

Appendix A: Overview of Data Collection and Analysis

Exhibit A-1: Planned Data Collection

Source	Mode	Sample	Topics
States	Administrative data (supplemented by Common Core Data)	16 States	<ul style="list-style-type: none"> Description of schools applying and selected for the FFVP FFVP implementation costs (detail for sample schools)
	Web survey	All 54 State Agencies	<ul style="list-style-type: none"> Description of FFVP selection process and criteria, summary data on results State policies, recommended practices, curricula and materials, and oversight Programs for purchase of foods for the FFVP Non-Federal partners FFVP implementation costs (State totals including State administration)
School Food Authorities	Web survey	SFAs responsible for 704 (256+448) selected schools Some separate modules for FFVP schools	<ul style="list-style-type: none"> Satisfaction with the FFVP and specific fruits/vegetables FFVP distribution: methods and locations, days per week, time of day, duration, frequency FFVP foods offered Non-Federal partners (district level) Changes to SBP and NSLP menus SBP and NSLP meal counts Vending machines and other competitive food sales by school food service
School principals	Web survey	Regression discontinuity (RD) sample of FFVP and comparison schools, N=256 Supplementary sample of FFVP schools, N=448 Some separate modules for FFVP schools	<ul style="list-style-type: none"> Satisfaction with the FFVP and specific fruits/vegetables Non-Federal partners (school level) Nutrition education and promotion Vending machines and other food sales competing with school food service
School environment	Observation, including photographs	RD sample of schools, N=256	<ul style="list-style-type: none"> FFVP distribution Presentation of fruits and vegetables served at school breakfast and lunch Nutrition education and promotion
School food service managers	Interview/Self-administered questionnaire	RD sample, N=256	<ul style="list-style-type: none"> Satisfaction with the FFVP and specific fruits/vegetables <i>Data for days of visit:</i> FFVP foods offered SBP and NSLP menus
Teachers	Cover sheet questionnaire for parental releases	Three per school in RD school sample, N=768	<ul style="list-style-type: none"> Satisfaction with the FFVP
Students	Interview Food diary/assisted recall; self-administered questionnaire	24 per school in RD analytic (final) sample, N=6,144	<ul style="list-style-type: none"> Demographic characteristics FFVP participation Reasons for nonparticipation Perceptions, attitudes, familiarity, preferences regarding the FFVP All foods/drinks consumed during sample 24-hour period: description, time, place, amount
Parents	Cover sheet questionnaire for consent form	24 per school in RD analytic (final) sample, N=6,144	<ul style="list-style-type: none"> Satisfaction with the FFVP Student demographic characteristics

Exhibit A-2: Outcome Measures and Planned Analysis

Research Question	Outcome Measures	Data Sources for Outcome Measures	Planned Analyses
Topic Area 1: Description of participating schools			
What are the characteristics of the schools in each State that applied to participate in the FFVP for School Year?	School characteristics: grade range, enrollment, urban/suburban/ rural, census region, percent FRPSL, racial /ethnic composition	State databases + Common Core Database for 16 States	<ul style="list-style-type: none"> • Tabulations • Nationally representative
For the School Years 2009-10 and 2010-11, what are the characteristics of the schools that were selected in each State to participate and how do they compare to those that were not selected? To other schools in the State or district?	School characteristics as above	As above	<ul style="list-style-type: none"> • Tabulations comparing selected schools with other applicants and nonapplicants. • Nationally representative.
Topic Area 2: Description of participating students (Students attending FFVP schools)			
At FFVP schools, how do characteristics of regular FFVP participants compare to those of occasional participants and to those students who rarely participate? Never participate?	Student characteristics: grade level, sex, FRPSL status, race/ethnicity	Student interviews (4th, 5th, 6th graders)	Tabulations comparing regular, occasional, rare participants and nonparticipants
For children that typically did not participate, why not?	Reasons for nonparticipation among rare participants and nonparticipants	As above	Tabulations
What proportion of children in FFVP schools participated (i.e., obtained and consumed fruits and/or vegetables)? With what frequency?	<ul style="list-style-type: none"> • Ever participate • Frequency of participation 	As above	Tabulations
What is the level of intake of fresh fruits and vegetables eaten by children through the FFVP? At school? And, in total, of fresh fruits and vegetables (including outside of school hours on school days)?	Mean and distribution of servings consumed of (a)fresh fruits (b)fresh vegetables <ul style="list-style-type: none"> • at school • over 24 hours 	Student interviews + assisted dietary recalls	Tabulations, by student characteristic (grade level, sex, FRPSL status, race/ethnicity)
Topic Area 3: Description of FFVP implementation			
What are the methods of fresh fruit/vegetable distribution for the fresh fruit and vegetable program in schools (e.g., kiosk, classroom, mid-afternoon snack, etc.)? What percent of schools use each method? What is the frequency of use of each of these distribution methods? How many schools use multiple methods of distribution? What are the combinations of multiple methods, and what is the frequency of use of each of these combinations?	Modes and combinations of modes of distribution	SFA web survey (full spectrum of FFVP schools in 16 States).	<ul style="list-style-type: none"> • Tabulations • Nationally representative
What fruits and vegetables are offered through FFVP? How frequently are each of these foods offered? How many schools offer multiple choices of foods on a school day? What is the frequency of use of the common combinations of multiple foods?	Frequencies of <ul style="list-style-type: none"> • offering specific foods • numbers of choices per day • common combinations of foods offered per day 	As above.	<ul style="list-style-type: none"> • Tabulations • Nationally representative
The FFVP encourages participating schools to partner with non-Federal entities to promote successful implementation. What proportions of FFVP schools have non-Federal partners, who are these partners, what is the distribution by number of partners?	<ul style="list-style-type: none"> • Use of non-Federal partners • Types of non-Federal partners • Numbers of non-Federal partners 	As above	<ul style="list-style-type: none"> • Tabulations • Nationally representative

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What are the distribution patterns of fresh fruit/vegetable offerings in participating schools (days per week, time of day, duration, frequency, and exposure of fresh fruits/vegetables offerings)?	FFVP distribution characteristics, as listed	SFA web survey, school principal web survey	<ul style="list-style-type: none"> • Tabulations • Nationally representative
How many schools offer FFVP at multiple times during the school day? What is the frequency of use of the common combinations of multiple times of food offering?	Frequencies of times of day, combinations of times of day	As above	<ul style="list-style-type: none"> • Tabulations • Nationally representative
At FFVP schools, what is the distribution of locations for offering FFVP foods? How many schools offer FFVP foods at multiple locations in the school? What is the frequency of use of the common combinations of multiple locations for offering FFVP foods?	Frequencies of locations, combinations of locations	As above	<ul style="list-style-type: none"> • Tabulations • Nationally representative
What level of nutrition education or other promotion accompanies the FFVP in participating schools? Does this represent a change from prior to FFVP implementation?	<ul style="list-style-type: none"> • Characteristics of nutrition education • Reported changes in nutrition education in since FFVP 	As above + school environmental audit	<ul style="list-style-type: none"> • Tabulations • Nationally representative
What products (e.g., types of fresh fruits and vegetables) are provided, offered, and consumed through the FFVP?	Specific fruits and vegetables provided, offered, consumed	As above	<ul style="list-style-type: none"> • Tabulations • Nationally representative
What quantity (per quarter, per school year, and per student) of fresh fruits and vegetables was purchased by the school and what quantity was taken and consumed by students?	Mean amounts of specific fruits and vegetables purchased, taken, consumed	<ul style="list-style-type: none"> • Purchased: as above • Taken/consumed: student interviews with 4th, 5th, 6th graders in regression discontinuity sample of schools 	Tabulations
What roles do the partners play in promoting the goals of FFVP, and what level of resources are they providing to each school?	<ul style="list-style-type: none"> • Partner roles • Partner resources 	SFA web survey	<ul style="list-style-type: none"> • Tabulations • Nationally representative
What are the costs of implementation (e.g., labor, storage, products especially food, supplies, etc.)?	Mean total implementation costs and components	As above	<ul style="list-style-type: none"> • Tabulations • Nationally representative
To what extent was the FFVP favorably viewed by parents, school administrators and teachers, and school food service staff?	Overall level of satisfaction for each group	<ul style="list-style-type: none"> • Parents: consent form • School administrators: school principal web survey • Teachers: principal survey • School food service staff: SFA web survey, interview/survey with school food service manager 	Tabulations
To what extent are specific fresh fruits and vegetables offered through FFVP favorably viewed?	Level of satisfaction with specific fruits and vegetables for each group	As above	Tabulations

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Topic Area 4: Impacts on school environment			
What was the impact of the FFVP on the types of foods offered in vending machines and in other venues in schools?	Reported current levels and recent changes in types of foods offered in vending machines, bake sales, a la carte	SFA web survey, school principal web survey, and school food service manager survey for treatment and comparison schools in regression discontinuity sample	Tabulations
What was the impact of FFVP participation on the number or types of fruits and vegetables offered and taken (i.e., served to students) in school meals in participating schools?	Reported current levels and recent changes in numbers and types of fruits on SBP and NSLP menus	SFA web survey and school food service manager survey for treatment and comparison schools in regression discontinuity sample	Tabulation
What was the impact of FFVP participation on the number of school meals served (NSLP and SBP)?	Current and two years prior numbers of SBP and NSLP meals served over comparable 3-month period	SFA web survey for treatment and comparison schools in regression discontinuity sample	Tabulation
What was the impact of FFVP participation on the range of choices in vending machines and other venues in schools?	Current range of choices and recent changes in vending machines, bake sales, a la carte	SFA web survey, school principal web survey, school food service manager survey, and school observational audit for treatment and comparison schools in regression discontinuity sample	Tabulations
What was the impact of the provision of fresh fruits and vegetables on the quantity of food purchased from other venues (e.g. – vending machines, bake sales, a la carte sales, etc...) and consumed by children?	Current and two years prior dollar value of foods purchased from vending machines, bake sales, a la carte over comparable 3-month period	SFA web survey, for treatment and comparison schools in regression discontinuity sample	Tabulations
Topic Area 5: Main impacts of FFVP on child outcomes			
What is the impact of FFVP participation on the consumption of fresh fruits and vegetables by children during the school day, overall, and by demographic subgroup, and time of day, on days in which the FFVP provides fresh fruits and/or vegetables to children? What are the quantitative (e.g. – MyPyramid equivalents) and relative percent changes?	Mean servings of fresh fruits, fresh vegetables consumed by children during the school day <ul style="list-style-type: none"> • morning • lunchtime • afternoon • total 	Assisted dietary recalls for 4th, 5th, 6th graders in regression discontinuity sample of schools	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, FRPSL status
What impact does the FFVP have on the usual level of student intake of fresh fruits and vegetables over a 24-hour period on school days? Analyses shall include a breakout of fresh fruits alone, fresh vegetables alone, all fruits alone, all vegetables alone, fresh fruits and fresh vegetables together, and all fruits and vegetables together. Analyses shall also include whether there are differential impacts by student socioeconomic and demographic characteristics.	Mean and distribution of servings over 24-hour period on school days of <ul style="list-style-type: none"> • fresh fruits • fresh vegetables • all fruits • all vegetables • fresh fruits and vegetables • all fruits and vegetables 	As above	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, Free and Reduced-Price Lunch (FRPSL) status

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What is the impact of FFVP on children's consumption of foods other than FFV? What foods are replaced? To what extent are they replaced?	Mean and distribution of servings over 24-hour period and at school on school days of other food groups ^a	As above	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, FRPSL status
What is the impact of FFVP on the degree to which total consumption below, at, or above FNS' school meal guidelines and other standards (such as, Dietary Guidelines for Americans or MyPyramid levels)?	<ul style="list-style-type: none"> Percentage of children above/below: FNS school meal guidelines^b DGAs^c MyPyramid level^d 	As above	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, FRPSL status
What is the impact of FFVP on total consumption above, at, or below the relevant Dietary Reference Intakes for Americans, on the HEI-2005, on inadequate and excessive nutrient intake, and on consumption within the AMDR's (Acceptable Macronutrient Distribution Range)	<ul style="list-style-type: none"> Percentage of children above/below DRIs^e, with inadequate/ excessive nutrient intake,^f with consumption above/below AMDRs^g Mean Healthy Eating Index (HEI)-2005 score and components^h 	As above	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, FRPSL status
What is the impact of FFVP participation on perceptions of, attitudes toward, familiarity with, and preferences for, fresh fruits and vegetables among children in participating schools?	Indexes of perceptions, attitudes, familiarity, preferences	Interviews with 4th, 5th, 6th graders in regression discontinuity sample of schools	Regression discontinuity analysis, for all children and for subgroups defined by grade, sex, race/ ethnicity, FRPSL status
Topic Area 6: Contextual effects of nutrition education and FFVP delivery system			
Does nutrition education and/or nutrition promotion (as currently available at school and other venues) play a role in changing children's consumption of fresh fruits and vegetables, modifying fresh fruit and vegetable consumption in response to the FFVP and in generating other observed outcomes? To what extent?	Mean and distribution of servings of fresh fruits, fresh vegetables during the school day and over 24-hour period	Assisted dietary recalls for 4th, 5th, 6th graders in regression discontinuity sample of schools	Tabulations and exploratory regressions
What is the relationship of the specific fruits and vegetables offered and the characteristics of the FFVP delivery (method, timing, location, frequency, etc...) to (1) changes in the HEI-2005 and its components, (2) changes in inadequate and excessive nutrient intake, and (3) changes in consumption within the AMDR's (Acceptable Macronutrient Distribution Range)	<ul style="list-style-type: none"> HEI-2005 score HEI-2005 components, as above Inadequate nutrient intake, as above Excessive nutrient intake, as above AMDRs, as above 	Assisted dietary recalls for 4th, 5th, 6th graders in regression discontinuity sample of schools	Tabulations and exploratory regressions
Is [the number of school meals served (NSLP and SBP)] affected by the particular fresh fruit or vegetable offered through FFVP?	<ul style="list-style-type: none"> Number of SBP meals served Number of NSLP meals served 	<ul style="list-style-type: none"> SFA web survey Assisted dietary recalls for 4th, 5th, 6th graders in regression discontinuity sample of schools 	Tabulations and exploratory regressions

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How does [student] participation vary in response to the specific fresh fruit(s) and vegetable(s) offered?	Student participation	<ul style="list-style-type: none"> SFA web survey Assisted dietary recalls for 4th, 5th, 6th graders in regression discontinuity sample of schools 	Tabulations and exploratory regressions

- ^a Sample list: white potatoes, fruit juice, milk and dairy, meat and beans, whole grains, and less desirable “discretionary” foods (such as sweetened beverages, fast foods, snack foods, sweets including cookies, cakes, candy, and other energy-dense, nutrient poor choices).
- ^b Sample list: no more than 30% of calories from fat, less than 10% of calories from saturated fat, one third of RDAs for protein, vitamin A, vitamin C, iron, calcium.
- ^c Sample list: variety of fruits and vegetables each day, five subgroups of vegetables (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week, 3 cups per day of fat-free or low fat milk or equivalent milk products for children aged 9 and older, total fat intake between 20-25% of calories (most from poly- and monounsaturated fats).
- ^d Sample list (per 1800 calorie intake): 6 ounces of grains, of which half are whole-grain, 2 ½ cups of vegetables (including/excluding fried potatoes), 1 ½ cups of fruit (excluding/excluding fruit juice), 3 cups of milk, 5 ounces of meat and beans.
- ^e Sample list of nutrients for analysis: calories, calcium, iron, zinc, magnesium, beta carotene, vitamin A, vitamin C, folate, sodium, fiber.
- ^f Sample list of nutrients for analysis: protein, vitamin A, vitamin C, iron, calcium, calories, sodium, beta carotene, folate, fiber.
- ^g Values for children are: less than 10% / more than 30% of calories from protein, less than 25% / more than 35% of calories from fat, and less than 45% / more than 65% of calories from carbohydrate.
- ^h Components of HEI-2005 are: total fruit (including 100% juice); whole fruit (not juice); total vegetables; dark green and orange vegetables and legumes; total grains; whole grains; milk and milk products, meat and beans, oils, saturated fat, sodium, and calories from solid fat, alcohol, and added sugar. (P. M. Guenther et al., *Healthy Eating Index—2005* (CNLPP Fact Sheet No. 1), USDA Center for Nutrition Policy and Promotion, June 2008. Retrieved September 17, 2009 from <http://www.cnpp.usda.gov/Publications/HEI/healthyeatingindex2005factsheet.pdf>.)