0^
Carbohydrate (g)	13	1.4	1	2	5	11	25	27	31
Protein (g)	1	0.1	0^	0^	0^	1	1	1	2
Percentage of calories from:									
Total fat	5.3	0.46	2.1	2.2	2.3	3.3	8.4	9.6	12.0
Saturated fat	0.8	0.08	0.3	0.3	0.4	0.5	1.1	1.3	2.4
Vitamins									
Vitamin A (mcg RAE)	11	2.1	0^	1	2	5	14	26	41
Vitamin C (mg)	19	2.8	1	2	3	10	28	48	70
Vitamin D (mcg)	0	0.0	0	0	0	0	0	0	0
Vitamin E (mg AT)	0^	0.0^	0^	0^	0^	0^	0^	0^	1
Vitamin B6 (mg)	0.1	0.02	0.0^	0.0^	0.0^	0.1	0.1	0.4	0.4
Vitamin B12 (mcg)	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Folate (mcg DFE)	14.5	1.41	1.5	3.9	5.5	12.0	22.3	27.0	39.3
Niacin (mg)	0.3	0.03	0.0^	0.1	0.2	0.2	0.4	0.7	0.8
Riboflavin (mg)	0.0^	0.00^	0.0^	0.0^	0.0^	0.0^	0.1	0.1	0.1
Thiamin (mg)	0.0^	0.00^	0.0^	0.0^	0.0^	0.0^	0.1	0.1	0.1
Minerals									
Calcium (mg)	16	1.8	3	4	6	11	25	34	52
Iron (mg)	0.3	0.04	0.1	0.1	0.1	0.2	0.3	0.3	0.7
Magnesium (mg)	12	1.3	3	3	5	9	13	29	32
Phosphorus (mg)	17	1.2	6	7	12	15	22	28	31
Potassium (mg)	182	15.8	38	61	90	163	237	362	422
Sodium (mg)	12	5.3	0	0	1	1	2	25	50
Zinc (mg)	0.1	0.01	0.0^	0.0^	0.1	0.1	0.2	0.2	0.3
Other dietary components									
Cholesterol (mg)	0	0.0	0	0	0	0	0	0	0
Dietary fiber (g)	2	0.2	0^	0^	1	2	3	4	6
Added sugar (teaspoons)	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of FFVP snack items	**51**								
Number of schools[a]	**14**								

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form, SY 2014–2015 (spring n = 34). Tabulations prepared by Mathematica Policy Research.

Note: These estimates exclude spreads and condiments offered with snacks such as peanut butter and "light" Ranch dressing. Nutrient estimates are calculated for 46 fresh FFVP snack occasions in the spring.

[a] Excludes one school that did not offer FFVP snacks during their target week for data collection. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.11. Mean and distribution of energy and key nutrient content of FFVP snacks offered: canned, frozen, or dried and fresh, spring 2015

.	.	.	Percentiles						
Dietary Component	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	73	8.1	10	14	24	52	101	123	171
Macronutrients									
Total fat (g)	1	0.3	0^	0^	0^	0^	0^	0^	1
Saturated fat (g)	0^	0.0^	0^	0^	0^	0^	0^	0^	0^
Monounsaturated fat (g)	0^	0.1	0^	0^	0^	0^	0^	0^	0^
Polyunsaturated fat (g)	0^	0.1	0^	0^	0^	0^	0^	0^	0^
Linoleic acid (g)	0^	0.1	0^	0^	0^	0^	0^	0^	0^
Alpha–linolenic acid (g)	0^	0.0^	0	0^	0^	0^	0^	0^	0^
Carbohydrate (g)	18	1.9	2	3	6	14	27	31	44
Protein (g)	1	0.2	0^	0^	0^	0^	1	1	1
Percentage of calories from:									
Total fat	4.8	0.89	0.9	1.4	2.1	3.1	5.3	8.4	9.6
Saturated fat	0.7	0.13	0.1	0.2	0.3	0.4	0.7	1.3	1.8
Vitamins									
Vitamin A (mcg RAE)	37	12.3	0	0	1	3	14	61	292
Vitamin C (mg)	13	2.1	0^	0^	1	4	20	42	51
Vitamin D (mcg)	0	0.0	0	0	0	0	0	0	0
Vitamin E (mg AT)	0^	0.1	0^	0^	0^	0^	0^	1	1
Vitamin B6 (mg)	0.1	0.01	0.0^	0.0^	0.0^	0.0^	0.1	0.1	0.2
Vitamin B12 (mcg)	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Folate (mcg DFE)	10.9	1.64	0.0	0.0	1.5	5.5	17.3	27.4	39.3
Niacin (mg)	0.4	0.06	0.1	0.1	0.2	0.3	0.5	0.7	0.9
Riboflavin (mg)	0.0^	0.00^	0.0^	0.0^	0.0^	0.0^	0.0^	0.1	0.1
Thiamin (mg)	0.0^	0.00^	0.0^	0.0^	0.0^	0.0^	0.0^	0.1	0.1
Minerals									
Calcium (mg)	14	1.7	2	3	5	8	19	38	52
Iron (mg)	0.3	0.04	0.1	0.1	0.1	0.2	0.3	0.6	0.8
Magnesium (mg)	10	1.5	2	2	3	7	11	16	32
Phosphorus (mg)	19	4.3	3	3	7	14	20	29	43
Potassium (mg)	153	15.8	13	13	57	116	199	291	422
Sodium (mg)	10	3.0	0	0	1	2	5	26	42
Zinc (mg)	0.1	0.03	0.0^	0.0^	0.0^	0.1	0.1	0.2	0.3
Other dietary components									
Cholesterol (mg)	0	0.0	0	0	0	0	0	0	0
Dietary fiber (g)	2	0.2	1	1	1	2	2	4	4
Added sugar (teaspoons)	1.1	0.30	0.0	0.0	0.0	0.0	0.0	4.3	4.4
Number of FFVP snack items	**74**								
Number of schools[a]	**17**								

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form, SY 2014–2015 (spring n = 34). Tabulations prepared by Mathematica Policy Research.

Note: These estimates exclude spreads and condiments offered with snacks, such as peanut butter and "light" Ranch dressing. Nutrient estimates are calculated for 67 FFVP snack occasions in the spring. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Excludes one school that did not offer FFVP snacks during their target week for data collection.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; RFF = Reimbursable Foods Form; SE = Standard error; SY = school year.

Exhibit E.12. Types and forms of fruits and vegetables offered in reimbursable breakfasts and lunches

	Percentage of breakfasts			Percentage of lunches		
Food item	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Fresh fruits	**49.0**	**43.9**	**-5.0**	**52.4**	**50.7**	**-1.7**
Oranges	13.3	12.8	-0.4	24.1	20.7	-3.5
Strawberries	0.0	0.7	0.7	2.1	0.7	-1.4
Pears	1.4	0.7	-0.7	3.4	2.7	-0.8
Blueberries	2.1	1.4	-0.7	2.1	1.3	-0.7
Plums	0.7	0.0	-0.7	0.7	0.0	-0.7
Pomegranates	0.7	0.0	-0.7	0.7	0.0	-0.7
Cherries	0.0	0.7	0.7	0.0	0.0	0.0
Mixtures with citrus	0.0	0.0	0.0	0.7	0.7	-0.0^
Pineapple	2.1	0.7	-1.4	1.4	1.3	-0.0^
Watermelon	0.0	0.0	0.0	0.7	0.7	-0.0^
Kiwis	4.2	2.7	-1.5	2.8	3.3	0.6
Honeydew melon	0.0	0.0	0.0	0.0	0.7	0.7
Peaches	0.0	0.7	0.7	0.0	0.7	0.7
Grapes	7.7	4.7	-3.0	8.3	9.3	1.1
Grapefruit	1.4	2.0	0.6	1.4	2.7	1.3
Mixtures without citrus	0.0	0.0	0.0	0.0	1.3	1.3
Tangerines	1.4	3.4	2.0	2.1	3.3	1.3
Bananas	15.4	12.2	-3.2	9.7	11.3	1.7
Cantaloupe	2.1	0.7	-1.4	2.1	4.7	2.6
Apples	14.7	17.6	2.9	27.6	30.7	3.1
Canned fruits	**42.0**	**43.9**	**2.0**	**64.1**	**71.3**	**7.2**
Mixtures	7.7	12.8	5.1	20.0	16.7	-3.3
Mandarin oranges	4.2	0.0	-4.2	7.6	6.7	-0.9
Apricots	0.7	2.0	1.3	0.7	0.0	-0.7
Cranberries	0.0	0.7	0.7	4.1	4.0	-0.1
Strawberries	0.7	0.0	-0.7	0.0	0.0	0.0
Applesauce	11.9	12.8	0.9	11.7	12.7	0.9
Pineapple	4.9	4.7	-0.2	9.0	12.0	3.0
Pears	6.3	10.8	4.5	12.4	16.0	3.6
Peaches	12.6	10.8	-1.8	12.4	23.3	10.9
Dried fruits	**18.2**	**18.9**	**0.7**	**10.3**	**10.7**	**0.3**
Raisins	13.3	14.9	1.6	7.6	6.7	-0.9
Pineapple	0.7	0.7	-0.0^	0.0	0.0	0.0
Cranberries	4.2	10.1	5.9	4.1	4.7	0.5
Dates	0.0	0.0	0.0	1.4	2.0	0.6
Mixtures	0.0	0.7	0.7	0.0	3.3	3.3
Frozen fruits	**0.7**	**2.7**	**2.0**	**2.8**	**4.7**	**1.9**
Strawberries	0.7	0.7	-0.0^	2.1	2.7	0.6
Blueberries	0.0	2.0	2.0	0.7	2.7	2.0
Fruit juice	**85.3**	**81.1**	**-4.2**	**14.5**	**25.3**	**10.9**
Blends	17.5	10.8	-6.7	3.4	3.3	-0.1
Cranberry	0.7	0.0	-0.7	0.0	0.0	0.0
Pineapple	2.1	3.4	1.3	0.0	1.3	1.3
Watermelon	0.0	0.0	0.0	0.0	1.3	1.3
Apple	55.9	55.4	-0.5	7.6	10.7	3.1

EXHIBIT E.12. *(continued)*

Food item	Percentage of breakfasts			Percentage of lunches		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Frozen juice cup/bar	1.4	0.7	-0.7	2.8	7.3	4.6
Grape	34.3	39.9	5.6	4.8	10.0	5.2
Orange	55.2	67.6	12.3	6.9	14.7	7.8
Fresh vegetables	**0.0**	**0.7**	**0.7**	**79.3**	**77.3**	**-2.0**
Tomatoes	0.0	0.0	0.0	40.0	32.7	-7.3
Other leafy greens	0.0	0.0	0.0	28.3	22.7	-5.6
Celery	0.0	0.0	0.0	17.2	14.0	-3.2
Beets	0.0	0.0	0.0	2.8	0.0	-2.8
Spinach	0.0	0.0	0.0	3.4	0.7	-2.8
Cauliflower	0.0	0.0	0.0	5.5	3.3	-2.2
Mixtures	0.0	0.0	0.0	3.4	1.3	-2.1
Cabbage	0.0	0.0	0.0	1.4	0.0	-1.4
Mushrooms	0.0	0.0	0.0	1.4	0.0	-1.4
Winter squash	0.0	0.0	0.0	1.4	0.0	-1.4
Summer squash	0.0	0.0	0.0	0.7	0.0	-0.7
Broccoli	0.0	0.0	0.0	13.1	12.7	-0.4
Onions	0.0	0.0	0.0	7.6	7.3	-0.3
Sweet potatoes	0.0	0.0	0.0	0.7	0.7	-0.0^
Green peas	0.0	0.0	0.0	2.8	3.3	0.6
Snow peas	0.0	0.0	0.0	2.1	2.7	0.6
Sprouts	0.0	0.0	0.0	0.7	1.3	0.6
White potatoes	0.0	0.7	0.7	2.8	3.3	0.6
Corn	0.0	0.0	0.0	0.0	0.7	0.7
Peppers	0.0	0.0	0.0	17.2	18.7	1.4
Cucumber	0.0	0.0	0.0	29.7	31.3	1.7
Entrée salads[a]	0.0	0.0	0.0	10.3	13.3	3.0
Carrots	0.0	0.0	0.0	35.2	38.7	3.5
Side salads[a]	0.0	0.0	0.0	29.0	33.3	4.4
Canned vegetables	**0.0**	**0.7**	**0.7**	**38.6**	**34.0**	**-4.6**
Baked beans	0.0	0.0	0.0	7.6	5.3	-2.3
String beans	0.0	0.0	0.0	10.3	8.0	-2.3
Black, pinto, or other beans/peas	0.0	0.0	0.0	4.8	2.7	-2.2
Green peas	0.0	0.0	0.0	3.4	1.3	-2.1
Carrots	0.0	0.0	0.0	2.1	2.0	-0.1
Sweet potatoes	0.0	0.0	0.0	0.7	0.7	-0.0^
Tomatoes	0.0	0.7	0.7	4.8	5.3	0.5
Mixtures	0.0	0.0	0.0	2.8	3.3	0.6
Spinach	0.0	0.0	0.0	0.0	0.7	0.7
Beets	0.0	0.0	0.0	0.0	1.3	1.3
Corn	0.0	0.0	0.0	5.5	8.7	3.1
Frozen vegetables	**2.1**	**3.4**	**1.3**	**25.5**	**29.3**	**3.8**
Sweet potatoes	0.0	0.0	0.0	2.8	0.0	-2.8
Corn	0.0	0.0	0.0	6.2	4.0	-2.2
String beans	0.0	0.0	0.0	2.1	0.0	-2.1
Green peas	0.0	0.0	0.0	6.2	4.7	-1.5
Mixtures	0.0	0.0	0.0	2.8	2.0	-0.8
Carrots	0.0	0.0	0.0	2.1	2.7	0.6
White potatoes	0.7	0.7	-0.0^	0.0	0.7	0.7
Spinach	0.0	0.0	0.0	0.0	2.7	2.7

EXHIBIT E.12. *(continued)*

Food item	Percentage of breakfasts			Percentage of lunches		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Broccoli	0.0	0.0	0.0	3.4	7.3	3.9
French fries and similar products	1.4	2.7	1.3	3.4	8.0	4.6
Dried vegetables	**0.0**	**0.0**	**0.0**	**10.3**	**9.3**	**-1.0**
Black, pinto, or other beans/peas	0.0	0.0	0.0	3.4	1.3	-2.1
White potatoes	0.0	0.0	0.0	7.6	8.0	0.4
Vegetable juice	**0.0**	**2.7**	**2.7**	**0.0**	**2.0**	**2.0**
Blends	0.0	2.7	2.7	0.0	2.0	2.0
Vegetables with form not specified	0.7	0.0	-0.7	12.4	6.7	-5.7
Black, pinto, or other beans/peas	0.0	0.0	0.0	5.5	2.7	-2.9
String beans	0.0	0.0	0.0	3.4	2.0	-1.4
Winter squash	0.0	0.0	0.0	1.4	0.0	-1.4
Other leafy greens	0.0	0.0	0.0	0.7	0.0	-0.7
Peppers	0.0	0.0	0.0	0.7	0.0	-0.7
White potatoes	0.7	0.0	-0.7	0.7	0.0	-0.7
Green peas	0.0	0.0	0.0	0.7	0.7	-0.0^
Corn	0.0	0.0	0.0	0.0	0.7	0.7
Spinach	0.0	0.0	0.0	0.0	1.3	1.3
Number of meals	**143**	**148**		**145**	**150**	
Number of schools	**34**	**34**		**34**	**34**	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Exhibit includes whole fruit and vegetables, side and entrée salads, and 100 percent fruit and vegetable juices offered at breakfast and lunch. This Exhibit excludes fruit and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie). Numbers in the Change columns may not match the subtracted values for spring minus fall due to rounding. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Salad includes tossed salad and raw mixed vegetables with or without lettuce.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.13. Percentage of schools offering canned, frozen, dried, or fresh FFVP snacks by time of day, spring 2015

	Percentage of schools			
Timing	CFD only	Fresh only	CFD and fresh	All schools
Before lunch only	50.0	35.3	42.9	38.2
After lunch only	50.0	23.5	35.7	29.4
Both before and after lunch[a]	0.0	5.9	0.0	2.9
Varies	0.0	35.3	21.4	26.5
No FFVP snacks[b]	**--**	**--**	**--**	**2.9**
Number of schools	**2**	**17**	**14**	**34**

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] All of these schools offered the same snack at both time periods, typically to students in different grades.

[b] One school did not offer FFVP snacks during their target week for data collection.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.14. Percentage of schools offering fresh (fall 2014) or canned, frozen, dried, or fresh (spring 2015) FFVP snacks by time of day

	Percentage of schools		
Timing	Fall 2014	Spring 2015	Change
Before lunch only	41.2	38.2	-2.9
After lunch only	32.4	29.4	-2.9
Both before and after lunch[a]	8.8	2.9	-5.9
Varies	8.8	26.5	17.6
No FFVP snacks[b]	8.8	2.9	-5.9
Number of schools	**34**	**34**	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] All of these schools offered the same snack at both time periods, typically to students in different grades.

[b] Three schools in the fall and one school in the spring did not offer FFVP snacks during their target week for data collection.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.15. Number of days per week schools offered any form of fruits or vegetables in FFVP snacks and reimbursable meals

	Percentage of schools		
	Fall 2014	Spring 2015	Change
Number of days per week in FFVP snacks			
None[a]	8.8	2.9	-5.9
1 or 2	20.6	17.6	-2.9
3	47.1	38.2	-8.8
4	14.7	17.6	2.9
5	8.8	23.5	14.7
Mean days per week	2.8	3.4	0.6
Median days per week	3.0	3.0	0.0
Number of schools	**34**	**34**	
Number of days per week in breakfasts			
None[b]	2.9	0.0	-2.9
1	2.9	0.0	-2.9
2 or 3	14.7	17.6	2.9
4	44.1	38.2	-5.9
5	35.3	44.1	8.8
Mean days per week	3.9	4.2	0.3
Median days per week	4.0	4.0	0.0
Number of schools	**34**	**34**	
Number of days per week in lunches			
1 or 2	0.0	0.0	0.0
3	11.8	14.7	2.9
4	50.0	29.4	-20.6
5	38.2	55.9	17.6
Mean days per week	4.3	4.4	0.1
Median days per week	4.0	5.0	1.0
Number of schools	**34**	**34**	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34). SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Number of days per week schools offered fruits or vegetables is based on a target (typical) week for each school during fall and spring. Exhibit includes whole fruit and vegetables and salads offered at FFVP snacks, breakfast, and lunch. This exhibit excludes fruit and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) and 100% fruit and vegetable juices. Percentages may not add to 100 due to rounding. Numbers in the Change column may not match the subtracted values for spring minus fall due to rounding. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Three schools in the fall and one school in the spring did not offer FFVP snacks during their target week for data collection.

[b] One school did not offer any fruits or vegetables other than fruit juice for breakfast during their target week.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.16. Number of days per week schools offered canned, frozen, or dried fruits and vegetables in FFVP snacks and reimbursable meals

	Percentage of schools		
	Fall 2014	Spring 2015	Change
Number of days per week in FFVP snacks			
None[a]	97.1	44.1	-52.9
1[b]	2.9	35.3	--
2	--	11.8	--
3 to 4	--	8.8	--
5	--	0.0	--
Mean days per week	--	0.9	--
Median days per week	--	1.0	--
Number of schools	34	34	
Number of days per week in breakfasts			
None[c]	14.7	11.8	-2.9
1	11.8	8.8	-2.9
2 to 3	35.3	35.3	0.0
4	26.5	32.4	5.9
5	11.8	11.8	0.0
Mean days per week	2.5	2.8	0.3
Median days per week	2.0	3.0	1.0
Number of schools	34	34	
Number of days per week in lunches			
1	0.0	0.0	0.0
2 to 3	44.1	32.4	-11.8
4	29.4	32.4	2.9
5	26.5	35.3	8.8
Mean days per week	3.7	4.0	0.3
Median days per week	4.0	4.0	0.0
Number of schools	34	34	

Source: FFV Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Number of days per week schools offered fruits or vegetables is based on a target (typical) week for each school during fall and spring. Exhibit includes whole fruit and vegetables and salads offered at FFVP snacks, breakfast, and lunch. This Exhibit excludes fruit and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) and 100% fruit and vegetable juices. Vegetables with form not specified were also excluded from this table. Percentages may not add to 100 due to rounding. Numbers in the Change column may not match the subtracted values for spring minus fall due to rounding. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] Three schools in the fall and one school in the spring did not offer FFVP snacks during their target week for data collection.

[b] Canned peaches were reported as being offered for an FFVP snack in one school during the fall. For this case, the change was not calculated since CFD items should not have been offered in the fall.

[c] One school did not offer any fruit or vegetables other than fruit juice for breakfast during their target week.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.17. Preparation methods for fruits and vegetables offered in FFVP snacks and reimbursable school meals

	Percentage of schools		
	Fall 2014	Spring 2015	Change
FFVP snack			
Preparation method			
Vegetables			
Fresh/raw	58.8	44.1	-14.7
Cooked from fresh	14.7	8.8	-5.9
Cooked from canned	--	2.9	--
Cooked from frozen	--	0.0	--
Cooked from dried	--	0.0	--
Fruit			
Fresh/raw	88.2	85.3	-2.9
Canned[a]	2.9	26.5	23.5
Frozen (thawed)	--	2.9	--
Dried	--	35.3	--
Cooked from fresh	0.0	0.0	0.0
Cooked from frozen	--	0.0	--
Fat used in preparation of:			
Fruit	0.0	0.0	0.0
Vegetables	2.9	2.9	0.0
No FFVP snacks[b]	8.8	2.9	-5.9
Number of schools	34	34	
Breakfast			
Preparation method			
Vegetables			
Fresh/raw	0.0	0.0	0.0
Cooked from fresh	0.0	2.9	2.9
Cooked from canned	0.0	2.9	2.9
Cooked from frozen	8.8	11.8	2.9
Cooked from dried	0.0	0.0	0.0
Cooked from form not specified	2.9	0.0	-2.9
Fruit			
Fresh/raw	70.6	73.5	2.9
Canned	70.6	76.5	5.9
Frozen (thawed)	2.9	8.8	5.9
Dried	23.5	32.4	8.8
Cooked from fresh	0.0	0.0	0.0
Cooked from frozen	0.0	0.0	0.0
Fat used in preparation of:			
Fruit	0.0	0.0	0.0
Vegetables	0.0	0.0	0.0
No fruit or vegetables offered[c]	2.9	0.0	-2.9
Number of schools	34	34	

	Percentage of schools		
	Fall 2014	Spring 2015	Change
Lunch			
Preparation method			
Vegetables[d]			
Fresh/raw	94.1	91.2	-2.9
Cooked from fresh	29.4	32.4	2.9
Cooked from canned	82.4	88.2	5.9
Cooked from frozen	58.8	70.6	11.8
Cooked from dried	32.4	38.2	5.9
Cooked from form not specified	20.6	14.7	-5.9
Fruit			
Fresh/raw	85.3	79.4	-5.9
Canned	100.0	100.0	0.0
Frozen	11.8	14.7	2.9
Dried	17.6	23.5	5.9
Cooked from fresh	2.9	0.0	-2.9
Cooked from frozen	0.0	0.0	0.0
Fat used in preparation of:			
Fruit	0.0	0.0	0.0
Vegetables	29.4	26.5	-2.9
Number of schools	34	34	

Source: Evaluation of the FFVP-CFD pilot project, Reimbursable Foods Form (fall n = 34; spring n = 34), SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Exhibit includes whole fruit and vegetables and salads offered at FFVP snacks, breakfast, and lunch. This exhibit excludes fruit and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) and 100% fruit and vegetable juices. Numbers in the Change column may not match the subtracted values for spring minus fall due to rounding. Because no school sampling was conducted and RFFs were completed by all schools with on-site data collection, statistical tests were not necessary.

[a] One school reported offering canned peaches at an FFVP snack during the fall.

[b] Three schools in the fall and one school in the spring did not offer FFVP snacks during their target week for data collection.

[c] One school did not offer any fruit or vegetables other than fruit juice for breakfast during their target week.

[d] Excludes string bean salad offered by a small share of schools in the fall and spring for which neither form nor preparation method was reported.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; RFF = Reimbursable Foods Form; SY = school year.

Exhibit E.18. Mean and distribution of cup equivalents of fruits and vegetables consumed in school on an FFVP snack day, fall 2014

			Percentiles						
Food group	Mean	SE	5th	10th	25th	50th	75th	90th	95th
Total fruits and vegetables[a]	**1.72**	**0.02**	**0.25**	**0.44**	**0.92**	**1.50**	**2.31**	**3.11**	**3.82**
100% fruit and vegetable juices[b]	0.61	0.02	0.24	0.44	0.47	0.49	0.58	1.00	1.18
Fresh	1.12	0.02	0.12	0.22	0.42	0.92	1.64	2.21	2.74
Canned	0.49	0.02	0.12	0.15	0.26	0.45	0.52	0.96	1.20
Frozen	0.52	0.02	0.10	0.15	0.26	0.48	0.72	0.91	0.98
Dried	0.47	0.02	0.11	0.17	0.20	0.37	0.60	0.82	1.00
Total fruits (excluding juices)	**1.15**	**0.02**	**0.24**	**0.31**	**0.50**	**0.89**	**1.65**	**2.24**	**2.77**
Fresh	1.09	0.02	0.17	0.25	0.45	0.82	1.62	2.16	2.74
Canned	0.44	0.03	0.12	0.16	0.25	0.45	0.50	0.71	0.98
Frozen	0.87	0.02	0.39	0.39	0.55	0.66	0.76	1.16	1.36
Dried	0.38	0.03	0.03	0.05	0.14	0.30	0.37	0.64	1.01
Total vegetables (excluding juices)	**0.55**	**0.01**	**0.06**	**0.12**	**0.24**	**0.48**	**0.79**	**1.09**	**1.40**
Fresh	0.44	0.02	0.04	0.07	0.17	0.30	0.62	0.94	1.18
Canned	0.40	0.01	0.10	0.12	0.24	0.35	0.50	0.72	0.73
Frozen	0.47	0.01	0.09	0.13	0.26	0.47	0.52	0.90	0.93
Dried	0.53	0.02	0.11	0.14	0.25	0.45	0.70	0.81	0.90
Number of students	**858**								

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Data on cup equivalents of FVs were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Notes: Exhibit reflects total in-school intake on an average FFVP day in the fall (standard FFVP) and in the spring (FFVP-CFD pilot). Fresh, canned, frozen, and dried FVs include items consumed as whole FVs from FFVP snacks, school meals, and other sources; FVs that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) are included only in the estimates of cup equivalents for total fruits and vegetables.

[a] Includes 100% fruit and vegetable juices and fruits and vegetables from all sources.

[b] On average, vegetable juice contributed less than 0.01 cup equivalents to total juice consumption for an FFVP snack day in both fall and spring.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

Exhibit E.19. Mean and distribution of cup equivalents of fruits and vegetables consumed in school on an FFVP snack day, spring 2015

			Percentiles						
Food group	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Total fruits and vegetables[a]	**1.49**	**0.03**	**0.17**	**0.37**	**0.77**	**1.36**	**2.00**	**2.64**	**3.09**
100% fruit and vegetable juices[b]	0.59	0.01	0.14	0.25	0.50	0.50	0.63	1.00	1.21
Fresh	1.00	0.02	0.13	0.23	0.42	0.79	1.36	2.00	2.54
Canned	0.45	0.01	0.08	0.15	0.23	0.33	0.55	0.85	1.01
Frozen	0.44	0.03	0.08	0.11	0.19	0.37	0.46	0.76	1.17
Dried	0.58	0.02	0.05	0.12	0.28	0.49	0.87	1.03	1.17
Total fruits (excluding juices)	**0.97**	**0.03**	**0.14**	**0.20**	**0.42**	**0.77**	**1.28**	**1.94**	**2.34**
Fresh	0.98	0.03	0.14	0.24	0.48	0.76	1.50	1.88	2.40
Canned	0.39	0.01	0.08	0.16	0.23	0.32	0.50	0.75	0.91
Frozen	0.34	0.02	0.17	0.18	0.21	0.24	0.31	0.47	0.74
Dried	0.52	0.02	0.03	0.08	0.28	0.48	0.59	1.06	1.18
Total vegetables (excluding juices)	**0.56**	**0.02**	**0.06**	**0.11**	**0.25**	**0.40**	**0.74**	**1.09**	**1.45**
Fresh	0.47	0.01	0.05	0.08	0.20	0.38	0.60	0.98	1.21
Canned	0.39	0.02	0.05	0.07	0.16	0.40	0.55	0.65	0.81
Frozen	0.44	0.03	0.08	0.10	0.18	0.36	0.46	0.72	1.17
Dried	0.64	0.05	0.17	0.22	0.37	0.47	0.82	0.93	0.97
Number of students	**935**								

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Data on cup equivalents of fruits and vegetables were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Notes: Exhibit reflects total in-school intake on an average FFVP day in the fall (standard FFVP) and in the spring (FFVP-CFD pilot). Fresh, canned, frozen, and dried fruits and vegetables include items consumed as whole fruits and vegetables from FFVP snacks, school meals, and other sources; fruits and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) are included only in the estimates of cup equivalents for total fruits and vegetables.

[a] Includes 100% fruit and vegetable juices and fruits and vegetables from all sources.

[b] On average, vegetable juice contributed less than 0.01 cup equivalents to total juice consumption for an FFVP snack day in both fall and spring.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SE= Standard error; SY = school year.

Exhibit E.20. Mean and distribution of cup equivalents of fruits and vegetables consumed in school during a typical school week, fall 2014

			Percentiles						
Food group	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Total fruits and vegetables[a]	**1.58**	**0.02**	**0.15**	**0.35**	**0.77**	**1.36**	**2.18**	**3.00**	**3.65**
100% fruit and vegetable juices[b]	0.64	0.01	0.23	0.39	0.46	0.49	0.66	1.00	1.36
Fresh	1.07	0.02	0.11	0.20	0.41	0.83	1.54	2.15	2.63
Canned	0.52	0.01	0.13	0.16	0.28	0.46	0.60	1.00	1.31
Frozen	0.50	0.01	0.09	0.14	0.26	0.48	0.72	0.89	0.93
Dried	0.50	0.02	0.11	0.16	0.24	0.37	0.62	0.87	1.13
Total fruits (excluding juices)	**1.07**	**0.02**	**0.20**	**0.29**	**0.47**	**0.83**	**1.49**	**2.15**	**2.58**
Fresh	1.05	0.02	0.17	0.26	0.46	0.79	1.56	2.04	2.50
Canned	0.45	0.02	0.13	0.16	0.25	0.38	0.51	0.76	1.01
Frozen	0.87	0.02	0.39	0.39	0.55	0.66	0.76	1.16	1.36
Dried	0.45	0.03	0.05	0.18	0.19	0.31	0.42	0.93	1.14
Total vegetables (excluding juices)	**0.55**	**0.01**	**0.06**	**0.11**	**0.23**	**0.48**	**0.75**	**1.09**	**1.40**
Fresh	0.43	0.02	0.04	0.06	0.15	0.30	0.57	0.93	1.28
Canned	0.44	0.01	0.10	0.12	0.27	0.46	0.57	0.72	0.80
Frozen	0.46	0.01	0.09	0.13	0.25	0.47	0.60	0.84	0.92
Dried	0.52	0.01	0.11	0.14	0.24	0.45	0.67	0.81	0.94
Number of students	**1,255**								

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Data on cup equivalents of FVs were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Notes: Exhibit reflects total in-school intake on an average school day in the fall (standard FFVP) and in the spring (FFVP-CFD pilot). Fresh, canned, frozen, and dried fruits and vegetables include items consumed as whole fruits and vegetables from FFVP snacks, school meals, and other sources; fruits and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) are included only in the estimates of cup equivalents for total fruits and vegetables.

[a] Includes 100% fruit and vegetable juices and fruits and vegetables from all sources.

[b]On average, vegetable juice contributed less than 0.01 cup equivalents to total juice consumption for a typical school week in both fall and spring.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SE= Standard error; SY = school year.

Exhibit E.21. Mean and distribution of cup equivalents of fruits and vegetables consumed in school during a typical school week, spring 2015

			Percentiles						
Food group	**Mean**	**SE**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Total fruits and vegetables[a]	**1.44**	**0.02**	**0.13**	**0.33**	**0.69**	**1.32**	**1.93**	**2.58**	**3.02**
100% fruit and vegetable juices[b]	0.58	0.01	0.13	0.25	0.50	0.50	0.52	1.00	1.18
Fresh	0.95	0.02	0.13	0.19	0.40	0.74	1.25	1.92	2.39
Canned	0.47	0.01	0.08	0.16	0.25	0.45	0.57	0.90	1.09
Frozen	0.48	0.02	0.09	0.15	0.25	0.38	0.60	0.79	1.17
Dried	0.58	0.02	0.05	0.13	0.28	0.49	0.85	1.07	1.22
Total fruits (excluding juices)	**0.93**	**0.02**	**0.15**	**0.21**	**0.41**	**0.75**	**1.23**	**1.80**	**2.23**
Fresh	0.95	0.02	0.14	0.24	0.47	0.75	1.38	1.79	2.31
Canned	0.42	0.01	0.12	0.16	0.25	0.33	0.51	0.81	0.93
Frozen	0.50	0.02	0.18	0.19	0.23	0.32	0.74	0.86	1.21
Dried	0.56	0.02	0.03	0.07	0.28	0.49	0.59	1.16	1.23
Total vegetables (excluding juices)	**0.56**	**0.01**	**0.07**	**0.12**	**0.25**	**0.41**	**0.74**	**1.06**	**1.34**
Fresh	0.45	0.01	0.05	0.07	0.19	0.36	0.60	0.97	1.20
Canned	0.40	0.02	0.06	0.08	0.19	0.40	0.55	0.65	0.81
Frozen	0.47	0.02	0.08	0.14	0.25	0.38	0.59	0.76	1.14
Dried	0.58	0.04	0.15	0.21	0.28	0.44	0.76	0.91	0.96
Number of students	**1,236**								

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Data on cup equivalents of FVs were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Notes: Exhibit reflects total in-school intake on an average school day in the fall (standard FFVP) and in the spring (FFVP-CFD pilot). Fresh, canned, frozen, and dried fruits and vegetables include items consumed as whole FVs from FFVP snacks, school meals, and other sources; fruits and vegetables that were part of a mixed dish/entrée (e.g., beef stew) or a baked good or dessert (e.g., blueberry muffin, apple pie) are included only in the estimates of cup equivalents for total fruits and vegetables.

[a] Includes 100% fruit and vegetable juices and FVs from all sources.

[b] On average, vegetable juice contributed less than 0.01 cup equivalents to total juice consumption for a typical school week in both fall and spring.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SE= Standard error; SY = school year.

Exhibit E.22. Mean cup equivalents of fruits and vegetables consumed in school for an FFVP snack

	Mean amount (cup equivalents)		
Food group	**Fall 2014**	**Spring 2015**	Change
All students			
Total fruits and vegetables [a]	0.48	0.37	-0.11*
Total fruits [a]	0.43	0.32	-0.11*
Total vegetables [a]	0.05	0.05	0.00^
Total number of students	**858**	**935**	
Students consuming any amount of the item only			
Total fruits and vegetables	0.69	0.63	-0.06*
Fresh	0.69	0.68	-0.02
Canned	0.25[b]	0.43	0.17[c]
Frozen	--	0.26[b]	--
Dried	--	0.50	--
Total fruits	0.81	0.67	-0.14*
Fresh	0.81	0.75	-0.06
Canned	0.25[b]	0.42	0.17[c]
Frozen	--	0.26[b]	--
Dried	--	0.50	--
Total vegetables	0.31	0.46	0.15*
Fresh	0.31	0.46	0.14*
Canned	--	0.64[b]	--
Frozen	--	0.00	--
Dried	--	0.00	--
Students that consumed snack	**616**	**590**	

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Data on cup equivalents of FVs were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at schools with a total enrollment of 50 or more students.

Notes: Exhibit reflects FFVP snack intake on an average FFVP day in the fall (standard FFVP) and spring (FFVP-CFD pilot). Total, fresh, canned, frozen, and dried FVs include items consumed as whole FVs from FFVP snacks. Amounts by form (fresh, canned, frozen, or dried) are calculated among students who consumed any amount of the fruit or vegetable snack in that form. Change column may not equal the difference between fall and spring exactly due to rounding. Means may not sum to total due to rounding.

* Change between fall and spring is significant at the 0.05 level.

[a] Total rows for all students include those who were offered, served or took a snack but did not consume any of it.

[b] Sample size is less than 10.

[c] Fall sample size is too small to calculate significance.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit E.23. Mean cup equivalents of fruits and vegetables consumed in school on an FFVP snack day, among students who consumed the fruit and/or vegetable

	Fall 2014		Spring 2015		
Food group	Percentage of students who consumed food group	Among students who consumed food group, mean amount consumed (cup equivalents)	Percentage of students who consumed food group	Among students who consumed food group, mean amount consumed (cup equivalents)	Regression-adjusted change in cup equivalents[a]
Total fruits and vegetables	**98.9**	**1.73**	**97.5**	**1.49**	**-0.24***
100% fruit and vegetable juices	38.2	0.66	37.7	0.63	-0.04
Fresh	86.4	1.02	72.1	0.91	-0.11
Canned	33.5	0.45	41.0	0.38	-0.06*
Frozen	17.2	0.52	15.6	0.50	-0.03
Dried	8.4	0.40	16.7	0.54	0.15*
Fruits and vegetables incorporated into other foods	76.5	0.35	76.1	0.30	-0.05*
Total fruits[b]	**80.8**	**1.03**	**77.7**	**0.88**	**-0.15***
Fresh	70.7	0.96	56.1	0.88	-0.08
Canned	28.5	0.39	35.7	0.34	-0.05
Frozen	1.9	0.73	1.2	-0.19	-0.92*
Dried	4.2	0.12	11.5	0.42	0.30*
Total vegetables[b]	**61.4**	**0.46**	**56.6**	**0.49**	**0.03**
Fresh	45.5	0.36	35.9	0.42	0.06
Canned	9.2	0.37	10.7	0.34	-0.03
Frozen	15.5	0.51	14.7	0.52	0.02
Dried	4.4	0.43	5.8	0.55	0.12
Number of students	**858**	**-**	**935**	**-**	**-**

Source: FFVP-CFD Pilot Evaluation, Diary-assisted/in-school Dietary Recall, SY 2014–2015.

Note: Fruits and vegetables of unknown form are excluded from this exhibit. The sample of students consuming them was too small to calculate estimates.

* Change between fall and spring is significant at the 0.05 level.

[a]This column shows a regression-adjusted change between fall 2014 and spring 2015 that holds constant gender, grade, primary language spoken at home, free and reduced-price lunch status, race/ethnicity, and whether students usually engage in physical activity before the FFVP snack is served.

[b]Excludes juices and fruits and vegetables incorporated into other foods.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit E.24. Change in mean cup equivalents of fruits and vegetables consumed in school on an FFVP snack day, with and without controlling for portion size

Food group	Change, controlling for student characteristics and activity[a]	Change, controlling for student characteristics, activity, and snack portion size[b]
Total fruits and vegetables	**-0.26***	**-0.19***
100% fruit and vegetable juices[c]	-0.05*	-0.05*
Fresh	-0.24*	-0.18*
Canned	0.02	0.02
Frozen	-0.01	-0.01
Dried	0.07*	0.07*
Form unknown	-0.01*	-0.01*
Fruits and vegetables incorporated into other foods	-0.04*	-0.04*
Total fruits[d]	**-0.13***	**-0.07**
Fresh	-0.21*	-0.15*
Canned	0.02	0.02
Frozen	-0.01	-0.01
Dried	0.07*	0.07*
Form unknown	-0.00^	-0.00^
Total vegetables[d]	**-0.04**	**-0.03**
Fresh	-0.03	-0.03
Canned	-0.00^	-0.00^
Frozen	0.00^	0.00^
Dried	0.00^	0.00^
Form unknown	-0.01*	-0.01*
Number of students	**858**	**935**

Source: FFVP-CFD Pilot Evaluation, diary-assisted/in-school dietary recall, 2014–2015 school year.

* Difference between fall and spring is statistically significant at the 0.05 level.

^ Rounds to, but different from, zero.

[a]This column shows a regression-adjusted change between fall 2014 and spring 2015 that holds constant gender, grade, primary language spoken at home, free and reduced-price lunch status, race/ethnicity, and whether students usually engage in physical activity before the FFVP snack is served.

[b]This column shows a regression-adjusted change between fall 2014 and spring 2015 that holds constant all of the characteristics in the previous column as well as snack portion size.

[c]On average, vegetable juice contributed less than 0.01 cup equivalents to total juice consumption for an FFVP snack day in both fall and spring.

[d]Excludes juices and fruits and vegetables incorporated into other foods.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program.

Exhibit E.25. Mean Healthy Eating Index (HEI)-2010 Scores for in-school dietary intakes during a typical school week

HEI Component	Maximum score	Fall 2014 Mean score	Fall 2014 SE	Spring 2015 Mean score	Spring 2015 SE	Difference
Adequacy						
Total fruit[a]	5	4.0	0.05	3.9	0.05	-0.1
Whole fruit[b]	5	4.2	0.05	4.1	0.05	-0.0^
Total vegetables	5	2.2	0.05	2.2	0.05	0.1
Greens and beans[c]	5	0.9	0.06	0.7	0.04	-0.1
Whole grains	10	5.7	0.11	5.5	0.13	-0.2
Dairy[d]	10	8.4	0.08	8.2	0.10	-0.2
Total protein foods	5	3.2	0.05	3.2	0.05	0.0^
Seafood and plant proteins[e]	5	1.1	0.05	1.1	0.04	0.0^
Fatty acids[f]	10	5.3	0.10	5.4	0.09	0.1
Moderation						
Refined grains	10	7.2	0.09	7.4	0.08	0.2
Sodium	10	5.1	0.08	5.2	0.11	0.1
Empty calories[g]	20	15.5	0.15	14.9	0.13	-0.6 *
Total	100	62.7	0.43	61.9	0.31	-0.7
Number of students		**1,255**		**1,236**		

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. HEI components were calculated using the HEI-2010. Tabulations prepared by Mathematica Policy Research are weighted be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: Exhibit reflects total in-school intake during a typical school week in the fall (standard FFVP) and in the spring (FFVP-CFD pilot).

* Change between fall and spring is significant at the 0.05 level.

[a]Includes fruit juice.

[b]Includes all forms except juice.

[c]Includes any beans and peas not counted as total protein foods.

[d]Includes all milk products, such as fluid milk, yogurt, cheese, and fortified soy beverages.

[e]Includes seafood, nuts, seeds, soy products, and beans and peas counted as total protein foods.

[f]Ratio of poly- and monounsaturated fatty acids to saturated fatty acids.

[g]Calories from solid fats and added sugars only; alcohol consumption is assumed to be 0 grams for school-age children.

CFD = Canned, frozen, or dried; FFVP=Fresh Fruit and Vegetable Program; HEI = Healthy Eating Index; SE = Standard error; SY = school year.

Exhibit E.26 Mean in-school intakes of energy and key nutrients on FFVP snack days

.	Fall 2014		Spring 2015		
Dietary component	**Mean**	**SE**	**Mean**	**SE**	**Difference**
Calories	**857**	12.3	**785**	10.8	**-72***
Macronutrients					
Total fat (g)	28	0.5	25	0.4	-3*
Saturated fat (g)	9	0.2	8	0.1	-1*
Monounsaturated fat (g)	10	0.2	9	0.2	-1*
Polyunsaturated fat (g)	7	0.2	6	0.1	-1*
Carbohydrate (g)	126	1.8	116	1.7	-9*
Protein (g)	33	0.6	31	0.5	-2*
Percentage of calories from:					
Total fat	28.3	0.31	27.6	0.22	-0.8*
Saturated fat	8.9	0.14	8.6	0.09	-0.2
Vitamins					
Vitamin A (mcg RAE)	232	5.9	219	5.7	-13
Vitamin C (mg)	46	1.6	43	1.2	-3
Vitamin D (mcg)	3	0.1	3	0.1	0
Vitamin E (mg AT)	3	0.1	3	0.1	-0^*
Vitamin B_6 (mg)	0.8	0.01	0.7	0.01	-0.1*
Vitamin B_{12} (mcg)	2.3	0.05	2.1	0.05	-0.2*
Folate (mcg DFE)	175.4	3.46	155.9	2.56	-19.5*
Niacin (mg)	8.5	0.12	7.5	0.11	-1.0*
Riboflavin (mg)	1.0	0.02	0.9	0.02	-0.1
Thiamin (mg)	0.6	0.01	0.6	0.01	-0.1*
Minerals					
Calcium (mg)	590	12.6	575	13.9	-15
Iron (mg)	5.7	0.10	5.1	0.09	-0.6*
Magnesium (mg)	139	2.0	129	2.2	-10*
Phosphorus (mg)	692	12.4	651	12.6	-42*
Potassium (mg)	1,320	17.6	1,239	20	-81*
Sodium (mg)	1,313	25.6	1,222	21.3	-91*
Zinc (mg)	4.8	0.09	4.5	0.07	-0.3*
Other dietary components					
Cholesterol (mg)	69	2.6	70	1.9	1
Dietary fiber (g)	10	0.2	9	0.1	-1*
Added sugar (teaspoons)	6.6	0.17	6.6	0.16	0.0^
Number of students	**858**		**935**		

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (fall day 1 recalls (n=858); spring day 1 recalls (n=935)), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake. Difference column may not equal the difference between fall and spring due to rounding. Means and SEs are based on one-day means.

* Change between fall and spring is significant at the 0.05 level.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; DFE = Dietary folate equivalents; RAE = Retinol activity equivalents;
SE = Standard error; SY = school year.

Exhibit E.27. Mean and distribution of usual in-school intakes of energy and key nutrients on FFVP snack days, fall 2014

		Percentiles						
Dietary component	**Mean**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	858	494	563	688	842	1,010	1,174	1,279
Macronutrients								
Total fat (g)	28	15	18	22	27	33	38.0	42
Saturated fat (g)	9	5	5	7	8	10	12	13
Monounsaturated fat (g)	10	5	6	8	9	11	14	15
Polyunsaturated fat (g)	7	3	4	5	7	8	11	12
Carbohydrate (g)	126	68	79	99	123	150	176	193
Protein (g)	33	19	21	26	32	39	45	49
Percentage of calories from:								
Total fat	28.3	21.5	23.0	25.5	28.3	31.1	33.7	35.2
Saturated fat	8.9	6.5	7.0	7.8	8.8	9.9	10.9	11.5
Vitamins								
Vitamin A (mcg RAE)	232	59	84	137	214	306	405	470
Vitamin C (mg)	46	26	29	36	45	55	65	72
Vitamin D (mcg)	3	1	1	2	3	5	6	7
Vitamin E (mg AT)	3	2	2	3	3	4	5	5
Vitamin B_6 (mg)	0.8	0.4	0.5	0.6	0.7	0.9	1.1	1.3
Vitamin B_{12} (mcg)	2.3	0.7	0.9	1.4	2.1	2.9	3.8	4.4
Folate (mcg DFE)	175.7	80.9	95.4	124.8	165.2	214.8	269.0	306.3
Niacin (mg)	8.5	4.4	5.2	6.5	8.2	10.2	12.2	13.4
Riboflavin (mg)	1.0	0.4	0.5	0.7	0.9	1.2	1.5	1.6
Thiamin (mg)	0.6	0.3	0.4	0.5	0.6	0.8	0.9	1.0
Minerals								
Calcium (mg)	591	242	302	418	568	738	909	1,019
Iron (mg)	5.7	3.0	3.5	4.3	5.5	6.8	8.1	9.0
Magnesium (mg)	139	81	92	112	137	163	189	206
Phosphorus (mg)	693	345	411	531	679	838	993	1,090
Potassium (mg)	1,322	657	782	1,012	1,294	1,599	1,896	2,082
Sodium (mg)	1,320	735	844	1,045	1,293	1,563	1,828	1,996
Zinc (mg)	4.8	2.5	2.9	3.7	4.6	5.8	7.0	7.8
Other dietary components								
Cholesterol (mg)	70	21	27	42	63	90	120	142
Dietary fiber (g)	10	5	6	8	10	12	14	15
Added sugar (teaspoons)	6.6	2.5	3.2	4.5	6.3	8.4	10.6	12.0
Number of students	**858**							

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (fall day 1 (n=858) and day 2 (n=112) recalls), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; DFE = Dietary folate equivalents; RAE = Retinol activity equivalents;
SY = school year.

Exhibit E.28. Mean and distribution of usual in-school intakes of energy and key nutrients on FFVP snack days, spring 2015

		Percentiles						
Dietary component	**Mean**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	787	464	525	637	774	921	1,065	1,156
Macronutrients								
Total fat (g)	25	14	16	19	24	29	35	38
Saturated fat (g)	8	4	4	6	7	10	12	13
Monounsaturated fat (g)	9	5	5	7	9	10	12	14
Polyunsaturated fat (g)	6	3	4	5	6	7	8	9
Carbohydrate (g)	116	74	82	97	115	134	152	164
Protein (g)	31	14	17	23	30	38	46	51
Percentage of calories from:								
Total fat	27.6	27.3	27.3	27.4	27.6	27.7	27.8	27.9
Saturated fat	8.6	5.7	6.2	7.3	8.5	9.9	11.1	11.9
Vitamins								
Vitamin A (mcg RAE)	218	64	87	135	202	283	370	428
Vitamin C (mg)	43	20	24	31	41	53	66	75
Vitamin D (mcg)	3	1	1	2	3	5	6	7
Vitamin E (mg AT)	3	2	2	2	3	4	4	5
Vitamin B_6 (mg)	0.7	0.4	0.4	0.5	0.7	0.8	1.0	1.1
Vitamin B_{12} (mcg)	2.1	0.6	0.8	1.3	1.9	2.7	3.5	4.0
Folate (mcg DFE)	155.5	62.5	76.0	104.2	144.1	193.7	249.4	288.1
Niacin (mg)	7.5	3.7	4.4	5.7	7.3	9.1	10.9	12.0
Riboflavin (mg)	0.9	0.4	0.5	0.7	0.9	1.2	1.4	1.6
Thiamin (mg)	0.6	0.3	0.3	0.4	0.6	0.7	0.9	1.0
Minerals								
Calcium (mg)	575	233	289	400	548	719	897	1,013
Iron (mg)	5.1	2.5	2.9	3.8	4.9	6.1	7.5	8.4
Magnesium (mg)	130	71	82	102	127	154	181	199
Phosphorus (mg)	652	299	362	481	633	799	967	1,073
Potassium (mg)	1,243	637	748	957	1,216	1,496	1,774	1,950
Sodium (mg)	1,226	622	730	935	1,193	1,478	1,765	1,949
Zinc (mg)	4.5	2.1	2.5	3.3	4.3	5.5	6.7	7.5
Other dietary components								
Cholesterol (mg)	70	18	24	38	61	91	127	152
Dietary fiber (g)	9	5	6	7	9	10	12	13
Added sugar (teaspoons)	6.6	3.5	4.1	5.1	6.5	7.9	9.5	10.4
Number of students	**935**							

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (spring day 1 (n=935) and day 2 (n=111) recalls), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students in pilot schools with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; SY = school year.

Exhibit E.29. Mean usual in-school intakes of energy and key nutrients during a typical school week

	Fall 2014		Spring 2015		
Dietary component	Mean	SE	Mean	SE	Difference
Calories	**844**	9.4	**800**	10.2	**-44***
Macronutrients					
Total fat (g)	27	0.4	26	0.4	-2*
Saturated fat (g)	9	0.2	8	0.1	-1*
Monounsaturated fat (g)	9	0.1	9	0.2	-0^
Polyunsaturated fat (g)	7	0.1	6	0.1	-1*
Carbohydrate (g)	123	1.4	117	1.5	-5*
Protein (g)	33	0.4	31	0.5	-2*
Percentage of calories from:					
Total fat	28.1	0.25	28.1	0.19	-0.0^
Saturated fat	8.9	0.11	8.9	0.07	-0.1
Vitamins					
Vitamin A (mcg RAE)	238	4.6	222	4.9	-16*
Vitamin C (mg)	42	1.2	40	1.1	-2
Vitamin D (mcg)	4	0.1	4	0.1	-0^
Vitamin E (mg AT)	3	0.1	3	0.1	-0^
Vitamin B_6 (mg)	0.7	0.01	0.7	0.01	-0.1*
Vitamin B_{12} (mcg)	2.3	0.04	2.1	0.04	-0.2*
Folate (mcg DFE)	176.8	3.01	160.0	2.3	-16.8*
Niacin (mg)	8.3	0.10	7.6	0.10	-0.7*
Riboflavin (mg)	1.0	0.01	0.9	0.02	-0.1*
Thiamin (mg)	0.6	0.01	0.6	0.01	-0.1*
Minerals					
Calcium (mg)	597	9.7	573	11.8	-24
Iron (mg)	5.7	0.08	5.2	0.08	-0.4*
Magnesium (mg)	136	1.6	129	2.0	-7*
Phosphorus (mg)	693	9.5	654	10.9	-40*
Potassium (mg)	1,287	14.2	1,233	18.1	-54*
Sodium (mg)	1,319	19.6	1,250	18.2	-69*
Zinc (mg)	4.9	0.07	4.6	0.07	-0.3*
Other dietary components					
Cholesterol (mg)	75	2.2	71	1.7	-3
Dietary fiber (g)	9	0.1	9	0.1	-1*
Added sugar (teaspoons)	6.5	0.13	6.7	0.13	0.2
Number of students	**1,255**		**1,236**		

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (fall day 1 recalls (n=1,255) recalls; spring day 1 recalls (n=1,236) recalls), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake. Change column may not equal the difference between fall and spring due to rounding.

* Change between fall and spring is significant at the 0.05 level.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; CFD = Canned, frozen, and dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; SE = Standard error; SY = school year.

Exhibit E.30. Mean and distribution of usual in-school intakes of energy and key nutrients during a typical school week, fall 2014

		Percentiles						
Dietary component	**Mean**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	845	470	539	667	826	1,001	1,175	1,288
Macronutrients								
Total fat (g)	27	15	17	21	26	32	39	43
Saturated fat (g)	9	4	5	6	8	10	13	14
Monounsaturated fat (g)	10	5	6	7	9	11	13	15
Polyunsaturated fat (g)	7	3	4	5	6	8	10	11
Carbohydrate (g)	123	66	76	95	120	147	174	191
Protein (g)	33	18	21	26	32	39	46	50
Percentage of calories from:								
Total fat	28.1	22.1	23.4	25.6	28.1	30.5	32.7	34.1
Saturated fat	8.9	6.6	7.1	7.9	8.9	9.9	10.9	11.5
Vitamins								
Vitamin A (mcg RAE)	239	63	89	142	220	314	414	482
Vitamin C (mg)	42	19	22	29	39	51	65	74
Vitamin D (mcg)	4	1	1	2	3	5	6	7
Vitamin E (mg AT)	3	2	2	2	3	4	4	5
Vitamin B_6 (mg)	0.7	0.4	0.4	0.6	0.7	0.9	1.1	1.2
Vitamin B_{12} (mcg)	2.3	0.8	1.0	1.5	2.2	3.0	3.8	4.4
Folate (mcg DFE)	177.1	72.0	87.4	119.0	164.0	220.4	283.5	328.0
Niacin (mg)	8.3	4.3	5.0	6.3	8.1	10.0	12.0	13.3
Riboflavin (mg)	1.0	0.4	0.5	0.7	1.0	1.2	1.5	1.7
Thiamin (mg)	0.6	0.3	0.4	0.5	0.6	0.8	0.9	1.0
Minerals								
Calcium (mg)	599	257	315	428	575	743	914	1,027
Iron (mg)	5.7	2.9	3.4	4.3	5.5	6.8	8.3	9.2
Magnesium (mg)	137	80	90	110	134	160	186	203
Phosphorus (mg)	696	346	411	531	680	842	1,002	1,104
Potassium (mg)	1,292	641	763	986	1,263	1,563	1,858	2,046
Sodium (mg)	1,325	720	830	1,035	1,292	1,577	1,862	2,048
Zinc (mg)	4.9	2.7	3.1	3.8	4.8	5.8	7.0	7.7
Other dietary components								
Cholesterol (mg)	75	24	31	46	68	96	128	151
Dietary fiber (g)	10	5	6	7	9	11	13	15
Added sugar (teaspoons)	6.6	2.4	3.0	4.3	6.2	8.3	10.6	12.2
Number of students	**1255**							

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (day 1 (n=1,255) and day 2 (n=212) recalls), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; SY = school year.

Exhibit E.31. Mean and distribution of usual in-school intakes of energy and key nutrients during a typical school week, spring 2015

		Percentiles						
Dietary component	**Mean**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Calories	802	433	500	623	780	955	1,133	1,248
Macronutrients								
Total fat (g)	26	13	15	20	25	31	37	41
Saturated fat (g)	8	4	5	6	8	10	12	13
Monounsaturated fat (g)	9	5	6	7	9	11	13	15
Polyunsaturated fat (g)	6	3	4	5	6	7	9	10
Carbohydrate (g)	118	67	77	94	115	139	162	177
Protein (g)	31	13	16	22	30	38	47	52
Percentage of calories from:								
Total fat	28.1	28.0	28.0	28.0	28.1	28.1	28.2	28.2
Saturated fat	8.9	7.2	7.6	8.2	8.9	9.6	10.3	10.7
Vitamins								
Vitamin A (mcg RAE)	222	63	86	134	204	289	381	444
Vitamin C (mg)	40	15	19	26	37	50	66	76
Vitamin D (mcg)	4	1	1	2	3	5	6	8
Vitamin E (mg AT)	3	1	2	2	3	4	5	5
Vitamin B_6 (mg)	0.7	0.4	0.4	0.5	0.7	0.8	1.0	1.1
Vitamin B_{12} (mcg)	2.1	0.7	0.9	1.4	2.0	2.7	3.5	4.1
Folate (mcg DFE)	159.9	66.1	80.1	108.4	148.5	198.5	254.4	293.5
Niacin (mg)	7.6	3.7	4.4	5.7	7.4	9.3	11.2	12.5
Riboflavin (mg)	0.9	0.4	0.5	0.7	0.9	1.2	1.5	1.6
Thiamin (mg)	0.6	0.3	0.3	0.4	0.6	0.7	0.9	1.0
Minerals								
Calcium (mg)	574	242	297	405	548	713	885	999
Iron (mg)	5.2	2.5	2.9	3.8	5.0	6.4	7.9	8.9
Magnesium (mg)	129	69	80	100	126	155	184	203
Phosphorus (mg)	655	294	357	478	632	806	981	1,095
Potassium (mg)	1,238	584	700	918	1,197	1,510	1,828	2,035
Sodium (mg)	1,253	588	704	923	1,208	1,531	1,861	2,077
Zinc (mg)	4.6	2.2	2.6	3.4	4.4	5.6	6.9	7.7
Other dietary components								
Cholesterol (mg)	71	18	24	38	61	93	131	159
Dietary fiber (g)	9	5	6	7	8	10	12	13
Added sugar (teaspoons)	6.7	2.9	3.6	4.8	6.4	8.3	10.3	11.6
Number of students	**1236**							

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall (day 1 (n=1,236) and day 2 (n=176) recalls), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Note: Computed using the National Cancer Institute's software to estimate usual intake.

^ Rounds to, but different from, zero.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; SY = school year.

Exhibit E.32. Difference in impacts on total cup equivalents of fruits and vegetables consumed in school on a FFVP snack day by demographic subgroup

	Fall 2014	Spring 2015	Change
Gender			
Girls	1.69	1.48	-0.21*
Boys	1.75	1.51	-0.24*
Impact: Girls – Boys	-0.06	-0.04	0.03
Grade Level			
4th	1.76	1.55	-0.20
5th	1.69	1.45	-0.23*
6th	1.70	1.46	-0.25
Impact: 4th graders – 5th graders	0.07	0.10	0.03
Impact: 4th graders – 6th graders	0.05	0.10	0.04
Number of students	858	935	

Source: Evaluation of the FFVP-CFD pilot project, Diary-assisted/In-school Dietary Recall, SY 2014–2015. Students provided gender on their food diary. Grade was based on the sampling and selection of students in 4th to 6th grade classrooms in each pilot school. Data on cup equivalents of FVs were obtained from the Food Patterns Equivalents Database 2011-12. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students with a total enrollment of 50 or more students.

Notes: Total cup equivalents of fruits and vegetables (including 100% juice) from all sources. Change column may not equal the difference between fall and spring exactly due to rounding. Subgroup data are not adjusted for other factors that may influence consumption.

* Change between fall and spring is significant at the 0.05 level.

CFD = Canned, Frozen, or Dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

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APPENDIX F

CLASSROOM OBSERVATIONS OF FFVP SNACKS: PLATE WASTE, AND NUTRITION EDUCATION AND PROMOTION DATA

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Exhibit F.1. Plate waste in FFVP snacks: mean calories, nutrients, and USDA food pattern food groups (unadjusted)

	Fall 2014					Spring 2015					
	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Change in percentage wasted
All fruits and vegetables											
Calories	54	2.0	13	1.6	23.3	70	2.2	12	1.4	17.5	-5.9
Macronutrients											
Total fat (g)	0^	0.0^	0^	0.0^	--	1	0.2	0^	0.0^	11.7	--
Saturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Monounsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.1	0^	0.0^	--	--
Polyunsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.1	0^	0.0^	--	--
Carbohydrate (g)	14	0.5	3	0.4	23.4	17	0.4	3	0.4	18.1	-5.2
Protein (g)	1	0.0^	0^	0.0^	23.7	1	0.1	0^	0.0^	14.4	-9.2*
Percentage of calories from:											
Total fat	5.5	0.25	1.6	0.21	28.5	6.0	0.41	0.9	0.1	15.5	-13.0*
Saturated fat	0.9	0.05	0.3	0.05	--	0.9	0.06	0.1	0.02	--	--
Micronutrients											
Vitamin A (mcg RAE)	28	2.60	9	1.40	32.9	52	7.90	11	3.20	20.7	-12.3
Vitamin C (mg)	20	1.10	5	0.50	23.4	14	0.60	2	0.30	16.3	-7.1*
Vitamin D (mcg)	0.0	0.00	0.0	0.00	--	0.0	0.00	0.0	0.00	--	--
Vitamin E (mg AT)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Vitamin B_6 (mg)	0.1	0.00^	0.0^	0.00^	--	0.1	0.00^	0.0^	0.00^	--	--
Vitamin B_{12} (mcg)	0.0	0.00	0.0	0.00	--	0.0	0.00	0.0	0.00	--	--
Folate (mcg DFE)	14.8	0.80	3.5	0.39	23.4	12.7	0.51	2.0	0.25	15.5	-7.9*
Niacin (mg)	0.3	0.01	0.1	0.01	--	0.4	0.03	0.1	0.01	--	--
Riboflavin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--
Thiamin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--
Minerals											
Calcium (mg)	15	0.7	3	0.3	22.3	14	0.4	2	0.2	15.7	-6.6*
Iron (mg)	0.2	0.01	0.1	0.01	--	0.3	0.01	0.0^	0.01	--	--
Magnesium (mg)	11	0.4	2	0.3	22.3	12	0.6	2	0.2	14.8	-7.5*
Phosphorus (mg)	18	0.7	4	0.5	25.1	22	1.8	3	0.5	15.6	-9.5*
Potassium (mg)	180	6.3	40	4.6	22.4	178	4.7	28	3.7	15.8	-6.7*
Sodium (mg)	6	0.6	2	0.2	27.6	13	1.6	3	0.9	26.5	-1.1
Zinc (mg)	0.1	0.00^	0.0^	0.00^	--	0.1	0.01	0.0^	0.00^	--	--
Other dietary components											
Cholesterol (mg)	0	0.0	--	0.0	--	--	0.0	0	0.0	--	--
Dietary fiber (g)	2	0.1	1	0.1	24.9	2	0.1	0^	0.1	19.2	-5.7
Added sugar (teaspoons)	0.0^	0.01	0.0^	0.00^	--	0.7	0.05	0.1	0.02	--	--

Table F.1 (*continued*)

	Fall 2014					Spring 2015					
	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Change in percentage wasted
Food groups (cup equivalents)											
Total fruits and vegetables	0.75	0.03	0.20	0.03	26.6	0.71	0.02	0.13	0.02	18.8	-7.8*
Fruits	0.85	0.03	0.21	0.03	24.2	0.77	0.02	0.14	0.02	18.2	-6.0
Vegetables	0.43	0.03	0.17	0.02	38.6	0.50	0.03	0.10	0.02	19.8	-18.8*
Dark green	0.65	0.08	0.39	0.09	59.8	0.43	0.00	0.05	0.03	12.5	-47.3*
Red and orange	0.26	0.02	0.11	0.02	43.8	0.41	0.02	0.07	0.02	16.5	-27.3
Legumes	--	--	--	--	--	--	--	--	--	--	--
Starchy	0.24	0.01	0.11	0.04	45.2	0.32	0.06	0.31	0.06	97.8	52.6*
Other	0.43	0.03	0.11	0.02	24.9	0.41	0.04	0.09	0.02	20.7	-4.2
Number of FFVP plates observed[a]	**535**					**548**					
Fresh fruits											
Calories	67	2.1	15	2.1	22.3	69	1.7	12	2.4	17.3	-5.0
Macronutrients											
Total fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Saturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Monounsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Polyunsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Carbohydrate (g)	17	0.5	4	0.6	22.6	18	0.5	3	0.6	17.5	-5.1
Protein (g)	1	0.0^	0^	0.0^	18.7	1	0.0^	0^	0.0^	14.3	-4.5
Percentage of calories from:											
Total fat	4.1	0.20	0.8	0.11	19.2	4.0	0.13	0.5	0.09	13.2	-6.0
Saturated fat	0.6	0.02	0.1	0.02	--	0.7	0.02	0.1	0.02	--	--
Micronutrients											
Vitamin A (mcg RAE)	9	0.50	2	0.50	21.8	8	0.90	1	0.20	13.0	-8.7
Vitamin C (mg)	21	1.30	4	0.50	17.7	18	0.90	3	0.40	13.7	-4.0
Vitamin D (mcg)	0.0	0.00	0.0	0.00	0.0	0.0	0.00	0.0	0.00	--	--
Vitamin E (mg AT)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Vitamin B_6 (mg)	0.1	0.01	0.0^	0.00^	--	0.1	0.01	0.0^	0.00^	--	--
Vitamin B_{12} (mcg)	0.0	0.00	0.0	0.00	--	0.0	0.00	0.0	0.00	--	--
Folate (mcg DFE)	13.0	0.72	2.3	0.28	17.5	13.7	0.54	1.9	0.35	13.9	-3.6
Niacin (mg)	0.3	0.01	0.1	0.01	--	0.3	0.01	0.0^	0.01	--	--
Riboflavin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--
Thiamin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--
Minerals											
Calcium (mg)	15	0.8	3	0.3	18.3	15	0.6	2	0.4	15.9	-2.4

Table F.1 (*continued*)

	Fall 2014					Spring 2015					
	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Change in percentage wasted
Iron (mg)	0.2	0.01	0.0^	0.01	--	0.2	0.01	0.0^	0.01	--	--
Magnesium (mg)	11	0.5	2	0.3	19.2	13	0.4	2	0.4	14.5	-4.8
Phosphorus (mg)	18	0.6	4	0.5	20.2	18	0.4	3	0.5	15.9	-4.3
Potassium (mg)	199	6.7	38	5.3	19.3	211	6.2	32	6.2	15.0	-4.3
Sodium (mg)	1	0.1	0^	0.0^	18.2	2	0.4	0^	0.1	12.8	-5.3
Zinc (mg)	0.1	0.00^	0.0^	0.00^	--	0.1	0.00^	0.0^	0.00^	--	--
Other dietary components											
Cholesterol (mg)	0	0.0	0	0.0	--	0	0.0	0	0.0	--	--
Dietary fiber (g)	3	0.1	1	0.1	23.2	3	0.1	1	0.1	19.7	-3.5
Added sugar (teaspoons)	0	0	0	0	--	0	0	0	0	--	--
Food groups											
Fruits (cup equivalents)	0.86	0.03	0.20	0.03	24.2	0.9	0.04	0.16	0.03	18.2	-6.0
Number of FFVP plates observed	**398**					**319**					
Fresh vegetables											
Calories	14	1.0	5	0.6	36.9	21	1.6	4	1.0	21.4	-15.5*
Macronutrients											
Total fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Saturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Monounsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Polyunsaturated fat (g)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Carbohydrate (g)	3	0.2	1	0.1	37.2	4	0.3	1	0.2	22.1	-15.1*
Protein (g)	1	0.1	0^	0.0^	38.4	1	0.1	0^	0.0^	17.5	-20.9*
Percentage of calories from:											
Total fat	9.9	0.63	4.0	0.67	40.5	9.0	0.84	1.5	0.26	17.2	-23.3*
Saturated fat	1.7	0.18	0.8	0.18	43.3	1.4	0.22	0.3	0.05	18.7	-24.6*
Micronutrients											
Vitamin A (mcg RAE)	88	10.70	32	5.80	36.4	214	27.70	47	14.80	21.9	-14.5
Vitamin C (mg)	16	2.10	8	1.50	47.5	14	1.50	4	0.90	27.1	-20.4*
Vitamin D (mcg)	0.0	0.00	0.0	0.00	--	0.0	0.00	0.0	0.00	--	--
Vitamin E (mg AT)	0^	0.0^	0^	0.0^	--	0^	0.0^	0^	0.0^	--	--
Vitamin B_6 (mg)	0.1	0.00^	0.0^	0.00^	--	0.1	0.01	0.0^	0.00^	--	--
Vitamin B_{12} (mcg)	0.0	0.00	0.0	0.00	--	0.0	0.00	0.0	0.00	--	--
Folate (mcg DFE)	21.0	2.11	7.3	1.10	34.7	16.2	1.53	2.7	0.47	16.6	-18.2*
Niacin (mg)	0.3	0.02	0.1	0.01	--	0.4	0.03	0.1	0.02	--	--
Riboflavin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--

Table F.1 (*continued*)

	Fall 2014					Spring 2015					
	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Mean amount served	SE	Mean amount wasted	SE	Percentage wasted	Change in percentage wasted
Thiamin (mg)	0.0^	0.00^	0.0^	0.00^	--	0.0^	0.00^	0.0^	0.00^	--	--
Minerals											
Calcium (mg)	15	1.1	5	0.7	35.4	18	1.6	3	0.6	17.4	-18.0*
Iron (mg)	0.3	0.03	0.1	0.01	--	0.4	0.05	0.1	0.01	--	--
Magnesium (mg)	8	0.5	3	0.4	35.3	10	0.9	2	0.4	18.3	-17.0*
Phosphorus (mg)	19	1.4	7	1.0	39.9	22	1.7	4	0.8	18.3	-21.6*
Potassium (mg)	123	7.6	47	5.3	38.0	180	13.2	34	6.8	19.1	-18.9*
Sodium (mg)	22	2.4	6	0.9	29.5	45	5.8	8	2.4	18.6	-10.9
Zinc (mg)	0.1	0.01	0.1	0.01	--	0.1	0.01	0.0^	0.01	--	--
Other dietary components											
Cholesterol (mg)	0	0.0	0	0.0	--	0	0.0	0	0.0	--	--
Dietary fiber (g)	1	0.1	0^	0.0^	37.4	1	0.1	0^	0.1	19.4	-18.0*
Added sugar (teaspoons)	0	0	0	0	--	0	0	0	0	--	--
Food groups (cup equivalents)											
Vegetables	0.43	0.03	0.17	0.02	38.6	0.51	0.03	0.09	0.02	18.3	-20.3*
Dark green	0.65	0.08	0.39	0.09	59.8	0.43	0.00	0.05	0.03	12.5	-47.3*
Red and orange	0.26	0.02	0.11	0.02	43.8	0.41	0.02	0.07	0.02	16.5	-27.3*
Legumes	--	--	--	--	--	--	--	--	--	--	--
Starchy	0.24	0.01	0.11	0.04	45.2	--	--	--	--	--	--
Other	0.43	0.03	0.11	0.02	24.9	0.41	0.04	0.09	0.02	20.7	-4.2
Number of FFVP plates observed	**133**					**87**					

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: A plate is defined as the total number of servings taken by a student. The estimates exclude spreads and condiments, such as peanut butter and "light" Ranch dressing. Approximately 18% (n=17) and 8% (n=10) of FFVP snacks were offered with a spread/condiment in the fall and spring, respectively. Very small values appear as zero in the exhibit due to rounding. Change column may not equal the difference between fall and spring exactly due to rounding. Calculations for mean percent wasted of macronutrients, micronutrients, and minerals are restricted to cases where the mean amount of the nutrient served was greater than or equal to one g/mg/mcg. Calculations for food group cup equivalents are restricted to cases where the amount of the food group served is greater than zero. Dashes (--) in the percentage wasted and change in percentage wasted indicate that the mean amount served was less than 1 g/mg/mcg of the nutrient.

The sum of fresh fruit and fresh vegetable plates observed is less than the total, which includes CFD plates. Four plates in fall were observed with canned peaches.

*Change between fall and spring [or standard and pilot FFVP] is significantly different from zero at the 0.05 level.

AT = Alpha–tocopherol; CFD = Canned, frozen, or dried; DFE = Dietary folate equivalents; FFVP = Fresh Fruit and Vegetable Program; RAE = Retinol activity equivalents; SE = Standard error; SY = school year.

Exhibit F.2. Plate waste in FFVP snacks: fresh fruits and vegetables wasted, fall 2014

Food Item	Number of plates	Mean amount served (cup equivalents)	SE	Mean amount wasted (cup equivalents)	SE	Percentage wasted
Fresh fruits[a]	**398**	**0.86**	**0.03**	**0.19**	**0.03**	**22.0**
Pineapple	28	0.49	0.04	0.22	0.05	44.9
Grapefruit	15	0.44	0.05	0.14	0.07	40.3
Pears	21	1.14	0.11	0.40	0.11	38.8
Apples	106	1.36	0.05	0.35	0.07	22.8
Grapes	57	0.66	0.05	0.11	0.03	21.6
Tangerines	12	0.52	0.03	0.10	0.03	21.5
Pomegranates	10	0.40	0.06	0.05	0.03	21.1
Peaches	11	0.98	0.00	0.13	0.04	13.5
Bananas	41	0.81	0.04	0.09	0.03	12.9
Oranges	58	0.52	0.05	0.05	0.01	11.6
Kiwis	25	0.57	0.06	0.01	0.01	2.1
Honeydew melon	5	0.62	0.10	0.00	0.00	0.0
Fresh vegetables[b]	**133**	**0.43**	**0.03**	**0.17**	**0.02**	**40.9**
Summer squash	6	0.25	0.00	0.19	0.02	77.2
Broccoli	7	0.89	0.00	0.62	0.13	69.2
Jicama	12	0.24	0.01	0.11	0.04	49.5
Carrots	33	0.26	0.02	0.11	0.01	45.6
Salad[c]	8	0.77	0.13	0.20	0.05	40.5
Beets	6	0.71	0.21	0.15	0.07	34.8
Peppers	13	0.27	0.05	0.15	0.06	34.4
Cucumber	6	0.33	0.06	0.05	0.03	21.9
Brussels Sprouts	6	0.61	0.00	0.10	0.06	16.5
Snow peas	23	0.44	0.03	0.04	0.01	10.9
Spinach	5	0.28	0.08	0.04	0.04	9.8
Number of FFVP plates observed	**531**					

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: A plate is defined as the total number of servings taken by a student: 14% of students took multiple portions of the snack in fall. Cup equivalents are means for one plate. Items are ordered by largest to smallest percent wasted in the fall. Mean percentage wasted may be less reliable for sample sizes less than 30 plates.

[a] Includes data for blackberries, cantaloupe, plums, and strawberries not shown separately due to small sample sizes (less than 5 plates observed).

[b] Includes data for tomatoes, carrots and celery, and carrots not shown separately due to small sample sizes (less than 5 plates observed).

[c] Salad includes tossed salad and raw mixed vegetables with or without lettuce.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

Exhibit F.3. Plate waste in FFVP snacks: fruits and vegetables wasted by type and form, spring 2015

Food item	Number of plates	Mean amount served (cup equivalents)	SE	Mean amount wasted (cup equivalents)	SE	Percentage wasted
Fresh fruits[a]	**319**	**0.88**	0.04	**0.16**	0.03	**15.8**
Pears	17	1.17	0.04	0.52	0.16	47.7
Kiwis	12	0.22	0.02	0.07	0.03	28.4
Tangerines	29	0.47	0.03	0.06	0.02	20.1
Apples	80	1.32	0.05	0.27	0.06	19.0
Watermelon	5	1.92	0.00	0.35	0.27	18.0
Oranges	44	0.64	0.07	0.08	0.02	13.9
Bananas	36	0.95	0.06	0.08	0.04	11.0
Grapes	42	0.49	0.02	0.03	0.01	6.2
Strawberries	29	0.36	0.03	0.01	0.00^	2.9
Raspberries	6	0.28	0.00	0.00^	0.00^	1.7
Canned fruits[b]	**58**	**0.40**	0.02	**0.04**	0.01	**10.6**
Applesauce	18	0.46	0.04	0.06	0.02	12.7
Mandarin oranges	25	0.36	0.03	0.03	0.02	10.9
Fruit cocktail	11	0.44	0.05	0.02	0.02	3.9
Dried fruits[c]	**71**	**0.64**	0.04	**0.12**	0.02	**23.3**
Apples	7	0.06	0.00	0.03	0.01	56.8
Raisins	12	0.47	0.03	0.10	0.04	23.5
Cranberries	31	0.70	0.04	0.16	0.03	23.3
Mixed dried fruit	16	0.74	0.11	0.08	0.01	14.6
Frozen fruits	**11**	**0.26**	0.00	**0.12**	0.03	**45.6**
Blueberries	11	0.26	0.00	0.12	0.03	45.6
Fresh vegetables[d]	**87**	**0.51**	0.03	**0.09**	0.02	**21.8**
Sweet potatoes, cooked	5	0.32	0.03	0.14	0.06	51.4
Peppers	12	0.38	0.00	0.18	0.05	46.6
Celery	12	0.73	0.15	0.17	0.07	25.6
Salad[e]	27	0.51	0.03	0.08	0.03	21.1
Carrots	14	0.46	0.01	0.07	0.04	16.6
Tomatoes	7	1.23	0.00	0.08	0.05	6.5
Cucumbers	9	0.31	0.03	0.01	0.01	5.7
Number of FFVP plates observed[f]	548					

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Table F.3 (*continued*)

Note: A plate is defined as the total number of servings taken by a student: 11% of students took multiple portions of the snack in spring. Cup equivalents are means for one plate. Items are ordered by largest to smallest percent wasted in the spring. Mean percentage wasted may be less reliable for sample sizes less than 30 plates. Data are not shown for canned vegetables (canned corn) due to small sample size (2 plates observed).

[a] Includes data for blueberries, cantaloupe, cherries, fruit mixtures, grapefruit, honeydew melon, pineapple, and plums not shown separately due to small sample sizes (less than 5 plates observed).

[b] Includes data for canned apricots and canned cranberries not shown separately due to small sample sizes (less than 5 plates observed).

[c] Includes data for dried mango, papaya, and pineapple, not shown separately due to small sample sizes (less than 5 plates observed).

[d] Includes data for snow peas, not shown separately due to small sample sizes (less than 5 plates observed).

[e] Salad includes tossed salad and raw mixed vegetables with or without lettuce.

[f] Total number of FFVP plates includes two plates of canned vegetables not shown in the table due to small sample size.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

Exhibit F.4. Plate waste in FFVP snacks: change in fresh fruits and vegetables wasted, fall 2014 versus spring 2015

	Fall 2014						Spring 2015						
Food item	Number of plates	Mean amount served (cup equivalents)	SE	Mean amount wasted (cup equivalents)	SE	Percentage wasted	Number of plates	Mean amount served (cup equivalents)	SE	Mean amount wasted (cup equivalents)	SE	Percentage wasted	Change in percentage wasted
Fresh fruits[a]	**320**	**0.80**	**0.05**	**0.16**	**0.04**	**18.7**	**260**	**0.75**	**0.04**	**0.16**	**0.05**	**20.9**	**2.2**
Grapes	57	0.66	0.05	0.11	0.03	21.6	42	0.49	0.02	0.03	0.01	6.2	-15.4 *
Apples	106	1.36	0.05	0.35	0.07	22.8	80	1.32	0.05	0.27	0.06	19.0	-3.8
Bananas	41	0.81	0.04	0.09	0.03	12.9	36	0.95	0.06	0.08	0.04	11.0	-1.9
Tangerines	12	0.52	0.03	0.10	0.03	21.5	29	0.47	0.03	0.06	0.02	20.1	-1.4
Oranges	58	0.52	0.05	0.05	0.01	11.6	44	0.64	0.07	0.08	0.02	13.9	2.4
Pears	21	1.14	0.11	0.40	0.11	38.8	17	1.17	0.04	0.52	0.16	47.7	8.9
Kiwis	25	0.57	0.06	0.01	0.01	2.1	12	0.22	0.02	0.07	0.03	28.4	26.4 *
Fresh vegetables[b]	**52**	**0.29**	0.04	**0.11**	0.04	**34.0**	**35**	**0.38**	0.01	**0.09**	0.03	**22.9**	**-11.0**
Carrots	33	0.26	0.02	0.11	0.01	45.6	14	0.46	0.01	0.07	0.04	16.6	-29.0 *
Cucumber	6	0.33	0.06	0.05	0.03	21.9	9	0.31	0.03	0.01	0.01	5.7	-16.3
Peppers	13	0.27	0.05	0.15	0.06	34.4	12	0.38	0.00	0.18	0.05	46.6	12.3
Total number of FFVP plates observed	372						295						

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: A plate is defined as the total number of servings taken by a student. Cup equivalents are means for one plate. Items are ordered by largest to smallest percent decrease in waste from fall to spring.

*Change between fall and spring [or standard and pilot FFVP] is significantly different from zero at the 0.05 level.

[a] Includes data for cantaloupe and honeydew melon not shown separately due to small sample sizes (less than 5 plates observed).

[b] Includes data for celery not shown separately due to small sample sizes (less than 5 plates observed).

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SE = Standard error; SY = school year.

Exhibit F.5. Percentage of FFVP snacks wasted, by time of day

Timing	Fall 2014	Spring 2015	Change	Plates observed
Mean percentage wasted before lunch	30.4	17.1	-13.3*	--
Number of plates observed	319	321	--	640
Mean percentage wasted after lunch	20.6	21.3	0.7	--
Number of plates observed	216	227	--	443
Mean percentage wasted before and after lunch (total)	26.6	18.8	-7.8*	1,083
Total number of plates observed	**535**	**548**	**--**	**1,083**

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form (fall n before lunch = 319, fall n after lunch = 216, spring n before lunch = 321, spring n after lunch =227), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: Estimates reflect total fruits and vegetables.

* Change between fall and spring is significant at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit F.6. Mean percentage of canned, frozen, dried, or fresh FFVP snacks wasted by time of day, spring 2015

Timing	Canned	Frozen	Dried	Fresh	All snacks
Mean percentage wasted before lunch	17.4	0.0	22.1	16.1	17.1
Number of plates observed	55	0	35	231	321
Mean percentage wasted after lunch	26.1	45.6	24.6	19.5	21.3
Number of plates observed	5	11	36	175	227
Mean percentage wasted both before and after lunch (total)	17.8	45.6	23.3	17.5	18.8
Total number of plates observed	**60**	**11**	**71**	**406**	**548**

Source: Evaluation of the FFVP-CFD pilot project, Classroom and Student Fruit and Vegetable Snacks Observation Form (spring n before lunch = 321, spring n after lunch = 227), SY 2014–2015. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all 4th to 6th grade students at pilot schools with a total enrollment of 50 or more students.

Note: Estimates reflect total fruits and vegetables.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY= school year.

Exhibit F.7 Classroom nutrition education activities

Activity conducted in the classroom during snack time	Fall 2014		Spring 2015		Change	
	Conducted	Pertained to fruits and vegetables	Conducted	Pertained to fruits and vegetables	Conducted	Pertained to fruits and vegetables
Nutrition education	6.7	85.5	4.6	100.0	-2.1	14.5
Staff encouraged consumption of nutritious foods	22.2	100.0	19.3	100.0	-3.0	0.0
Taste testing	2.4	73.0	1.1	58.1	-1.3	-15.0*
Total n	**91**	**85**	**83**	**74**	-	-

Source: Evaluation of the FFVP-CFD pilot project, School-Level Nutrition Education and Promotion Material and Menu Collection Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Multiple responses were allowed.

* Change between fall and spring is significant at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SY = school year.

Exhibit F.8 Classroom nutrition education displays

Display observed in classroom	Fall 2014		Spring 2015		Change	
	Percentage of classrooms	Display pertained to fruits and vegetables	Percentage of classrooms	Display pertained to fruits and vegetables	Percentage of classrooms	Displays pertained to fruits and vegetables
Nutrition poster	7.0	78.3	2.4	100	-4.6	21.7
Nutrition display	1.6	0.0	0.0	0.0	-1.6	0.0
Other	6.0	100	5.1	18.1	-0.8	-81.9
None	86.1	n.a.	92.3	n.a.	6.2	n.a.
Total	**77**	**6**	**86**	**5**		

Source: Evaluation of the FFVP-CFD pilot project, School-Level Nutrition Education and Promotion Material and Menu Collection Form, SY 2014–2015. Tabulations prepared by Mathematica Policy Research.

Note: Multiple responses were allowed.

* Change between fall and spring is significant at the 0.05 level.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; n.a. = not applicable; SY = school year.

APPENDIX G

FFVP ADMINISTRATIVE COST DATA

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Exhibit G.1. Mean number of program days per month among Alaska and Delaware pilot SFAs

	Fall 2014			Spring 2015			
State	Program days	Program months	Program days per month	Program days	Program months	Program days per month	Change in program days per month
Alaska[a]	44.0	3.0	14.7	56.9	3.1	18.2	3.5
Delaware	39.0	4.0	9.8	52.7	4.7	11.2	1.4

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: In Delaware one school per SFA was included in the pilot study. In Alaska, multiple schools per SFA participated in the pilot. Months with no program days were not included in the calculations conducted by Mathematica. Maine and Kansas were not included in this analysis because information on number of program days per month were not available.

[a] One Alaska district reported 4 months of FFVP operation in the spring, but data on the number of program days were only available for 3 months. These 3 months of data were used in calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.2. Mean costs per month of FFVP operation for pilot schools

	Fall 2014			Spring 2015			
State	Total costs (dollars)	Program months	Costs per month (dollars)	Total costs (dollars)	Program months	Costs per month (dollars)	Change in costs per month (dollars)
Delaware	11,196	4.0	2,799	12,517	4.7	2,682	-117
Kansas	4,820	5.0	964	4,455	4.8	922	-42
Maine	4,485	3.9	1,155	5,967	5.0	1,193	38

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: In Delaware, and Kansas, one school per SFA was included in the pilot study. In Maine, multiple schools from some SFAs participated in the pilot. Months in which no FFVP snacks were served were excluded from the calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.3. Mean costs per month for Alaska pilot SFAs

	Fall 2014			Spring 2015			Change in costs per month (dollars)
	Total costs (dollars)	Program months	Costs per month (dollars)	Total costs (dollars)	Program months	Costs per month (dollars)	
Mean per SFA	5,996	3.0	1,999	9,467	3.1	3,029	1,031

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: In Alaska, multiple schools per SFA were included in the pilot study. Months in which no FFVP snacks were served were excluded from the calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.4. Mean monthly fruit and vegetable costs for Alaska pilot SFAs

	Vegetable costs[a] (dollars)			Fruit costs (dollars)		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Mean per month	17	74	58	1,363	2,279	916
Total	333	1,560	1,228	27,268	47,860	20,592

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: In Alaska, multiple schools per SFA were included in the pilot study. Months in which no FFVP snacks were served were excluded from the calculations. One district is excluded from this table because fruit and vegetable costs were only available as combined. Another district had no program days in the spring and is included in this table.

[a]SFAs did not purchase vegetables in all months. Months that had program days but no vegetable purchases are included in this analysis.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.5. Spring 2015 fruit costs by form for Alaska pilot SFAs (dollars)

	Fresh	Canned	Frozen	Dried
Mean per SFA	4,776	1,830	38	1,333
Total	28,656	10,980	225	8,000

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, 2014–2015 school year. Tabulations by Mathematica Policy Research.

Notes: In Alaska, multiple schools per SFA were included in the pilot study. Months in which no FFVP snacks were served were excluded from the calculations. One district was excluded from this analysis because there were no program days in the spring. Another district was excluded from this analysis because fruit and vegetable costs were only available as combined.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA=School Food Authority.

Exhibit G.6. Costs by type for Kansas pilot schools (dollars)

	Vegetables			Fruits			Non-Food		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Mean per school	730	614	-116	2,933	2,531	-401	1,157	1,309	152

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: One school per SFA was included in the pilot study and only pilot schools were included in the sample. Months with no program days were not included in the calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.7. Costs by type for Delaware pilot schools (dollars)

	Fruits and vegetables			Operational		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Mean per school	9,292	12,432	3,140	815	1,174	359

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: One school per SFA was included in the pilot study and only pilot schools were included in the sample. Months in which no FFVP snacks were served were excluded from the calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA = School Food Authority; SY = school year.

Exhibit G.8. Maine pilot schools operating costs (dollars)

	Food			Labor			Other		
	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change	Fall 2014	Spring 2015	Change
Mean per school	57,708	82,786	25,078	8,936	13,698	4,762	2,524	2,413	-111

Source: Evaluation of the FFVP-CFD pilot project, Fresh Fruit and Vegetable cost reimbursement data provided by State Child Nutrition agencies, SY 2014–2015. Tabulations by Mathematica Policy Research.

Notes: One school per SFA was included in the pilot study and only pilot schools were included in the sample. Months with no program days were not included in the calculations.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; SFA=School Food Authority; SY = school year.

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APPENDIX H

STAKEHOLDER INTERVIEW DATA

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Exhibit H.1. Perceived reaction of teachers, students, and parents when first learning of the pilot, according to School Food Authority Directors and food service managers

Respondent type	Summary
School Food Authority (SFA) Director; n = 4	SFA Directors had minimal exposure to school staff, students and parents when providing information about the CFD pilot, but school staff, students and parents reacted positively or neutrally when SFA Directors were aware of reactions. One SFA Director mentioned parents being concerned with additives contained in CFD snacks.
Food Service Manager (FSM); n = 5	All FSMs reported positive reactions to the pilot. No FSMs experienced negative reactions from staff or parents when informing them of the CFD pilot.

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SFA = School Food Authority.

Exhibit H.2. Overall acceptance of FFVP-CFD pilot

Respondent type	Summary
State Child Nutrition Director; n = 4	Most thought it worked well. One appreciated the pilot's cost efficiency and the fact that it increased frequency of snacks. Another appreciated the increased potential for variety and the decreased labor required to prepare and serve CFD snacks. A third respondent appreciated using CFD as a supplement but not replacement for fresh FFVP snacks. The fourth respondent thought the pilot was not worth the administrative burden and thought there should have been limits on the amount of CFD that could be offered as FFVP snacks. This respondent said CFD should only be used as a back-up emergency if it is not possible to obtain fresh snacks.
School Food Authority (SFA) Director; n = 7	All SFA directors interviewed had a positive view of the pilot. Common reasons included increased flexibility, increased variety, reduced costs, improved quality, and ease of storage and preparation. One also cited increased familiarity to students of CFD fruits and vegetables.
Food service manager (FSM); n = 5	All FSMs interviewed had a positive view of the pilot. One preferred fresh but appreciated CFD because serving fresh was not always possible. Others cited reduced waste, reduced cost, increased student acceptance, ease of preparation, and the fact that the pilot allowed snacks to be served more days during the week as advantages of the pilot.
Principal; n = 5	All principals interviewed had a positive view of the pilot. They cited increased variety, increased student acceptance, decreased mess, ease of storage and preparation, and the ability to serve snacks more frequently as advantages of the pilot.
Teacher; n = 10	Most teachers interviewed had a positive view of the pilot. They appreciated the increased variety and the fact that increasing the number of snack days decreased the frequency of students bringing snacks from home, which were often less healthy. One respondent disliked the fact that the frequency of vegetable snacks decreased under the pilot in that school.
Community partner; n = 4	Most partners interviewed had a positive view of the pilot. Some cited increased student acceptance; others thought the pilot increased total consumption of fruits and vegetables. One preferred fresh fruit and vegetable snacks but agreed CFD snacks were more affordable.

EXHIBIT H.2 (*continued*)

Respondent type	Summary
Parent representative; n = 4	Parents interviewed had mixed opinions of the pilot. Some supported it, believing it increased variety and frequency of snacks. Others preferred fresh snacks over CFD. One parent interviewed hoped the pilot would not continue.

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager; SFA = School Food Authority.

Exhibit H.3. Perceived student and parent acceptance of pilot

Respondent type	Summary
SFA Director; n = 7	Some parents called with concerns about the canned items but accepted them once the respondent explained the pilot project.
Food service manager (FSM); n = 5	Most FSMs interviewed indicated that students had a positive reaction and accepted the CFD pilot. Some FSMs mentioned that student participation increased. Some FSMs indicated there were neutral reactions from students and saw no difference in acceptance of the snacks when CFD was served. Overall FSMs reported that parents did not have strong reactions and most remained neutral, but one FSM reported hearing concern from a parent about food additives contained in CFD products.
Principal; n = 5	All principals interviewed reported that students accepted and liked the CFD pilot. Some principals added that students like the CFD snacks just as much as they like the fresh snacks. No principals were able to speak to the parent acceptance of the pilot.
Teacher; n = 10	Most teachers interviewed noted the students' positive acceptance of the CFD pilot and excitement to try new food items. One teacher indicated that students preferred fresh-only snacks because they were rare to have at home, specifically in rural Alaska. Most teachers did not encounter parent reactions, but some reported that parents had asked questions about the pilot and had a neutral response overall.
Community partner; n = 4	One community partner interviewed stated that students are eager to discuss what they tried for FFVP-CFD snacks. No community partners could discuss perceived parent acceptance of the pilot.
Parent representative; n = 4	All parents reported students had either a positive or neutral reaction to the CFD pilot.

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FSM = Food service manager.

Exhibit H.4. Advantages of canned, frozen, or dried fruits and vegetables

	Respondent Type						
Advantages	State Child Nutrition Director (n = 4)	School Food Authority Director (n = 7)	Food service manager (n = 5)	Principal (n = 5)	Teacher (n = 10)	Community partner (n = 4)	Parent (n = 4)
Quality							
Higher quality than fresh	✓	✓	✓				
Could be served as a backup if fresh foods were spoiled, unripe, or did not arrive	✓	✓	✓				
Less perishable than fresh		✓	✓	✓	✓	✓	
Cost							
Decreased FFVP program costs	✓	✓					
Decreased costs meant FFVP snacks could be served more frequently during the pilot project	✓		✓	✓	✓		
Cheaper than fresh when purchased in bulk						✓	
Labor							
Some CFD items were less labor intensive to prepare, faster to serve, and ensured that the correct portion was served		✓	✓	✓	✓		
Food waste							
Some CFD items could be saved instead of thrown out, resulting in less food waste		✓	✓		✓		
Decreased perishability provided flexibility for staff in deciding what to serve		✓					

EXHIBIT H.4 (*continued*)

Advantages	Respondent Type						
	State Child Nutrition Director (n = 4)	School Food Authority Director (n = 7)	Food service manager (n = 5)	Principal (n = 5)	Teacher (n = 10)	Community partner (n = 4)	Parent (n = 4)
Student experience							
Exposed students to new foods	✓				✓		✓
Increased variety in snack offerings	✓	✓		✓	✓		
Student acceptance was often high	✓	✓		✓		✓	
CFD items were often more familiar to students than fresh		✓					
Increased student participation in FFVP			✓				
Provided students with opportunities to try new foods				✓			
Students could take dried snacks home with them					✓		
Provided examples of healthy snack options					✓	✓	
Generated more student interest in the snacks					✓		
At some schools students brought fewer snacks from home, opting to take the FFVP snack instead					✓		
Other							
Allowing CFD foods enabled some schools to serve locally grown frozen and dried products	✓			✓			

EXHIBIT H.4 (*continued*)

Advantages	Respondent Type						
	State Child Nutrition Director (n = 4)	School Food Authority Director (n = 7)	Food service manager (n = 5)	Principal (n = 5)	Teacher (n = 10)	Community partner (n = 4)	Parent (n = 4)
Staff at one school were more involved in educating students about the snacks		✓					
Did not take up valuable refrigeration space					✓		
Some parents were pleased with the selection			✓				
Allowed snacks to be served year-round, when fresh FV are not available		✓	✓				
Dried fruits were convenient			✓				

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FV = fruits and vegetables.

Exhibit H.5. Disadvantages of canned, frozen, or dried fruits and vegetables

	Respondent type						
Disadvantages	State Child Nutrition Director	School Food Authority Director	Food service manager	Principal	Teacher	Community partner	Parent
Some respondents believe they are inherently lower in quality than fresh	✓						
Some respondents preferred fresh		✓			✓	✓	✓
Some students preferred fresh			✓		✓		
Bulk frozen and canned snacks were labor intensive to prepare		✓	✓				
There were some instances in which schools did not follow the Smart Snack standards during purchasing and could not be reimbursed	✓						
Dried items were a concern for some respondents due to potential contamination with nuts, resulting in an allergy risk		✓					
Some respondents were concerned that canned food may have sweeteners, high sodium, or be otherwise less healthy			✓			✓	✓
Some vendors did not have a large selection to choose from			✓				

EXHIBIT H.5 (*continued*)

Disadvantages	Respondent type						
	State Child Nutrition Director	School Food Authority Director	Food service manager	Principal	Teacher	Community partner	Parent
For some respondents, the variety of FV served decreased				✓			
In some cases fewer vegetables were served			✓		✓		
Frozen and canned could be messy and required a spoon					✓		
More food was wasted under the pilot project					✓		
Took money away from purchasing fresh items					✓		
Some respondents reported that portions were too small					✓		
Some respondents expressed concern that dried items seemed less filling to students							✓

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables.

Exhibit H.6. Barriers the FFVP-CFD pilot was intended to address

Respondent type	Barriers	Additional Details
State Child Nutrition (CN) Director; n = 4	• Lack of availability of fresh produce in winter months • High costs of fresh produce • Limited variety of fresh produce • Insufficient supply of fresh, servable snacks to cover all school days • Limited storage space for fresh produce	Primary barriers CN Directors hoped to overcome with the pilot varied across States. The most common was the expense of accessing fresh snacks, especially during winter.
School Food Authority (SFA) Director; n = 7	• Lack of availability of fresh produce (especially in winter months/rural areas) • Inconsistent quality of fresh produce (e.g., spoilage before snacks are served) • Lack of variety of fresh produce • High costs of fresh produce • Portion sizes of fresh snacks are inconsistent	Most SFA Directors intended to address snack availability and quality problems by applying for the pilot, as well as hoping the CFD pilot would reduce costs for both the snack purchasing and labor used to prepare snacks. Two SFA Directors noted inconsistent quality of fresh FFVP snacks and that having pre-portioned snacks could decrease labor costs and provide full snacks to all students. One SFA Director intended to use the CFD as a supplement to the standard FFVP.
Food service manager (FSM); n = 5	• Lack of availability of fresh produce • Limited student access to FV • Limited storage space for fresh produce • High costs of fresh produce	For the FSMs involved in the decision or application process for FFVP-CFD, most noted the intention to increase the availability of FV snacks and address storage limitations they had with the fresh FV snack.
Principal; n = 5	• High costs of fresh produce • Lack of availability of fresh produce	Principals were not involved in the decision to apply for CFD pilot but were informed of the decision. One principal speculated that high costs of fresh produce was a potential barrier and another speculated the lack of available fresh options was a barrier.
Teacher; n = 10	• High costs of fresh produce • Lack of availability of fresh produce	None.

Source: Evaluation of the FFVP-CFD pilot project, qualitative interview data, spring 2015. Tabulations prepared by Mathematica Policy Research.

CFD = Canned, frozen, or dried; CN = Child Nutrition; FFVP = Fresh Fruit and Vegetable Program; FV = Fruits and vegetables; FSM = Food service manager; SFA = School Food Authority.

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