



**KIDS' SAFE &  
HEALTHFUL  
FOODS PROJECT**



THE  
**PEW**  
CHARITABLE TRUSTS

# Serving Healthy School Meals

Staff development and training needs

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**The Kids' Safe and Healthful Foods Project**, a collaboration between The Pew Charitable Trusts and the Robert Wood Johnson Foundation, provides nonpartisan analysis and evidence-based recommendations to make sure that all foods and beverages sold in U.S. schools are safe and healthful.

## Overview

Operating a school meal program requires knowledge and skills from a range of disciplines: the culinary arts, nutrition science, food safety, business administration, finance, purchasing, and marketing. The professionals who lead and work in school food service departments have the challenge of planning and executing economical menus that meet children's dietary needs and appeal to their varying tastes. The foods that schools provide and the eating habits that they promote significantly influence the health of the nation's children. Each school day, more than 30 million students in the United States receive their midday meals through the National School Lunch Program (NSLP),<sup>1</sup> and more than 13 million get their morning meals through the School Breakfast Program (SBP).<sup>2</sup> For many children, these meals supply almost half their daily calories.<sup>3</sup>

In January 2012, the U.S. Department of Agriculture (USDA) finalized updated nutrition standards for school meals. These standards are in alignment with the most recent information on children's nutritional requirements as reflected in the 2010 *Dietary Guidelines for Americans*<sup>4</sup> and recommendations issued by the Institute of Medicine.<sup>5</sup> As a result, beginning in school year (SY) 2012-13, schools were required to incorporate more fruits and vegetables, lean protein, whole grains, and low-fat dairy products into students' meals.

In support of the updated standards, USDA finalized a rule in March 2015 that established minimum professional standards for school nutrition personnel who manage and operate meal programs. In acknowledgment of the complexity of school food programs and the need for ongoing personnel training, the rule establishes hiring standards for state and local school nutrition program directors and requires all staff to complete annual continuing education and training courses.<sup>6</sup>

To investigate the staff development and training needed for schools to adequately meet USDA's updated meal standards, the Kids' Safe and Healthful Foods Project—a joint initiative of the Pew Charitable Trusts and the Robert Wood Johnson Foundation—commissioned a national survey of school food service directors or their designees, primarily food service managers. Data collection was conducted in SY 2012-13, which was before USDA released the proposed rule on professional standards.

### The Kitchen Infrastructure and Training for Schools Report Series

This report is the last in a series by the Kids' Safe and Healthful Foods Project, which began work in January 2012 on the first national study to assess the equipment, infrastructure, and training needs of school food authorities (SFAs). The first study of this series, *Serving Healthy School Meals: Despite challenges, schools meet USDA meal requirements*, analyzed the extent to which SFAs believed they would be able to comply with the updated standards. The second report, *Serving Healthy School Meals: U.S. schools need updated kitchen equipment*, and corresponding state briefs detailed the kitchen equipment and infrastructure challenges that schools face.

Most survey respondents said they or their staffs needed more training than is currently available through their own resources or federal and state agencies. To meet the new meal requirements, the majority of school food authorities (SFAs) expected to make at least one change in their production approach, such as implementing standard recipes to ensure consistent nutrient content per serving and cooking more food from scratch. Those changes may require additional training in cooking skills, food safety, and the use of new ingredients or kitchen equipment.

This report, based on a nationally representative survey of school food service directors or their designees, describes the educational and experiential background of their staffs, as well as their assessment of training they need to implement USDA's updated nutrition standards.

- **Finding 1:** The most common form of training received by school nutrition professionals was on the job (59 percent of SFA directors and 76 percent of food service managers). SFA directors in small and very small SFAs (fewer than 2,500 students) were more likely to report receiving on-the-job training than those from larger SFAs. Only 29 percent of SFA directors and 7 percent of food service managers reported having bachelor's degrees in food-related fields (nutrition, food service management, baking/culinary arts). SFA directors from large and very large SFAs (10,000 or more students) were more likely to have bachelor's degrees than those from smaller SFAs.
- **Finding 2:** Understanding compliance with the new nutrient requirements and meal standards, or patterns, was a top training need for all school nutrition personnel. Training in basic nutrition, cooking skills, and food safety was a top need for kitchen/cafeteria managers and cooks/front-line servers.
- **Finding 3:** Only 37 percent of SFAs have budgets for staff development and training. Of those, about two-thirds reported that the budgets are not sufficient to meet all of their training needs. Seventy-two percent of respondents reported that state child nutrition agencies would not provide all of the training and resources needed to meet the updated requirements.

### Kitchen Infrastructure, Training, and Equipment in Schools Workshop

To help address the needs highlighted by the survey, the project brought together food service directors, school administrators, industry representatives, nonprofit organizations, foundations, and financiers in July 2013 to discuss how schools can find the resources to improve their kitchens, cafeterias, and food service staff development. The convened group developed strategic approaches for financing equipment and infrastructure upgrades that included leveraging partnerships, sponsorship funding, low-interest loans, and revenue generated outside of the school meal setting. The model approaches, many of which have already been demonstrated by schools across the country, are detailed in the workshop proceedings, "Serving Healthy School Meals: Financing strategies for school food service."

Based upon the report findings and a series of specific suggestions discussed in the Kitchen Infrastructure, Training, and Equipment in Schools Workshop, the project recommendations are as follows:

**Recommendation 1:** School officials should prioritize and plan opportunities for training of food service personnel.

**Recommendation 2:** Federal, state, and local policymakers should prioritize making funds available to help school food service personnel complete training.

**Recommendation 3:** Nonprofit and for-profit organizations that have an interest in improving community wellness and children's health and education should work collaboratively with schools and make use of community resources to increase and enhance training opportunities for school nutrition staff.

A sizable majority of SFAs reported needs for additional training and technical assistance to successfully implement the updated meal standards and improve the quality and appeal of their meals. This report will outline the top training needs of SFAs as they work to provide healthier foods to the students they serve.

## Background

The National School Lunch Program, established in 1946, operates in about 95 percent of U.S. public schools.<sup>7</sup> The main goal of the National School Lunch and School Breakfast Programs is to promote the health and well-being of children by ensuring that they have access to nutritious meals that support normal growth and development. Schools that participate in the lunch program must make meals available to all students and provide lunches to children from low-income families for free or at a reduced price

### About the Survey of School Food Service Directors

The findings presented in this report are based on a survey, conducted by Mathematica Policy Research, of school food service directors or their designees (those deemed to be most knowledgeable about the district's equipment, infrastructure, and training needs) from a nationally representative sample of public school food authorities. In most cases (67 percent), respondents were food service or nutrition directors at the SFA level. Additional respondents included food service, kitchen, or cafeteria managers at the school level (17 percent) and personnel who held other positions within the SFA (14 percent). The questionnaire was developed with assistance from a consultant who works with SFAs to implement the updated meal requirements. In addition, a panel of child nutrition and food service experts from across the country helped to identify and frame the key issues to be measured. The questionnaire covered four main topic areas, each focusing on the needs of SFAs relative to implementing the updated requirements for school lunches:\*

- Readiness for and barriers to meeting the updated requirements.
- Adequacy of and need to replace or add food service equipment.
- Kitchen infrastructure needs.
- Staff training needs.

*Continued on next page*

Additional information was collected on demographic and operational characteristics of the SFAs and on the credentials and experience of survey respondents.

SFAs were sampled from a USDA database of those participating in the National School Lunch Program. A total of 3,372 representatives completed the survey, for a response rate of 54.3 percent.

Data were collected between August and December 2012, and responses reflect circumstances in SY 2012-13 as schools worked to implement the updated lunch requirements. The panel of experts developed the survey with a particular focus on what districts *need*, not what they *want*, in order to meet the updated meal standards.

Key findings were examined for differences among subgroups defined by size (total student enrollment), community type (urban, suburban, and rural), region of the country (as defined by the USDA's Food and Nutrition Service), and poverty category (based on the percentage of enrolled students approved for free or reduced-price meals). More information on the methodology can be found in Appendix C.

\* To limit the burden on respondents, the study focused only on the updated requirements for the National School Lunch Program. In addition, updated meal requirements for the School Breakfast Program had not yet gone into effect at the time of the survey.

In December 2010, the Healthy, Hunger-Free Kids Act reauthorized the school breakfast and lunch programs with a focus on improving children's access to nutritious foods in schools and promoting healthy eating and physical activity. Congress directed USDA to update nutrition standards for all foods sold on campuses during the school day and made additional funding available for the lunch program for the first time in more than 30 years.\* In January 2011, the agency proposed updated nutrition standards for meals that would require schools to offer more fruits, vegetables, and whole grains and limit milk to fat-free and low-fat varieties. Congress allocated an additional 6 cents per lunch, now available to SFAs that comply with the updated requirements, to help cover the costs of offering meals with more fruits, vegetables, and whole grains.

The final rule establishing the updated meal requirements was issued in January 2012 and went into effect July 1, 2012.<sup>8</sup> These requirements mark the first major changes to the nutrition standards for school meals in more than 15 years. Schools were required to implement the updated standards for lunches beginning in SY 2012-13 and for the School Breakfast Program in SY 2013-14.

The Healthy, Hunger-Free Kids Act of 2010 also required USDA to establish professional standards for school nutrition personnel. In March 2015, USDA published a final rule that established minimum professional standards for school nutrition personnel who manage and operate the NSLP and SBP. It instituted hiring standards for state

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\* Reimbursement rates for the school lunch and breakfast programs are adjusted annually to reflect changes in the Consumer Price Index (Food Away From Home Series for All Urban Consumers). Source: Federal Register, "National School Lunch, Special Milk, and School Breakfast Programs: National Average Payments/Maximum Reimbursement Rates," U.S. Department of Agriculture, 79, no. 136 (July 16, 2014), <http://www.fns.usda.gov/sites/default/files/cn/NAPs14-15.pdf>.

agency directors and school nutrition program directors at the SFA level and required that all personnel involved in these programs complete annual continuing education and training. In particular, the final rule instituted professional standards for new SFA nutrition program directors based on student enrollment (2,499 or fewer students; 2,500-9,999 students; and 10,000 or more students), recognizing that a higher level of education and experience is needed to match the complexity of managing a larger school food service system. By providing consistent minimum professional standards for school nutrition professionals, directors can adequately and effectively perform the duties and responsibilities associated with their positions.<sup>9</sup>

The first report of the “Serving Healthy School Meals” series found that schools were overcoming challenges and finding solutions in order to successfully implement the new school meal requirements. Overall, 90 percent of SFAs had made or expected to make at least one change to their production approach. For example, the vast majority of SFAs (80 percent) reported that they had implemented or would implement standard recipes and/or work methods, and just over half (55 percent) had moved toward more scratch cooking.<sup>10</sup>

### Lunch and Breakfast Programs Bring Billions of Dollars to Schools

Student participation in the school lunch and breakfast programs is a major driver of additional revenue for local districts, which receive federal reimbursements for each meal served, mainly in the form of direct cash payments or USDA-donated foods. In FY 2012, reimbursements for program meals and the value of USDA-donated foods totaled about \$15 billion.\*

\* Federal Register, “Certification of Compliance With Meal Requirements for the National School Lunch Program Under the Healthy, Hunger-Free Kids Act of 2010,” U.S. Department of Agriculture, 79, no. 2 (Jan. 3, 2014), <http://www.fns.usda.gov/sites/default/files/2013-341030P.pdf>.

## Education, credentials, and experience

To measure the educational and experiential backgrounds of SFA personnel, the survey asked respondents to provide their title, number of years in their current position, education degrees, and other credentials.

The majority of respondents (67 percent) identified themselves as SFA directors (also referred to as school food service or school nutrition directors). Seventeen percent were kitchen, cafeteria, or food service managers or lead cooks in schools and 14 percent held other positions within SFAs. (See Appendix A, Table A.1.) Other positions included area supervisors, managers or coordinators, dietitians and nutritionists, business managers, superintendents and other administrators, and other staff.

The majority of SFA directors (59 percent) and food service managers (76 percent) reported receiving some of their training on the job. (See Figure 1.) Nearly half (49 percent) of the respondents who were not SFA directors or food service managers reported the same. Among all respondents, 22 percent had no nutrition-related credentials and reported that on-the-job training was their only preparation for working in the food service profession (not shown in figure).

Among school nutrition personnel, the most commonly reported credentials or training included the following:

- **SFA directors.** More than one-quarter of SFA directors had bachelor's degrees in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or another related field. Twenty-nine percent of SFA directors held school nutrition specialist (SNS) credentials or School Nutrition Association (SNA) certificates in school nutrition,\* and 25 percent held state food service certificates.
- **Food service managers.** Twenty-seven percent of school food service managers had state food service certificates, and 18 percent held SNS credentials or SNA certificates.
- **Other respondents.** Respondents in this category held titles such as dietetic technician or dietary manager.† They also held degrees (associate, bachelor's, or advanced) in unrelated fields (25 percent) or advanced degrees in business, foods and nutrition, public health, or related fields (20 percent).

SFA directors had the highest percentage of associate and bachelor's degrees (13 and 29 percent, respectively) in foods and nutrition or related fields compared with all other respondents. Other respondents, who included school superintendents, administrators, and business managers, had the highest percentage of advanced degrees (20 percent), followed by SFA directors (14 percent). (See Figure 1.)

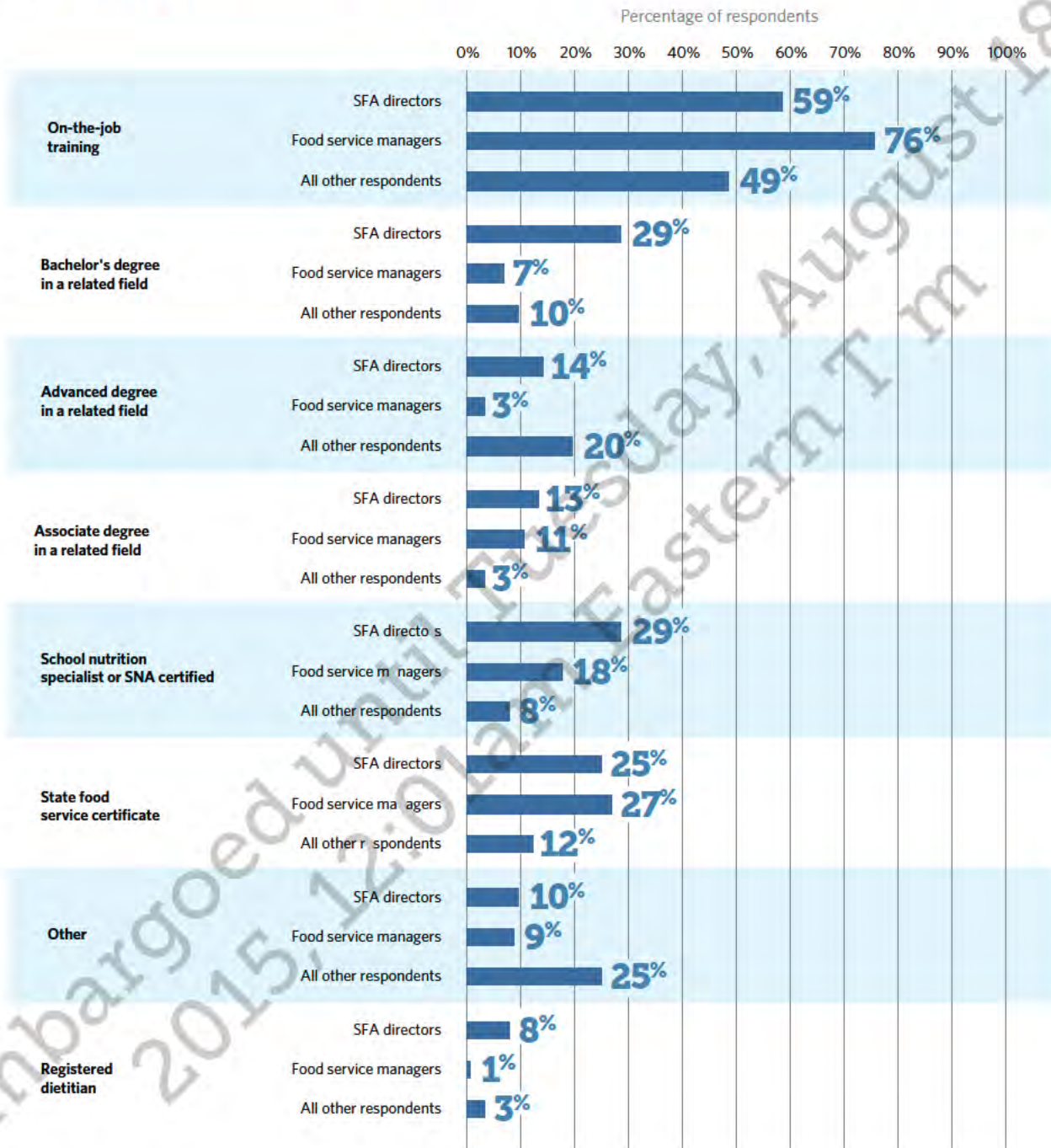
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\* A person who has received the school nutrition specialist (SNS) credential has passed the SNS exam, demonstrated the knowledge and competencies necessary to manage school nutrition programs, and remains dedicated to continuing professional development. Source: School Nutrition Association, "SNS Credentialing," accessed July 14, 2014, <https://schoolnutrition.org/sns/>. A person who has earned a School Nutrition Association (SNA) certificate in school nutrition is certified as having completed training courses relevant to his or her food service position. A certificate is valid for 12 months. Source: School Nutrition Association, "Certificate in School Nutrition Program Guide," June 2015, [https://schoolnutrition.org/uploadedFiles/03\\_Certification,\\_Education\\_and\\_Professional\\_development/Certification/SNACertificateGuideJune2015a.pdf](https://schoolnutrition.org/uploadedFiles/03_Certification,_Education_and_Professional_development/Certification/SNACertificateGuideJune2015a.pdf).

† A dietetic technician is a person who is educated and trained at the technical level of nutrition and dietetics practice for the delivery of safe and quality food and nutrition services. Source: Academy of Nutrition and Dietetics, "What is a Dietetic Technician, Registered?" accessed July 14, 2015, <http://www.eatrightpro.org/resources/about-us/what-is-an-rdn-and-dtr/what-is-a-dietetic-technician-registered>. A dietary manager is a person who is trained and qualified to administrate menus and purchase and prepare food by applying nutrition principles, documenting nutrition information, and ensuring food safety. Source: Association of Nutrition and Foodservice Professionals, "CDM, CFPP Credential," accessed July 14, 2015, [http://www.anfonline.org/About/CDM\\_CFPP\\_credential.shtml](http://www.anfonline.org/About/CDM_CFPP_credential.shtml).

Figure 1

## Education, Credentials, and Training of Survey Respondents, by Position



Note: Multiple responses were allowed.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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SFA directors had been in their positions for an average of 11 years, and food service managers averaged 10 years. All other respondents averaged less than eight years of experience. The range was wide: Some directors and managers were new to their jobs, and others had spent 40 years or more in their current positions. (See Table 1.)

Table 1

## Experience of SFA Directors, Food Service Managers, and Other Respondents

	SFA directors	Food service managers	All other respondents
	Years in position		
<b>Mean</b>	11.3	10.2	7.6
<b>Mode</b>	5.0	15.0	2.0
<b>Minimum</b>	0.1	0.1	0.1
<b>Maximum</b>	44.0	38.2	49.0
<b>Percentage of SFAs in position</b>	67.2	17.4	14.1
<b>Number of SFAs (unweighted)</b>	2,541	91	403
<b>Number of SFAs (weighted)</b>	9,280	2,400	1,950

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Thirty-seven SFAs were excluded from the table because the respondents did not provide information on their positions.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012.

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## Education, credentials, and experience by SFA size

The education, credentials, and experience of SFA directors responding to the KITS survey varied greatly depending on their SFA size. (See Appendix A, Table A.2.) For example, the percentage of respondents from small (1,000 to 2,499 students) and very small (fewer than 1,000 students) SFAs who reported on-the-job training was more than twice the percentage from very large SFAs (25,000 or more students): 57 and 70 percent versus 27 percent. The percentage of SFA directors with bachelor's degrees in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or related fields from small and very small SFAs was far less than the percentage from large and very large SFAs: 28 and 8 percent versus 63 and 64 percent.

## Training needs of school nutrition personnel

To understand the training needs of different groups of school food service personnel, the questionnaire focused on three staff types:

- SFA directors or food service management teams.
- Kitchen or cafeteria managers.
- Cooks or front-line servers.

Respondents were provided with a list of 13 topics and were asked to identify which staff members in their SFAs needed training in the specified areas. (See Appendix F for examples of subject matter that might be covered under the most commonly identified training topics.) Results of the study pointed to the critical knowledge and skills that SFA personnel need to successfully operate school nutrition programs, including implementing updated meal standards.

### Training Topics

- Assessing equipment and infrastructure needs.
- Basic cooking skills.
- Basic food safety/ServSafe\* training.
- Basic nutrition training.
- Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews.<sup>†</sup>
- Completing production records.
- Developing or modifying menus.
- Marketing and promoting the new meal requirements.
- Modifying and standardizing recipes.
- Purchasing new equipment
- Revising food purchasing specifications.
- Understanding compliance with meal pattern and nutrient requirements.
- Using/operating new equipment.

The ServSafe food safety training program is administered by the National Restaurant Association. SFA training requirements may include employees taking an exam to become ServSafe certified.

<sup>†</sup> The CRE is a comprehensive on-site evaluation of school nutrition programs.

## Training needs of SFA directors and food service management teams

Sixty-nine percent of SFA directors or food service management teams reported that they needed training on completing paperwork for additional reimbursement and producing Coordinated Review Effort (CRE)\* evaluations, a procedure used to assess SFA compliance with NSLP requirements. More than two-thirds of the respondents (68 percent) reported that school nutrition personnel would benefit from training on the development of new menus or the modification of current menus. The third most frequently reported training need was increasing understanding of compliance with the new meal pattern and nutrient requirements (63 percent). In addition, more than half of all SFAs reported that their directors or food service management teams needed training on marketing or promoting new menus (61 percent), revising food purchasing specifications (59 percent), and modifying and/or standardizing recipes (57 percent).

SFA directors and food service management teams also reported needing training for:

- Assessing their equipment and infrastructure needs (46 percent).
- Purchasing equipment and completing production records accurately and efficiently (40 percent).
- Use and operation of equipment (28 percent).
- Nutrition, food safety, and basic cooking skills (36, 29, and 23 percent respectively). (See Table 2.)

## Training needs of kitchen and cafeteria managers

Kitchen and cafeteria managers reported a different set of training needs from those of SFA directors and food service management teams. Roughly two-thirds of kitchen and cafeteria management staff needed additional training on understanding compliance with meal pattern and nutrient requirements and completing production records (67 and 65 percent, respectively). More than half of respondents (55 percent) reported that kitchen and cafeteria managers needed basic nutrition training. In addition, approximately half reported that kitchen and cafeteria managers needed training on modifying and/or standardizing recipes (54 percent), basic cooking skills (52 percent), developing or modifying menus (50 percent), marketing and promoting the updated meal requirements (49 percent), and basic food safety (46 percent). Relatively few kitchen/cafeteria managers needed training on assessing equipment and infrastructure needs (24 percent) and purchasing new equipment (15 percent). However, 39 percent of managers needed training on using or operating new equipment, compared with 28 percent of SFA directors. (See Table 3.)

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\* State agencies are required to perform this review of all SFAs at least once every five years. Food and Nutrition Service regulations identify two critical areas that must be reviewed—Performance Standard 1, accountability related to meal counting and claiming, and Performance Standard 2, compliance of meals with the federal requirements for a reimbursable lunch—but allow each state agency the flexibility to include additional areas of review based on its own determinants. Administrative reviews (AR) replaced the CRE procedures in SY 2013-14 and are on three-year cycles.

Table 2

## Training Needs of SFA Directors and Food Service Management Teams

Training type	Percentage of SFAs
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	68.9
Developing or modifying menus	68.2
Understanding compliance with meal pattern and nutrient requirements	62.5
Marketing and promoting the new meal requirements	61.3
Revising food purchasing specifications	58.8
Modifying and/or standardizing recipes	57.1
Assessing equipment and infrastructure needs	45.6
Purchasing new equipment	39.7
Completing production records	39.5
Basic nutrition training	36.4
Basic food safety/ServSafe training	29.0
Using/operating new equipment	27.9
Basic cooking skills	23.0
Number of SFAs (unweighted)	3,372
Number of SFAs (weighted)	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012.

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Table 3  
 Training Needs of Kitchen and Cafeteria Managers

Training type	Percentage of SFAs
Understanding compliance with meal pattern and nutrient requirements	67.2
Completing production records	65.1
Basic nutrition training	54.8
Modifying and/or standardizing recipes	53.8
Basic cooking skills	51.7
Developing or modifying menus	49.5
Marketing and promoting the new meal requirements	48.6
Basic food safety/ServSafe training	45.9
Using/operating new equipment	38.9
Revising food purchasing specifications	31.5
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	31.4
Assessing equipment and infrastructure needs	24.2
Purchasing new equipment	14.6
<b>Number of SFAs (unweighted)</b>	<b>3,372</b>
<b>Number of SFAs (weighted)</b>	<b>13,813</b>

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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### Training needs of cooks and front-line servers

The reported training needs for cooks and front-line servers were similar to those of kitchen and cafeteria managers. The most frequently reported training need was understanding compliance with meal pattern and nutrient requirements (63 percent). More than half of SFAs reported that cooks and front-line servers needed training on basic cooking skills (58 percent), basic nutrition training (55 percent), and basic food safety training (52 percent) in order to efficiently and safely serve school meals that meet the updated nutrition standards. Forty-one percent reported needing training to help complete production records, and 38 percent reported that cooks or front-line servers needed training to use or operate new equipment. (See Table 4 for a display of other training needs.)

Table 4

## Training Needs of Cooks and Front-Line Servers

Training type	Percentage of SFAs
Understanding compliance with meal pattern and nutrient requirements	62.8
Basic cooking skills	58.4
Basic nutrition training	54.8
Basic food safety/ServSafe training	51.9
Completing production records	41.2
Using/operating new equipment	37.9
Modifying and/or standardizing recipes	29.9
Marketing and promoting the new meal requirements	29.5
Developing or modifying menus	24.6
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	8.4
Assessing equipment and infrastructure needs	8.0
Revising food purchasing specifications	7.8
Purchasing new equipment	4.1
Number of SFAs (unweighted)	3,372
Number of SFAs (weighted)	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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## The Importance of Food Safety Training

When preparing foods for students, particularly when using raw ingredients, food service workers must be sure to follow proper food safety measures. Each year, foodborne illness affects millions of individuals in the United States. Students, especially young children, are a particularly vulnerable population. It is of vital importance that school food service staffs are properly trained on food safety principles to ensure the safety of meals served to children.

Safe food preparation is a key aspect of a healthy environment, and more than half of respondents (52 percent) indicated that their cooks and front-line staff needed additional training in this area. Potential strategies that could be covered in a training session include keeping hands, utensils, and cutting boards clean after contact with raw meat, poultry, seafood, and eggs; separating raw meats from foods that won't be cooked; cooking foods to the correct temperature; and properly chilling leftovers.<sup>11</sup>

## Training needs by SFA size

For all three staff categories, very small SFAs (fewer than 1 000 students) were generally less likely than larger SFAs to report that training was needed. (See Appendix A, Tables A.4-A.6.) For example, the percentage of SFAs in large and very large districts that reported needing training for kitchen/cafeteria managers on basic cooking skills was nearly twice the percentage of very small SFAs (72 and 71 percent versus 37 percent). However, the need to train kitchen/cafeteria managers on revising food purchasing specifications was almost four times greater in very small SFAs compared with very large SFAs (37 versus 10 percent, respectively).

## Training needs by other SFA characteristics

Training needs varied by community type, region, and poverty level. (See Appendix A, Tables A.7-A.15.) The major trends are summarized below.

- Suburban SFAs reported training needs for all staff types more often than did urban or rural SFAs. The differences across community types were relatively small, except for training of cooks/front-line servers to complete production records. Fifty-three percent of suburban SFAs need this type of training, compared with 34 percent of urban and 39 percent of rural SFAs. (See Appendix A, Table A.9.)
- SFAs in the Southeastern region of the United States were significantly more likely than those in other regions to report needing various types of training at all staff levels. More than 80 percent of respondents in the Southeast said they needed to train SFA directors and management teams on completing applications/paperwork for additional reimbursement and CRE reviews and on developing or modifying menus. (See Appendix A, Table A.10.)
- There were few statistically significant differences in the training needs of any staff types by poverty level of the SFA. (See Appendix A, Tables A.13-A.15.)

## Collaboration, Partnerships, Resourcefulness, and Creativity

More than 75 people from 31 states attended a workshop hosted by the Kids' Safe and Healthful Foods Project to discuss how schools can meet and exceed school meal nutrition standards by overcoming budget constraints, procuring needed equipment and infrastructure upgrades, and finding the resources to train staff. The Kitchen Infrastructure, Training, and Equipment in Schools Workshop—which took place in Chicago from July 28 to 30, 2013—drew upon the insights of food service directors, school administrators, industry representatives, nonprofit organizations, foundations, and financiers. The proceedings for this workshop are summarized in “Serving Healthy School Meals: Financing strategies for school food service.”

Collaboration, resourcefulness, and creativity were cited as crucial components of successful training programs. Workshop participants agreed that trainings should be convenient, consistent, flexible, and professional. In addition, obtaining buy-in and motivation from food service staff members will promote success, especially if employees understand and support a program's vision and goals.

Participants discussed challenges to securing training and possible solutions for increasing training opportunities. Although finding the resources for trainings can be challenging, several participants noted that it is often easier to get funding for training than for other things such as kitchen equipment and infrastructure upgrades. Challenges included:

- **Finding the time, tools, and financial resources to conduct meaningful trainings**
- **Identifying qualified and appropriate trainers who take a compelling, collegial approach to teaching adults who might have varying levels of education and proficiency in English.**
- **Motivating staff members to participate in training, embrace the content, and remain in their jobs.**

Despite the challenges, attendees identified several methods for boosting the success of training programs, including:

- **Gaining support of food service staff.**
  - Modifying outdated job descriptions to better incorporate trainings and making requirements and expectations clear upon hiring.
  - Offering incentives for food service personnel to participate in voluntary trainings and providing greater visibility and opportunities to those who have participated in trainings.
  - Engaging those who are motivated and willing to be trained, thus encouraging others to follow.
  - Holding food service staff accountable for material/skills learned in mandatory trainings.
- **Earning buy-in from other stakeholders (administration, unions, parents, etc.).**

Explaining to administrators and food service staff why training is important and how school meal programs can play an important role in the health and well-being of students.

- “Training up” by educating administrators and policymakers on the importance of training and food service operations through the use of annual reports or by hosting a session with management, among others.

*Continued on next page*

- Improving relationships with the union representing food service workers and working with that union to offer useful trainings.
  - Developing ways to assist customers—students and parents—in understanding updated nutrition regulations and the solutions being implemented.
  - **Making trainings more available and accessible.**
    - Scheduling trainings based on the availability of the staff.
    - Training workers in their kitchens with their equipment.
    - Considering different approaches, such as “popcorn sessions”— e.g., 15-minute modules—to introduce and reinforce lessons through the year.
    - Developing and circulating training resources that personnel can use as a reference between sessions (e.g., training manuals, training videos, online training modules, equipment maintenance instructions, information on the latest regulations and policies, and menu development or options).
  - **Improving the quality of training sessions.**
    - Determining training needs based on district or departmental goals.
    - Conducting basic skills and culinary needs assessments to understand the scope of training required for different types of food service personnel (SFAs, kitchen and cafeteria managers, and cooks and front-line staff).
    - Consulting with food service personnel to determine the types of training desired and, when appropriate, inviting personnel to help develop and deliver trainings.
    - Partnering with other school districts to identify key training needs and to simultaneously train food service personnel.
    - Identifying trainers who understand the material, know how to train and motivate adults, and leave trainees feeling satisfied by the experience—and sharing this information with other school districts in the area.
    - Involving industry representatives in training (e.g., offering advice on how to maintain and repair equipment, sharing tips on how to evaluate return on investment, and adapting menus to correspond with available equipment).
    - Bolstering professionalism, morale, and confidence by offering trainings on topics such as communications, cultural differences, conflict resolution, marketing, advocacy, customer service, and financial management.
    - Updating trainings as regulations and policies change.
- Analyzing which trainings provide the biggest return on investment.

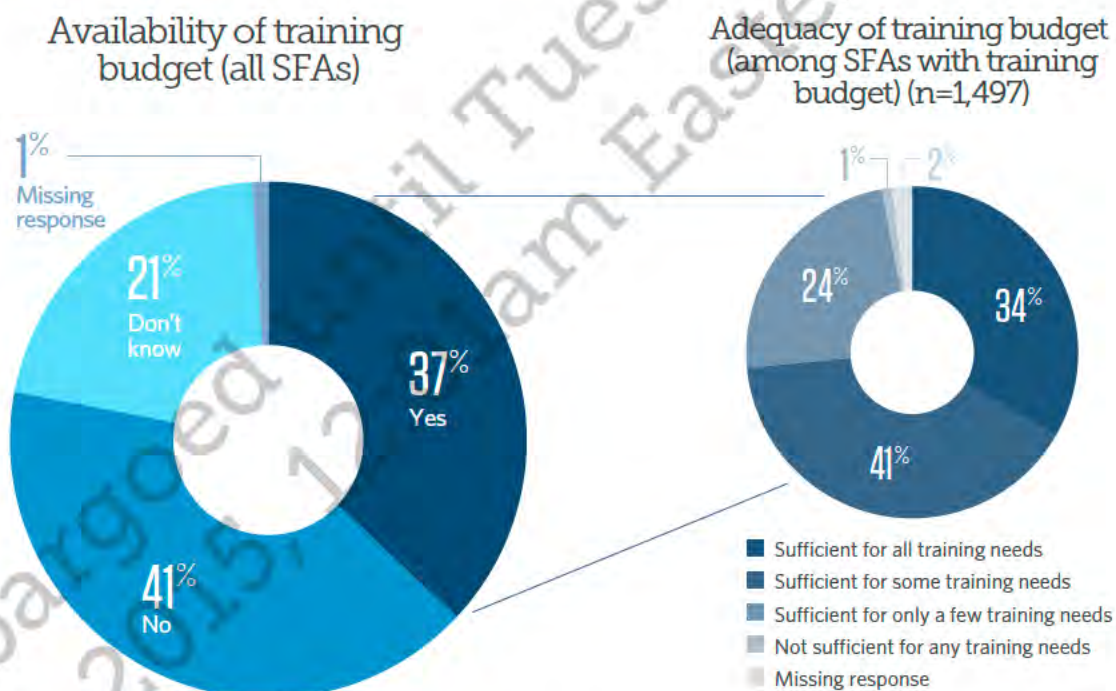
## Staff development and training budgets

Respondents were asked whether their SFAs had budgets for staff development and training and whether this money was adequate to meet their training needs. Almost one-quarter of respondents (21 percent) did not know whether their SFAs had budgets for training and staff development. These respondents were less likely to be SFA directors. Among respondents who were knowledgeable about this topic, responses were almost evenly split. Overall, 37 percent of all SFAs reported that they had budgets for staff training and development while 41 percent reported that they had no such budget. (See Figure 2.)

Among the SFAs that reported having budgets for staff training and development, about one-third (34 percent) reported that the budgets were sufficient to meet all of their training needs. A somewhat larger share (41 percent) said the budgets were sufficient to meet some of their training needs, and nearly one-quarter (24 percent) reported that the available money was sufficient to meet only a few of their needs

Figure 2

### Budget Availability and Adequacy for Staff Training and Development



Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. For further information about weighting, refer to the report methodology in Appendix C.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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SFAs are not necessarily expected to fulfill all of their staff training needs with their own budgets; state child nutrition agencies are also required to offer some training opportunities. The survey asked SFAs separately whether they expected their states to provide (or whether their states had already provided) training on the updated meal standards. About one-quarter (26 percent) of all respondents reported that their state child nutrition agencies would provide all of the training and resources needed to meet the updated requirements. (See Table 5.) Slightly more than half of respondents (51 percent) said they believed that their states would provide training to cover some of their needs, while 18 percent of SFAs expected the states to provide training for only a few of their needs. Very few SFAs (3 percent) said that the training provided by their states would not meet any of their needs.

Table 5  
**SFA Perceptions of Adequacy of State Agency Training on Updated Meal Standards**

State agency-provided training on new meal requirements is expected to meet:	Percentage of SFAs
All training needs	25.9
Some training needs	50.7
Only a few training needs	18.0
None of the training needs	3.0
Missing response	2.4
Number of SFAs (unweighted)	3,372
Number of SFAs (weighted)	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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## Summary of key findings

This report presents findings about the challenges that school districts face in implementing the USDA’s updated meal standards, specifically as they relate to training needs and knowledge and skill limitations. Below are the key findings:

- Finding 1:** The most common form of training that school nutrition professionals received was on-the-job training, reported by 59 percent of SFA directors and 76 percent of food service managers. SFA directors in small and very small SFAs (fewer than 2,500 students) were more likely to report on-the-job training than those from larger SFAs. Only 29 percent of SFA directors and 7 percent of food service managers reported having bachelor’s degrees in food-related fields (i.e., nutrition, food service management, baking/culinary arts). SFA directors from large and very large SFAs (10,000 or more students) were more likely to have bachelor’s degrees than were those from smaller SFAs.

- About 22 percent of school nutrition professionals at all staff levels rely exclusively on-the-job training.
- **Finding 2:** Understanding compliance with the new meal pattern and nutrient requirements was a top training need reported by all school nutrition personnel. Kitchen/cafeteria managers and cooks/front-line servers also reported that basic nutrition training, cooking skills, and food safety training were top needs to meet the updated standards.
  - Other top training needs for SFA directors or food service management teams include completing paperwork for additional reimbursement and CRE evaluations (69 percent) and developing new menus or modifying current menus to meet the new nutrition standards (68 percent).
  - Other top training needs for kitchen/cafeteria managers include completing production records (65 percent) and basic nutrition training (55 percent).
  - Other top training needs for cooks and front-line servers include basic cooking skills (58 percent) and basic nutrition training (55 percent).
- **Finding 3:** Only 37 percent of SFAs have budgets for staff development and training. Of those, about two-thirds reported that the money is not sufficient to meet all of their needs. Seventy-two percent of respondents reported that their state child nutrition agencies would not provide all of the training and resources needed to meet the updated requirements.
  - Almost one-quarter of respondents (21 percent) did not know whether their SFAs had budgets for training and staff development. Forty-one percent of all SFAs do not have a budget for staff development and training.
  - Among SFAs that reported having budgets for staff development and training, about one-third (34 percent) indicated that the budget is sufficient to meet all of their training needs. Forty-one percent said the budget is sufficient to meet some of their training needs, and nearly one-quarter (24 percent) stated that the available budget was sufficient to meet only a few of their needs.

## Recommendations

Based upon the report findings and a series of specific suggestions discussed in the Kitchen Infrastructure, Training, and Equipment in Schools Workshop, the project recommendations are as follows:

**Recommendation 1:** School officials should prioritize and plan opportunities for staff development and training of school food service personnel.

**Recommendation 2:** Federal, state, and local policymakers should prioritize making funds available to help school food service personnel complete staff development training.

**Recommendation 3:** Nonprofit and for-profit organizations that have an interest in improving community wellness and children's health and education should work collaboratively with schools and make use of community resources to increase and enhance training opportunities for school nutrition staff.

## Conclusion

As school food service authorities work to fully implement USDA's updated meal standards and improve the quality and appeal of their meals, their personnel need increased access to and opportunities for training and technical assistance to meet the new challenges of their jobs. Additional knowledge and skills would help nutrition professionals manage changes in food service production, such as greater use of scratch cooking, and increased student participation in meal programs, which can lead to greater revenue as a result of increased USDA reimbursement.

Federal standards will encourage training by setting minimum professional standards for school nutrition personnel who manage and operate meal programs. However, it is critical that policymakers—including school administrators, recognize the need for and value of training and technical assistance and consider it a priority in their continuing education planning. Providing school food service team members with the training they need to serve safe, healthy, and appealing meals is a critical step in ensuring that students are well-nourished and ready to learn.

## Appendix A: Tables

Table A.1.

### Credentials of Survey Respondents by Position

	Percentage of SFA directors	Percentage of food service managers	Percentage of all other respondents
<b>All SFAs</b>	67.2	17.4	14.1
	Credentials held		
<b>On-the-job training</b>	59.4	75.6	48.9
<b>School nutrition specialist or SNA certified</b>	29.3	17.9	8.2
<b>Bachelor's degree in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or related field</b>	28.7	6.7	10.3
<b>State food service certificate</b>	25.0	27.0	11.7
<b>Advanced degree in business, foods and nutrition, public health</b>	13.6	3.0	19.5
<b>Associate degree in consumer science, food service management, baking/culinary arts, or related field</b>	12.8	10.6	3.1
<b>Other*</b>	10.4	8.7	24.5
<b>Registered dietitian</b>	8.1	1.2	3.3
<b>Number of SFAs (unweighted)</b>	2,541	391	403
<b>Number of SFAs (weighted)</b>	9,285	2,400	1,950

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed. Thirty-seven SFAs were excluded from the table because the respondents did not provide information on their positions. SNA = School Nutrition Association.

\* Other credentials reported include dietetic technician and associate, bachelor's, or advanced degrees in unrelated fields.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.2.

## Credentials of SFA Directors Responding to the KITS Survey by SFA Size

Credentials held	Percentage of SFAs					All SFAs
	Very small (fewer than 1,000 students)	Small (1,000 to 2,499 students)	Medium (2,500 to 9,999 students)	Large (10,000 to 24,999 students)	Very large (25,000 or more students)	
On-the-job training	70.0	56.7	41.5	30.5	26.5	60.3
School nutrition specialist or SNA certified	14.1	31.5	37.3	41.3	48.5	24.1
Bachelor's degree in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or related field	8.0	28.1	47.6	62.8	63.8	21.9
State food service certificate	23.9	25.0	17.3	16.5	13.6	23.2
Advanced degree in business, foods and nutrition, public health	4.9	16.6	21.4	31.2	45.4	12.5
Associate degree in consumer science, food service management, baking/culinary arts, or related field	6.3	16.6	15.8	10.5	6.5	10.9
Other*	13.8	10.3	11.7	8.5	11.5	12.1
Registered dietitian	1.3	7.5	13.9	25.1	27.3	6.1
Number of SFAs (unweighted)	1,021	1,327	496	344	184	3,372
Number of SFAs (weighted)	6,855	5,009	991	645	313	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed. Thirty-seven SFAs were excluded from the table because the respondents did not provide information on their position. These data are for descriptive purposes only. Differences between categories were not tested for statistical significance. SNA = School Nutrition Association.

\* Other credentials reported include dietetic technician and associate, bachelor's, or advanced degrees in unrelated fields.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.3.

## Training Needs of SFA Directors and Food Service Management Teams by Credentials

Training type	Percentage of SFA directors							
	On-the-job training	School nutrition specialist or SNA certified	Bachelor's degree in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or related field	State food service certificate	Advanced degree in business, foods and nutrition, public health	Associate degree in consumer science, food service management, baking/culinary arts, or related field	Other*	Registered dietitian
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	76.0	80.6	80.8	74.4	80.3	70.8	74.8	81.1
Developing or modifying menus	78.8	80.8	81.1	78.5	78.8	77.8	72.1	79.7
Understanding compliance with meal pattern and nutrient requirements	71.8	69.2	71.8	69.5	72.2	67.6	66.1	70.9
Marketing and promoting the new meal requirements	68.4	76.4	76.6	68.0	73.7	66.8	65.1	80.5
Revising food purchasing specifications	66.1	69.3	71.4	63.7	71.0	63.4	61.4	73.6
Modifying and/or standardizing recipes	65.6	68.0	71.1	64.4	63.1	63.6	61.4	62.8
Assessing equipment and infrastructure needs	49.8	59.6	58.7	47.9	62.0	55.2	45.6	62.4
Purchasing new equipment	42.9	51.8	49.2	41.9	54.5	49.2	41.4	55.3
Completing production records	46.9	38.1	39.2	43.4	37.3	42.3	38.8	36.3

Continued on next page

Training type	Percentage of SFA directors							
	On-the-job training	School nutrition specialist or SNA certified	Bachelor's degree in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, or related field	State food service certificate	Advanced degree in business, foods and nutrition, public health	Associate degree in consumer science, food service management, baking/culinary arts, or related field	Other*	Registered dietitian
Basic nutrition training	46.1	34.3	30.2	42.0	24.6	41.0	39.5	17.4
Basic food safety/ ServSafe training	35.4	29.3	30.0	30.0	22.6	32.5	32.7	21.1
Using/operating new equipment	33.0	31.7	32.8	30.3	32.8	34.4	29.9	35.3
Basic cooking skills	29.3	24.7	24.5	28.9	19.3	22.9	24.1	20.9
Percentage of SFA directors with credential	59.4	29.3	28.7	25	13.6	12.8	10.4	8.1
Number of SFAs (unweighted)	1,319	951	958	591	487	340	284	313
Number of SFAs (weighted)	5,514	2,723	2,664	2,320	1,263	1,187	970	750

Notes: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed. Thirty-three SFAs were excluded from the table due to missing information on respondent credentials. The data are for descriptive purposes only. Differences between groups were not tested for statistical significance. SNA = School Nutrition Association.

\* Other credentials reported include dietetic technician and associate, bachelor's, or advanced degrees in unrelated fields.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.4.

## Training Needs of SFA Directors and Food Service Management Teams by SFA Size

Training type	Percentage of SFAs					All SFAs
	Very small (fewer than 1,000 students)	Small (1,000 to 2,499 students)	Medium (2,500 to 9,999 students)	Large (10,000 to 24,999 students)	Very large (25,000 or more students)	
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	60.3*	77.4*	76.8*	79.2*	79.9*	68.9
Developing or modifying menus	58.8*	75.8*	79.0*	79.3	76.7*	68.2
Understanding compliance with meal pattern and nutrient requirements	55.6*	69.7*	68.2	70.7*	72.7*	62.5
Marketing and promoting the new meal requirements	47.9*	73.1*	75.8*	78.3*	69.3*	61.3
Revising food purchasing specifications	47.8*	68.3*	70.6*	69.6*	74.4*	58.8
Modifying and/or standardizing recipes	47.5*	64.6*	67.1*	70.4*	63.4*	57.1
Assessing equipment and infrastructure needs	33.3*	54.2*	61.7*	58.6*	55.0*	45.6
Purchasing new equipment	30.0*	46.5*	52.1*	50.1*	48.7*	39.7
Completing production records	39.7	41.8	37.7	36.9	34.1*	39.5
Basic nutrition training	34.9	44.5*	34.5	25.2*	26.7*	36.4
Basic food safety/ServSafe training	25.7*	36.7*	29.4	25.6	27.3	29.0
Using/operating new equipment	21.7*	34.6*	33.3*	35.8*	28.6	27.9
Basic cooking skills	19.4*	27.3*	26.6*	22.4	24.9	23.0
Number of SFAs (unweighted)	1,021	681	1,142	344	184	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	313	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.5.

## Training Needs of Kitchen and Cafeteria Managers by SFA Size

Training type	Percentage of SFAs					All SFA
	Very small (fewer than 1,000 students)	Small (1,000 to 2,499 students)	Medium (2,500 to 9,999 students)	Large (10,000 to 24,999 students)	Very large (25,000 or more students)	
Understanding compliance with meal pattern and nutrient requirements	57.3*	72.2*	80.2*	85.8*	75.2*	67.2
Completing production records	52.0*	76.8*	78.1*	82.5*	78.4*	65.1
Basic nutrition training	45.1*	59.6*	67.5*	70.1*	69.0*	54.8
Modifying and/or standardizing recipes	49.0*	57.1	62.4*	53.8	45.0*	53.8
Basic cooking skills	36.9*	62.1*	68.6*	72.3*	71.4*	51.7
Developing or modifying menus	51.0	47.1	50.1	46.8	42.2*	49.5
Marketing and promoting the new meal requirements	41.5*	51.4	57.0*	65.9*	63.0*	48.6
Basic food safety/ServSafe training	36.5*	54.5*	54.6*	58.8*	59.7*	45.9
Using/operating new equipment	29.2*	41.0	53.9*	60.3*	46.0*	38.9
Revising food purchasing specifications	36.7*	33.2	23.3*	14.9*	9.6*	31.5
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	39.2*	26.2*	20.4*	24.6*	27.7	31.4
Assessing equipment and infrastructure needs	23.2	27.2	24.2	24.1	16.5*	24.2
Purchasing new equipment	16.6*	12.5	14.3	8.1*	8.9*	14.6
Number of SFAs (unweighted)	1,021	681	1,142	344	184	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	313	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.6.

## Training Needs of Cooks and Front-Line Servers by SFA Size

Training type	Percentage of SFAs					All SFA
	Very small (fewer than 1,000 students)	Small (1,000 to 2,499 students)	Medium (2,500 to 9,999 students)	Large (10,000 to 24,999 students)	Very large (25,000 or more students)	
Understanding compliance with meal pattern and nutrient requirements	56.7*	66.3	70.8*	72.7*	66.3	62.8
Basic cooking skills	47.2*	63.9*	72.6*	75.5*	79.2*	58.4
Basic nutrition training	48.1*	57.1	64.3*	67.5*	62.9*	54.8
Basic food safety/ServSafe training	44.8*	56.7*	59.4*	65.8*	62.1*	51.9
Completing production records	32.8*	47.1*	50.7	54.6*	51.6*	41.2
Using/operating new equipment	31.2*	39.7	48.0*	52.0*	45.4*	37.9
Modifying and/or standardizing recipes	31.4	25.8*	32.4	24.7*	22.3*	29.9
Marketing and promoting the new meal requirements	23.9*	33.9*	34.3*	40.6*	39.1*	29.5
Developing or modifying menus	27.9*	21.3	21.5	19.8*	24.3	24.6
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	10.1*	6.8	6.1*	7.1	9.0	8.4
Assessing equipment and infrastructure needs	10.1*	7.0	4.9*	5.8	4.4*	8.0
Revising food purchasing specifications	10.8*	6.3	4.1*	2.7*	1.6*	7.8
Purchasing new equipment	4.7	3.8	3.7	2.7*	3.5	4.1
Number of SFAs (unweighted)	1,021	681	1,142	344	184	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	313	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.7.

## Training Needs of SFA Directors and Food Service Management Teams by Community Type

Training type	Percentage of SFAs				All SFAs
	Urban	Suburban	Rural	Missing response	
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	68.9	74.2*	67.3	22.9	68.9
Developing or modifying menus	66.8	76.4*	65.8	37.0	68.2
Understanding compliance with meal pattern and nutrient requirements	64.1	68.2*	60.2*	26.4	62.5
Marketing and promoting the new meal requirements	63.5	68.3*	58.4*	33.3	61.3
Revising food purchasing specifications	61.0	68.9*	54.8*	30.0	58.8
Modifying and/or standardizing recipes	53.3	64.3*	55.6	23.1	57.1
Assessing equipment and infrastructure needs	49.8	51.1*	42.6*	33.6	45.6
Purchasing new equipment	41.7	41.9	38.5	18.2	39.7
Completing production records	40.5	37.3	40.2	15.8	39.5
Basic nutrition training	38.6	34.8	36.5	11.0	36.4
Basic food safety/ServSafe training	33.1	29.8	27.8	14.6	29.0
Using/operating new equipment	30.9	28.2	27.0	11.0	27.9
Basic cooking skills	24.0	22.3	23.0	11.0	23.0
Number of SFAs (unweighted)	1,021	681	1,142	344	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.8.

## Training Needs of Kitchen and Cafeteria Managers by Community Type

Training type	Percentage of SFAs				All SFAs
	Urban	Suburban	Rural	Missing response	
Understanding compliance with meal pattern and nutrient requirements	63.1	73.3*	66.2	35.9	67.2
Completing production records	62.0	72.2*	63.5	35.9	65.1
Basic nutrition training	60.3	59.1*	51.9*	35.9	54.8
Modifying and/or standardizing recipes	47.7*	54.7	55.1	29.1	53.8
Basic cooking skills	49.4	60.2*	49.3*	28.7	51.7
Developing or modifying menus	43.3*	46.4	52.3*	28.6	49.5
Marketing and promoting the new meal requirements	42.4	49.4	50.0	28.5	48.6
Basic food safety/ServSafe training	51.1	48.4	43.9*	22.0	45.9
Using/operating new equipment	37.4	43.4*	37.7	21.3	38.9
Revising food purchasing specifications	25.0*	26.3*	34.8*	58.2	31.5
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	29.7	22.2*	35.0*	57.9	31.4
Assessing equipment and infrastructure needs	24.1	20.1*	25.7	21.6	24.2
Purchasing new equipment	14.7	12.7	15.3	7.7	14.6
Number of SFAs (unweighted)	1,021	681	1,142	344	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.9.

## Training Needs of Cooks and Front-Line Servers by Community Type

Training type	Percentage of SFAs				All SFAs
	Urban	Suburban	Rural	Missing response	
Understanding compliance with meal pattern and nutrient requirements	55.3*	67.3*	63.0	75.8	62.8
Basic cooking skills	54.4	66.4*	56.6	32.4	58.4
Basic nutrition training	54.0	59.5*	53.4	35.9	54.8
Basic food safety/ServSafe training	53.1	54.1	50.8	61.9	51.9
Completing production records	33.5*	52.8*	39.2*	17.2	41.2
Using/operating new equipment	33.9	39.6	38.5	21.3	37.9
Developing or modifying menus	19.9*	22.4	26.6*	28.6	24.6
Modifying and/or standardizing recipes	23.1*	28.7	31.8*	61.5	29.9
Marketing and promoting the new meal requirements	22.8*	29.1	31.4*	17.2	29.5
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	5.3*	6.2*	9.9*	14.3	8.4
Assessing equipment and infrastructure needs	7.3	4.0*	9.6*	3.3	8.0
Revising food purchasing specifications	5.1	5.5*	9.3*	0.0	7.8
Purchasing new equipment	2.8	3.6	4.7	0.0	4.1
Number of SFAs (unweighted)	1,021	681	1,142	344	3,372
Number of SFAs (weighted)	6,855	3,107	2,893	645	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.10.

## Training Needs of SFA Directors and Food Service Management Teams by Region

Training type	Percentage of SFAs							All SFAs
	Northeast	Mid-Atlantic	Southeast	Midwest	Southwest	Mountain Plains	Western	
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	68.5	65.1	82.6*	69.6	69.3	65.4	66.0	68.9
Developing or modifying menus	70.5	76.4*	82.0*	66.9	66.5	62.5*	64.1	68.2
Understanding compliance with meal pattern and nutrient requirements	63.4	67.9	72.2*	61.0	62.7	57.4*	61.1	62.5
Marketing and promoting the new meal requirements	61.1	70.4*	75.2*	61.1	56.2	54.1*	61.7	61.3
Revising food purchasing specifications	57.6	73.2*	68.5	57.6	57.4	52.9*	56.1	58.8
Modifying and/or standardizing recipes	58.9	66.2*	68.3*	56.5	51.7	51.3*	56.6	57.1
Assessing equipment and infrastructure needs	41.1	51.0	58.0*	47.5	41.3	40.2*	46.2	45.6
Purchasing new equipment	38.8	39.6	54.8*	39.9	35.8	36.9	38.2	39.7
Completing production records	35.8	31.7*	38.4	36.8	42.4	44.1*	43.4	39.5
Basic nutrition training	34.7	40.0	36.4	37.3	35.9	36.5	34.3	36.4
Basic food safety/ServSafe training	25.6	31.1	31.1	29.3	26.2	30.0	29.8	29.0
Using/operating new equipment	23.7	32.2	32.9*	29.7	25.4	22.6*	31.1	27.9
Basic cooking skills	20.6	25.4	24.6	20.8	21.3	25.1	24.9	23.0
Number of SFA (unweighted)	413	302	509	517	349	690	592	3,372
Number of SFAs (weighted)	1,572	1,168	1,232	3,356	1,975	2,440	2,071	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.11.

## Training Needs of Kitchen and Cafeteria Managers by Region

Training type	Percentage of SFAs							All SFAs
	Northeast	Mid-Atlantic	Southeast	Midwest	Southwest	Mountain Plains	Western	
Understanding compliance with meal pattern and nutrient requirements	74.2*	69.4	81.5*	61.4*	73.4	61.4*	62.4	67.2
Completing production records	70.6*	71.7	82.4*	56.2*	73.8*	59.6*	59.3*	65.1
Basic nutrition training	55.2	60.2	71.4*	52.2	60.3	49.5*	46.9*	54.8
Modifying and/or standardizing recipes	59.7	52.6	65.6*	47.6*	57.3	53.8	49.2	53.8
Basic cooking skills	54.8	54.4	67.8*	45.3*	59.0	45.4*	48.8	51.7
Developing or modifying menus	54.8	42.6	55.2*	43.5*	59.0*	48.6	47.7	49.5
Marketing and promoting the new meal requirements	52.2	53.8	66.0*	40.5*	53.7	47.0	42.8*	48.6
Basic food safety/ ServSafe training	41.1	54.4*	58.0*	40.4*	50.6	44.9	43.3	45.9
Using/operating new equipment	32.6*	43.3	53.6*	38.2	37.4	35.5	38.8	38.9
Revising food purchasing specifications	31.7	32.3	17.7*	30.4	36.2	35.5	31.4	31.5
Completing applications/ paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	32.4	24.6*	32.4	26.9*	42.1*	33.2	28.8	31.4
Assessing equipment and infrastructure needs	19.6	27.6	28.7*	24.0	23.1	25.6	23.0	24.2
Purchasing new equipment	12.2	14.1	13.1	15.2	14.3	14.4	17.2	14.6
Number of SFAs (unweighted)	413	302	509	517	349	690	592	3,372
Number of SFAs (weighted)	1,572	1,168	1,232	3,356	1,975	2,440	2,071	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.12.

## Training Needs of Cooks and Front-Line Servers by Region

Training type	Percentage of SFAs							All SFAs
	Northeast	Mid-Atlantic	Southeast	Midwest	Southwest	Mountain Plains	Western	
Understanding compliance with meal pattern and nutrient requirements	68.3	63.7	63.1	59.9	65.9	63.2	59.3	62.8
Basic cooking skills	62.0	61.0	73.8*	53.6*	62.3	52.6*	55.7	58.4
Basic nutrition training	58.1	56.0	66.4*	51.3	56.1	51.1	53.4	54.8
Basic food safety/ServSafe training	45.9	59.8*	61.1*	48.3	49.5	53.9	52.6	51.9
Completing production records	53.5*	49.5*	35.0*	40.9	32.0*	36.6*	45.6	41.2
Using/operating new equipment	31.9*	41.0	50.9*	36.2	37.5	37.3	37.2	37.9
Modifying and/or standardizing recipes	36.3*	27.7	32.6	23.3*	29.2	36.1*	28.5	29.9
Marketing and promoting the new meal requirements	31.3	31.2	34.8*	25.8	27.8	28.9	32.2	29.5
Developing or modifying menus	30.2	21.6	23.0	20.2*	29.7	25.6	24.2	24.6
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	11.1	5.8	5.6*	5.3*	12.1	11.1	7.6	8.4
Assessing equipment and infrastructure needs	3.5*	8.2	5.3*	8.1	3.4*	13.7*	10.4	8.0
Revising food purchasing specifications	5.7	7.6	3.3*	6.7	7.8	12.6*	8.1	7.8
Purchasing new equipment	3.3	3.3	4.1	3.5	3.2	5.4	5.6	4.1
Number of SFAs (unweighted)	413	302	509	517	349	690	592	3,372
Number of SFAs (weighted)	1,572	1,168	1,232	3,356	1,975	2,440	2,071	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.13.

## Training Needs of SFA Directors and Food Service Management Teams by Poverty Level\*

Training type	Percentage of SFAs			All SFAs
	Lower poverty (less than 40%)	Intermediate poverty (40 to 60%)	High poverty (more than 60%)	
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	69.2	67.3	70.4	68.9
Developing or modifying menus	70.4	64.9	69.3	68.2
Understanding compliance with meal pattern and nutrient requirements	63.9	59.9	63.7	62.5
Marketing and promoting the new meal requirements	65.3 <sup>†</sup>	57.5 <sup>†</sup>	60.7	61.3
Revising food purchasing specifications	62.0*	56.1	57.9	58.8
Modifying and/or standardizing recipes	60.2	56.0	54.3	57.1
Assessing equipment and infrastructure needs	45.3	45.8	45.8	45.6
Purchasing new equipment	38.0	39.9	41.6	39.7
Completing production records	37.7	36.4	45.0 <sup>†</sup>	39.5
Basic nutrition training	36.6	31.8*	41.1 <sup>†</sup>	36.4
Basic food safety/ServSafe training	27.3	25.2 <sup>†</sup>	35.5*	29.0
Using/operating new equipment	26.9	26.9	30.2	27.9
Basic cooking skills	22.4	21.2	25.6	23.0
Number of SFAs (unweighted)	1,211	1,140	1,021	3,372
Number of SFAs (weighted)	5,087	4,611	4,116	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Categories based on the percentage of enrolled students approved for free or reduced-price meals.

† Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.14.

## Training Needs of Kitchen and Cafeteria Managers by Poverty Level\*

Training type	Percentage of SFAs			All SFAs
	Lower poverty (less than 40%)	Intermediate poverty (40 to 60%)	High poverty (more than 60%)	
Understanding compliance with meal pattern and nutrient requirements	68.0	69.2	63.8	67.2
Completing production records	65.5	66.1	63.3	65.1
Basic nutrition training	54.3	54.9	55.2	54.8
Modifying and/or standardizing recipes	55.2	57.4 <sup>†</sup>	47.9 <sup>†</sup>	53.8
Basic cooking skills	51.4	51.4	52.3	51.7
Developing or modifying menus	48.3	52.2	47.9	49.5
Marketing and promoting the new meal requirements	48.4	50.7	46.5	48.6
Basic food safety/ServSafe training	44.1	45.2	49.1	45.9
Using/operating new equipment	37.1	41.4	38.3	38.9
Revising food purchasing specifications	30.8	35.2 <sup>†</sup>	28.1	31.5
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	27.9 <sup>†</sup>	34.9 <sup>†</sup>	31.7	31.4
Assessing equipment and infrastructure needs	20.3 <sup>*</sup>	26.6	26.5	24.2
Purchasing new equipment	11.6 <sup>†</sup>	15.2	17.6 <sup>†</sup>	14.6
Number of SFAs (unweighted)	1,211	1,140	1,021	3,372
Number of SFAs (weighted)	5,087	4,611	4,116	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Categories based on the percentage of enrolled students approved for free or reduced-price meals.

† Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.15.

## Training Needs of Cooks and Front-Line Servers by Poverty Level\*

Training type	Percentage of SFAs			All SFAs
	Lower poverty (less than 40%)	Intermediate poverty (40 to 60%)	High poverty (more than 60%)	
Understanding compliance with meal pattern and nutrient requirements	63.6	63.4	61.1	62.8
Basic cooking skills	57.5	59.0	58.7	58.4
Basic nutrition training	54.9	55.4	53.9	54.8
Basic food safety/ServSafe training	49.6	52.7	53.9	51.9
Completing production records	47.6 <sup>†</sup>	39.3	35.4 <sup>†</sup>	41.2
Using/operating new equipment	35.2	44.6 <sup>†</sup>	37.2	37.9
Modifying and/or standardizing recipes	26.8 <sup>†</sup>	32.5	30.7	29.9
Marketing and promoting the new meal requirements	28.8	29.8	29.9	29.5
Developing or modifying menus	21.9	26.2	26.2	24.6
Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	7.2	8.1	10.1	8.4
Assessing equipment and infrastructure needs	7.6	7.8	8.7	8.0
Revising food purchasing specifications	7.7	6.7	9.1	7.8
Purchasing new equipment	3.8	4.6	4.1	4.1
Number of SFAs (unweighted)	1,211	1,140	1,021	3,372
Number of SFAs (weighted)	5,087	4,611	4,116	13,813

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program. Multiple responses were allowed.

\* Categories based on the percentage of enrolled students approved for free or reduced-price meals.

† Difference between the subgroup and all other SFAs is significantly different from zero at the  $\alpha = .05$  level.

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table A.16.

## Availability and Adequacy of Budgets for Staff Development and Training

Budget for staff development and training	
Yes	37.2
No	40.9
Don't know	21.1
Missing response	0.8
Among SFAs with a staff training budget (n=1,497)	
Budget is sufficient for:	
All training needs	33.7
Some training needs	40.5
Only a few training needs	23.5
None of the training needs	0.8
Missing response	1.5
Number of SFAs (unweighted)	3,372
Number of SFAs (weighted)	13,813

Note: The data were weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program.

Source: Kitchen Infrastructure and Training for School Survey, 2012

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## Appendix B: Characteristics of school food authorities

To provide context for the study findings, Table B.1 presents data on key characteristics of public SFAs, including size (number of students enrolled), number of schools, community type, region, and poverty category. Using data from the sample frame, SFAs were grouped into five categories based on the number of enrolled students: very small (fewer than 1,000), small (1,000 to 2,499), medium (2,500 to 9,999), large (10,000 to 24,999), and very large (25,000 or more). Half of all public SFAs have fewer than 1,000 enrolled students and can be characterized as very small. Another 44 percent are either small or medium (roughly equal proportions of each). Large and very large SFAs (10,000 or more students) are much less common, accounting for only 7 percent of all SFAs.

The size of an SFA can also be measured by the number of individual schools operating the lunch program. The smallest have one to three schools (55 percent). About one-third (34 percent) have four to 11 schools, and the remaining 11 percent have 12 or more schools.

Respondents were asked to characterize the location\* of the majority of schools in their SFAs as urban, suburban, or rural. More than 6 in 10 (62 percent) reported that most of their schools are in rural areas. Less than one-quarter (22 percent) said most of their schools are in suburban communities, and 16 percent described their schools as mainly urban.

USDA's Food and Nutrition Service administers the National School Lunch Program through seven regional offices. The largest proportion of SFAs is in the Midwest region (24 percent); the Northeast, Southwest, Western, and Mountain Plains regions each account for 11 to 18 percent of SFAs; and 8 to 9 percent are in the Mid-Atlantic and Southeast regions.

To measure socioeconomic status, we used data from the sample frame on the percentage of enrolled students approved for free or reduced-price meals.† Three poverty categories were created: low (fewer than 40 percent of students approved for free or reduced-price meals), intermediate (40 to 60 percent approved for free or reduced-price meals), and high (greater than 60 percent approved for free or reduced-price meals).‡ Thirty-seven percent of all SFAs fall within the low poverty category. Another one-third fall within the intermediate poverty category, and nearly one-third (30 percent) are within the high poverty category.

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\* To distinguish the relative urbanization of an SFA's location based on geographic region, we refer to urban, suburban, and rural areas as "community types" for the remainder of the report.

† In the NSLP and SBP, children from families with household incomes at or below 130 percent of the federal poverty threshold are eligible to receive free meals; those from households with incomes between 131 and 185 percent of the federal poverty threshold are eligible to receive meals at a reduced price. (From July 1, 2012, to June 30, 2013, 130 percent of the poverty level was \$29,965 for a family of four; 185 percent was \$42,643.)

‡ Schools that serve 40 percent or more of their lunches free or at a reduced price are considered "severe need" and are eligible for a higher rate of federal reimbursement for breakfasts. Source: U.S. Department of Agriculture, Food and Nutrition Service, "National School Lunch Program Fact Sheet," accessed May 13, 2013, <http://www.fns.usda.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.pdf>.

Schools with more than 60 percent of students approved for free or reduced-price meals are reimbursed at a slightly higher rate than are other SFAs (2 cents more per lunch served in SY 2012-13). Source: U.S. Department of Agriculture, Food and Nutrition Service, "School Breakfast Program Fact Sheet," accessed May 13, 2013, <http://www.fns.usda.gov/cnd/breakfast/AboutBFast/SBPFactSheet.pdf>.

Table B.1.  
Characteristics of School Food Authorities

Characteristic	Number of sample SFAs (unweighted)	Number of SFAs (weighted)	Percentage of SFAs (weighted)
Size (number of students)			
Very small (fewer than 1,000)	1,021	6,855	49.6
Small (1,000 to 2,499)	681	3,107	22.5
Medium (2,500 to 9,999)	1,142	2,893	20.9
Large (10,000 to 24,999)	344	645	4.7
Very large (25,000 or more)	184	313	2.3
Number of schools			
1 to 3	1,074	7,601	55.0
4 to 11	1,486	4,640	33.6
12 to 24	477	887	6.5
25 to 99	294	541	3.9
100 or more	41	144	1.0
Community type			
Urban	638	2,181	15.8
Suburban	921	3,075	22.3
Rural	1,803	8,507	61.6
Missing response	10	50	0.4
Food and Nutrition Service region			
Northeast	413	1,572	11.4
Mid-Atlantic	302	1,168	8.5
Southeast	509	1,232	8.9
Midwest	517	3,356	24.3
Southwest	349	1,975	14.3
Mountain Plains	690	2,440	17.7
Western	592	2,071	15.0
Poverty category (percentage of students approved for free or reduced-price meals)			
Low (fewer than 40%)	1,211	5,087	36.8
Intermediate (40 to 60%)	1,140	4,611	33.4
High (more than 60%)	1,021	4,116	29.8
<b>Number of SFAs</b>	<b>3,372</b>	<b>13,813</b>	<b>100</b>

Note: The data are weighted to be representative of all public school food authorities (SFAs) offering the National School Lunch Program.

Source: School Food Authority Verification Summary Report (Form Food and Nutrition Service-742), 2010-11

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## Appendix C: Study design and methodology

This appendix describes the design and methodological processes involved in conducting the Kitchen Infrastructure and Training for Schools study. Information is provided on questionnaire development and testing, sampling, data collection, response rates, weighting, and data analysis.

### Questionnaire development and pilot testing

The KITS questionnaire was developed collaboratively by the study teams at Mathematica Policy Research and The Pew Charitable Trusts, with assistance from a consultant and input from an expert panel (see Appendix E). The consultant, Mary Jo Tuckwell, provided important substantive expertise in implementation of the updated meal requirements, issues facing school food authority (SFA) directors, training of SFA and school food service staff, and sources of financial support. She helped guide the expert panel discussion, drafted survey questions, and reviewed the final questionnaire. Tuckwell is the former director of food and nutrition for the Eau Claire Area School District and nutrition education and training coordinator for the Wisconsin Department of Public Instruction. She also served as a member of the Institute of Medicine Committee on Nutrition Standards for National School Lunch and School Breakfast Programs, which developed recommendations for the updated requirements. As technical director for consulting services at inTEAM, a firm specializing in business intelligence for school food service, she works with SFAs across the country to enhance the nutritional quality of school meals and meet operational goals.

### Expert panel input

Eight individuals with expertise in child nutrition and school food service served on the expert panel. The panel helped to identify the key issues to be measured and determine critical survey questions and provided feedback on the draft questionnaire. The panel members, each of whom received an honorarium for participation, were:

- Kate Adamick, chef and co-founder of Cook for America.
- Pamela Lambert, director of student nutrition services for the Escondido (CA) Union High School District.
- Dr. Robert Lewis, director of nutrition services for the El Monte (CA) City School District.
- Steven W. Marshall, president of the Marshall Associates Inc., a company specializing in food service design.
- Jean Ronnei, director of nutrition and custodial services for St. Paul (MN) Public Schools.
- Dr. Keith Rushing, research scientist for the National Food Service Management Institute at the University of Southern Mississippi.
- Margie Saidel, vice president of nutrition and sustainability at Chartwells School Dining Services.
- Donna West, child nutrition manager, Brownwood (Scottsboro, AL) Elementary School.

In early April 2012, the expert panel met via webinar with Mathematica project staff and representatives from Pew and the Robert Wood Johnson Foundation. The panel discussed the proposed framework for the study, the main topics to be covered, and potential groupings of questions. At this point, the project staff and Tuckwell drafted the questionnaire. After the draft was completed, panel members reviewed the questionnaire and participated in another webinar in early May 2012 to provide more feedback. The resulting survey covered four

main areas, each focused on SFAs' perceptions of their needs relative to meeting the updated meal requirements for school lunches: (1) readiness and perceived barriers to full implementation, (2) adequacy of existing kitchen equipment and need for new equipment, (3) needed changes or upgrades in kitchen infrastructure, and (4) staff training needs.

## Pilot testing

The draft questionnaire underwent two rounds of pilot testing. For the first round, five respondents (including a kitchen manager, a retired SFA director, two active SFA directors, and an area supervisor) completed a paper copy of the draft questionnaire. Respondents generally provided positive feedback on the questionnaire design and topics covered. However, because the administration times were longer than anticipated, the survey was revised and shortened. The second draft of the questionnaire was then pilot-tested by three SFA directors. This second version took an average of 20 minutes to complete. Pew approved the final version of the survey in early June 2012.

The KITS survey was designed to be self-administered and completed online. Programming for the Web-based questionnaire began in June and internal testing was completed in early August 2012. The questionnaire was finalized and released online by mid-August 2012.

## Overview of study design

The KITS study was designed to provide national and state estimates, allowing it to develop and disseminate individual state profiles in addition to the national report. To produce reliable estimates from the survey data at both levels, it was necessary to draw a sufficiently large initial sample of SFAs and meet target completion rates within each state. Because not all SFAs that were selected to participate were eligible for the study or completed a survey, sampling weights were applied so that the study findings would be representative of SFAs across the nation and within states.

To accomplish the goals of the KITS sample design, maximize response rates, and increase the likelihood of meeting sample size requirements for reliable estimates, a stratified random sampling approach was employed, target completion rates for each state were set, the initial sample was augmented with a second sample release, and the data collection period was extended by two weeks. These strategies are summarized below and discussed in the sample design, response rates, and weighting sections that follow.

The sampling frame was all public SFAs in the 50 states and the District of Columbia participating in the National School Lunch Program in school year 2010-11. To select the sample, the SFAs within each state were divided into one to four strata based on size (number of schools). Mathematica statisticians then determined the target number of completed questionnaires required in each state to obtain the desired precision level for survey estimates.\* To avoid releasing a larger initial sample than might be needed, the number of SFAs selected across the size strata for each state was based on a completion rate of 75 percent. After tracking the response rates in each state over several months of data collection, an additional sample of SFAs was selected based on the number of completed surveys needed in states where the targets had not yet been met.

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\* It was not necessary to establish a separate target completion rate for the national sample because the sum of the state-level targets was larger than that needed to provide precise national estimates. In some of the smaller states, it was necessary to include all SFAs in the sample.

The final KITS national sample was defined as the 3,372 eligible SFAs that completed questionnaires as of Nov. 20, 2012. Although this sample size was more than adequate for national estimates, the field period was kept open longer because a few states had not met their sample size requirements. By Dec. 7, 2012, all states had reached the targeted number of completions needed for the state-level analyses. The final weighted response rate for the national sample was 54.3 percent (Table C.1).<sup>\*</sup> More details on the national sample and the state sample sizes and response rates are provided in Tables C.2 through C.4.

Table C.1.  
Sample Sizes and Response Rates for KITS National Report

	Number of sample SFAs released	Number of sample SFAs eligible	Number of sample SFAs completed	Response rates (%)	
				Unweighted	Weighted
<b>KITS national sample</b>	5,999	3,825	3,372	57.1	54.3

Source: Kitchen Infrastructure and Training for Schools Survey, 2012  
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Mathematica’s statisticians computed sampling weights to make the samples of respondents more representative of the target populations: all public SFAs and SFAs in each state. Applying weights to the data helps to reduce the potential for bias that sometimes occurs when subgroups of SFAs (such as those of different sizes) are over- or under-sampled relative to their actual population proportion, or when sample members do not respond to the survey. An analysis determined whether characteristics associated with nonresponse were also related to survey responses, and the weights were adjusted accordingly. The final weights used for analysis accounted for unequal selection probabilities, the two rounds of sample release, and potential nonresponse bias.

## Sample design

KITS was designed to be representative of public SFAs at the national and state levels. The target population for the KITS study included public SFAs in all 50 states and the District of Columbia. The sampling frame was a file of all public SFAs participating in the National School Lunch Program derived from the school year 2010-11 School Food Authority Verification Summary Report (Form Food and Nutrition Service-742). There were 14,837 public SFAs included in the sample frame.

## Stratification

This study employed a stratified random sampling approach. SFAs with equal probability within strata (or levels), defined based on geography and size, were selected. The first level of stratification was the state. Within a state,

<sup>\*</sup> Unweighted response rates measure the proportion of the sample that resulted in usable information for analysis and are useful in gauging the results of the interviewing effort. Weighted response rates, on the other hand, are used to estimate a survey’s sample coverage (the proportion of the population covered by the responding sample).

we defined up to four strata, including: (1) first-level certainty (*1-cert*),\* (2) second-level certainty (*2-cert*),\* and either (3) large and small<sup>†</sup> or (4) noncertainty (*noncert*). The noncert stratum combined SFAs that would have fallen into the large and small stratum, except that the number of SFAs allocated to the large and small stratum would have been fewer than nine. Overall, we formed 161 sampling strata nationwide.

## Sample allocation and selection

To allocate the sample across the states, the study team first determined the target number of completed questionnaires—that is, the number needed in each state to obtain a 10 percent margin of error at the 95 percent confidence level for estimates presented in the reports.<sup>‡</sup> The state-specific targets were based on a reasonable assumption of the design effects. The total sample size to be selected for a state was calculated by dividing the target number of completes by a conservative completion rate (50 percent). This state-level sample size was allocated to strata in that state/region such that: (1) all SFAs in the 1-cert and 2-cert strata were included, and (2) the remaining sample was allocated to the other strata (large and small, noncertainty) in proportion to its share of the total measure of size (MOS)<sup>§</sup> for the state. Seven of the smaller states had only one stratum (1-cert); thus, all public SFAs in those states were included in the sample.

To ensure that the sampling process was as efficient as possible, the total sample size for each state was adjusted using a less conservative completion rate. Thus, the initial sample sizes were calculated by dividing the target number of completes by a completion rate of 75 percent. Then, the state-level sample size was distributed across each stratum within that state such that SFAs in the 1-cert stratum were all released, and the remaining sample size was allocated in proportion to the initial sample sizes of other strata. Using this approach, the total size of the initial sample release (release 1) across all states was set at 4,635 SFAs. SFAs were randomly sampled from the total sample to be part of this first release for obtaining contact information and data collection. Those SFAs were flagged as the “main” sample, while the SFAs not sampled for the first release were flagged as the “alternate” sample.

About halfway through the data collection period, after tracking response rates in each state, additional sample was released in states at risk of not meeting (or coming close to) their targets. Alternates were selected randomly within each stratum to meet the target number of completes in each state.<sup>||</sup> A total of 1,364 additional SFAs from the alternate sample were included in the second sample release (release 2). The total sample size across all states and the two sample releases was 5,999 SFAs.

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\* The first-level certainty stratum included SFAs with a measure of size large enough that, if we were using probability proportional to size (PPS) sampling, would be certain to be sampled given a sample size and release based on the most optimistic assumptions about response rates. The second-level certainty stratum included those that would be selected with certainty using PPS sampling if all reserve sample was released.

† The large and small stratum was defined based on the MOS. The definition varied from state to state.

‡ Alternatively, this can be stated as a two-sided 95 percent confidence interval of plus or minus 10 percentage points.

§ In most instances, we used the number of schools provided in the Food and Nutrition Service-742 file as the MOS. However, we found that some of the data were not reasonable. For example, for some SFAs, the number of students per school was one. Therefore, we either obtained an MOS from the National Center for Education Statistics (NCES) 2009-2010 Common Core of Data (CCD), or imputed the MOS, for 51 SFAs where the number of students per school was considered too small (fewer than 11) and for 63 SFAs where the ratio of students per school was considered too large (greater than 1,600).

|| This was done by (1) assigning a random number to each alternate, uniformly between 0 and 1; (2) sorting the SFAs in each stratum by those random numbers, from smallest to largest; and (3) releasing SFAs in order starting from the one with the smallest number until we obtained the desired size of the release (number of SFAs) in that stratum.

## Data collection

Several advance activities were conducted to notify the Food and Nutrition Service's regional offices about the study, engage state child nutrition, or CN, directors, and gain access to SFA directors. In May 2012, project staff emailed regional office liaisons to introduce the study and request their support for gathering SFA directors' contact information from state CN directors. One week later, emails were sent to the state CN directors to introduce the study, request contact information for the sampled SFAs in their state, and ask that they inform these SFAs about the study and encourage them to participate.

Reminder emails were sent to nonresponding CN directors at the end of May 2012, and SFA contact information was received from all 50 states and the District of Columbia by August. Project staff reviewed and edited contact information as needed and noted SFA closures, mergers, and other anomalies to prepare a complete sample contact list to use for the initial mailing to SFAs. Twenty-one SFAs that had closed or merged were replaced with SFAs from the alternate sample.

Data for the KITS study were collected between August and December 2012 (a total of 17 weeks). The initial survey materials were mailed to SFA directors (or another staff member who had primary responsibility for making decisions about the types of equipment and training needed to implement the updated meal requirements). The mailing included a letter inviting the SFA director to participate in the study, a colorful flyer with the Web address and instructions for accessing the online questionnaire, a study fact sheet, and an endorsement letter from the School Nutrition Association.

Both email and telephone reminders were used to encourage participation and maximize response rates. Up to eight email reminders, each containing a link to the online survey, were sent weekly to nonrespondents after the initial mailing. Potential respondents had been identified by CN directors using state databases that did not always have the most up-to-date contact information; therefore, telephone follow-up was needed. Several rounds of follow-up calls were made to nonresponding SFAs by trained telephone interviewers, both to identify the most appropriate respondent and to obtain or verify email addresses.<sup>\*</sup> Because the questionnaire was designed for self-administration, telephone interviewers first encouraged respondents to complete it online rather than over the telephone. However, if a respondent requested or if it appeared that telephone administration was necessary to ensure completion, telephone interviewers used this mode. A total of 133 questionnaires (4 percent of responses) were completed over the telephone.

To keep to the schedule for the KITS national report, and because the sample size was more than adequate to produce national estimates, the final national sample was defined as the 3,372 eligible<sup>†</sup> SFAs that completed questionnaires as of Nov. 20, 2012. We extended the field period by about two weeks because a few states had not met their sample size targets. As state targets were met, email reminders were stopped and telephone interviewers ceased calls to SFAs in those states. By Dec. 7, 2012, all states had reached the targeted number of completes needed for state-level analysis. Questionnaires completed by an additional 87 SFAs between Nov. 21 and Dec. 7, 2012 were included in their respective state samples.<sup>‡</sup>

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\* Throughout the field period, we contacted approximately 1,000 potential respondents, sending survey materials electronically to both new SFA directors and respondents with corrected email addresses.

† A sampled SFA was eligible for the study if it (1) had a food service operation, (2) participated in the NSLP in SY 2012-13, (3) had at least one public school, and (4) was not a stand-alone pre-kindergarten or Head Start program; a jail, prison, or juvenile detention center; or merged with another SFA.

‡ The additional two weeks of data collection yielded completed surveys from one to 13 SFAs across 35 states; these cases would have had little effect on the national estimates if they were included in the national sample.

## Response rates

Two sets of response rates (unweighted and weighted) were computed for the KITS study:

- Response rates for the national sample of 3,372 SFAs (data presented in this report).
- Response rates for each of the 50 states and the District of Columbia.

To compute the response rates, we defined four terms.

1. Total number of sample SFAs released.
2. Number for which eligibility was determined.
3. Number found to be eligible to complete the survey.
4. Number of eligible SFAs that completed the survey.

By the end of the data-collection period (Dec. 7, 2012), we had released 5,999 SFAs. Among them, 3,923 had their eligibility status determined. Of those, 3,862 were eligible for the study, and 3,459 completed the survey. For the national sample (as of Nov. 20, 2012), 3,372 of the 3,862 eligible SFAs completed the survey.

Figure C.1 summarizes sample selection, eligibility determination, and final samples available for the national and state reports.

The unweighted response rate (for the nation or any state) was defined as the product of the eligibility determination rate (b/a) and the completion rate (d/c):

$$\text{Unweighted Response Rate} = \text{Eligibility Determination Rate} \times \text{Completion Rate} = (b/a) \times (d/c)$$

The final unweighted response rate for the national sample was 57.1 percent (Table C.2). The unweighted response rates for each state were computed similarly and ranged from 42.5 to 83.0 percent (Table C.3).

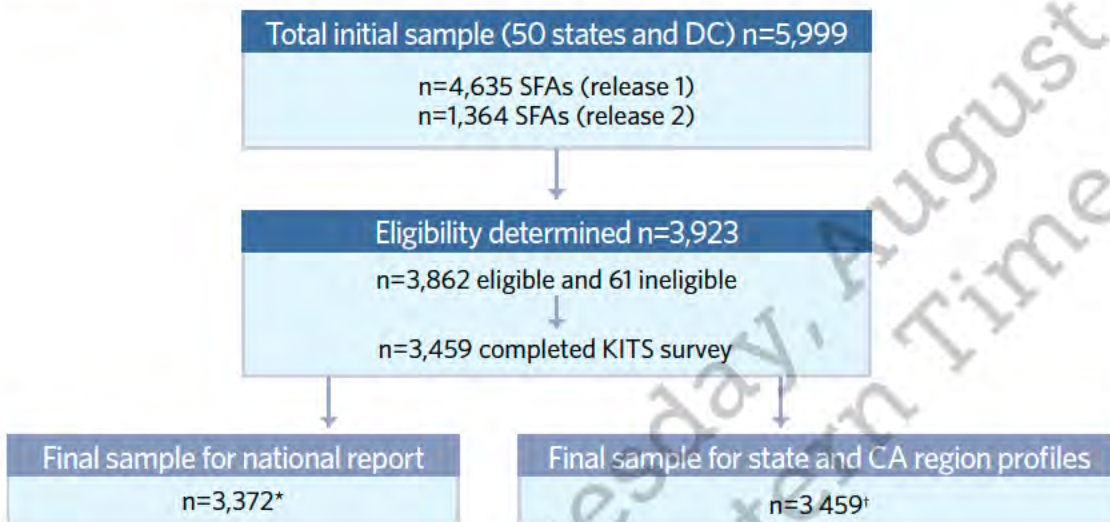
The weighted response rates were calculated by using the numbers of SFAs defined in (a), (b), (c), and (d) above and unadjusted sampling weights (the inverse of the probability of selection, as discussed in the next section).

$$\text{Weighted Response Rate} = (\text{Weighted } b / \text{Weighted } a) \times (\text{Weighted } d / \text{Weighted } c)$$

The final weighted response rate for the national sample was 54.3 percent. The weighted response rates for the states ranged from 36.9 to 83.0 percent and are reported in Table C.4.

Figure C.1.

### KITS Sample Sizes for National Report and State Profiles (Unweighted)



\* Completed KITS survey by Nov. 20, 2012

† Completed KITS survey by Dec. 7, 2012

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table C.2.

### Sample Sizes and Response Rates for National Report

(a) Released or contact	(b) Eligibility status determined	(c) Eligible	(d) Completed survey	Eligibility determination rate (%) (EDR = b/a)	Completion rate (%) (CR = d/c)	Response rate (%) (EDR*CR)
Unweighted national response rate						
5,999	3,825	3,763	3,372	63.8	89.6	57.1
Weighted national response rate						
14,816	8,953	8,778	7,885	60.4	89.8	54.3

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table C.3.

## Unweighted Sample Sizes and Response Rates by State

State	(a) Released for contact	(b) Eligibility status determined	(c) Eligible	(d) Completed survey	Eligibility determination rate (%) (EDR=b/a)	Completion rate (%) (CR=d/c)	Response rate (%) (EDR*CR)
AK	61	47	43	40	77.0	93.0	71.7
AL	105	59	58	52	56.2	89.7	50.4
AR	131	75	75	66	57.3	88.0	50.4
AZ	157	96	95	83	61.1	87.4	53.4
CA	391	276	265	238	70.6	89.8	63.4
CO	106	75	74	71	70.8	95.9	67.9
CT	107	73	73	67	68.2	91.8	62.6
DC	49	34	30	26	69.4	86.7	60.1
DE	30	24	24	20	80.0	83.3	66.7
FL	93	70	69	69	75.3	100.0	75.3
GA	112	73	73	68	65.2	93.2	60.7
HI	26	25	22	19	96.2	86.4	83.0
IA	142	94	94	90	66.2	95.7	63.4
ID	98	76	75	64	77.6	85.3	66.2
IL	192	118	116	100	61.5	86.2	53.0
IN	124	84	81	75	67.7	92.6	62.7
KS	115	83	83	75	72.2	90.4	65.2
KY	121	81	81	71	66.9	87.7	58.7
LA	88	56	56	52	63.6	92.9	59.1
MA	62	105	105	91	64.8	86.7	56.2
MD	26	21	20	18	80.8	90.0	72.7
ME	122	78	73	66	63.9	90.4	57.8
MI	177	98	97	86	55.4	88.7	49.1
MN	153	102	101	89	66.7	88.1	58.7
MO	145	92	92	88	63.4	95.7	60.7
MS	105	72	71	71	68.6	100.0	68.6

Continued on next page

State	(a) Released for contact	(b) Eligibility status determined	(c) Eligible	(d) Completed survey	Eligibility determination rate (%) (EDR=b/a)	Completion rate (%) (CR=d/c)	Response rate (%) (EDR*CR)
MT	117	90	90	80	76.9	88.9	68.4
NC	108	76	75	67	70.4	89.3	62.9
ND	133	84	83	60	63.2	72.3	45.7
NE	101	86	86	82	85.1	95.3	81.2
NH	87	49	49	41	56.3	83.7	47.1
NJ	180	102	100	75	56.7	75.0	42.5
NM	100	65	64	60	65.0	93.8	60.9
NV	28	23	23	19	82.1	82.6	67.9
NY	171	89	89	81	47.2	91.0	47.4
OH	173	103	102	95	59.5	93.1	55.5
OK	167	98	97	83	58.7	85.6	50.2
OR	138	79	79	63	57.2	79.7	45.7
PA	169	95	95	82	56.2	86.3	48.5
RI	44	30	29	22	68.2	75.9	51.7
SC	86	55	51	51	64.0	100.0	64.0
SD	117	83	82	71	70.9	86.6	61.4
TN	83	67	67	67	80.7	100.0	80.7
TX	157	103	103	92	65.6	89.3	58.6
UT	75	57	55	49	76.0	89.1	67.7
VA	97	68	68	61	70.1	89.7	62.9
VT	134	72	68	65	53.7	95.6	51.4
WA	152	95	95	80	62.5	84.2	52.6
WI	141	92	92	88	65.2	95.7	62.4
WV	56	42	41	39	75.0	95.1	71.3
WY	47	33	33	31	70.2	93.9	66.0

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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Table C.4.

## Weighted Sample Sizes and Response Rates by State

State	(a) Weighted released for contact	(b) Eligibility status determined	(c) Weighted eligible	(d) Weighted completed survey	Weighted eligibility determination rate (%) (EDR=b/a)	Weighted completion rate (%) (CR=d/c)	Weighted response rate (%) (EDR*CR)
AK	61	47	43	40	77.0	93.0	71.7
AL	132	72	70	63	54.7	90.5	49.5
AR	252	134	134	118	53.0	88.0	46.7
AZ	369	216	209	181	58.5	86.2	50.4
CA	1,005	682	652	603	67.9	92.5	62.8
CO	181	119	118	115	65.7	97.5	64.0
CT	163	109	109	103	66.5	94.5	62.9
DC	49	34	30	26	69.4	86.7	60.1
DE	30	24	24	20	80.0	83.3	66.7
FL	141	100	96	96	70.9	100.0	70.9
GA	218	122	122	107	55.9	87.8	49.1
HI	26	25	22	19	96.2	86.4	83.0
IA	368	239	239	225	64.9	94.2	61.1
ID	126	98	96	82	77.8	85.4	66.4
IL	851	554	534	453	65.0	84.8	55.2
IN	334	220	197	180	65.9	91.6	60.4
KS	286	205	205	185	71.9	90.3	64.9
KY	174	113	113	97	65.1	85.4	55.6
LA	88	56	56	52	63.6	92.9	59.1
MA	367	245	245	213	66.6	86.9	57.9
MD	26	21	20	18	80.8	90.0	72.7
ME	172	105	96	85	60.9	88.6	54.0
MI	720	349	338	318	48.4	94.1	45.6
MN	475	309	302	265	65.1	87.8	57.1
MO	590	329	329	313	55.7	95.3	53.1
MS	154	103	100	100	66.9	100.0	66.9

Continued on next page

State	(a) Weighted released for contact	(b) Eligibility status determined	(c) Weighted eligible	(d) Weighted completed survey	Weighted eligibility determination rate (%) (EDR=b/a)	Weighted completion rate (%) (CR=d/c)	Weighted response rate (%) (EDR*CR)
MT	222	169	169	149	75.9	88.4	67.2
NC	158	103	101	91	65.2	90.7	59.2
ND	176	111	109	78	62.7	71.5	44.8
NE	247	206	206	194	83.3	94.6	78.8
NH	87	49	49	41	56.3	83.7	47.1
NJ	562	282	265	195	50.2	73.6	36.9
NM	120	77	75	70	64.2	92.3	59.3
NV	28	23	23	19	82.1	82.6	67.9
NY	700	319	319	298	45.6	93.5	42.6
OH	928	522	511	490	56.2	95.9	53.9
OK	541	295	292	244	54.5	83.6	45.6
OR	190	112	112	92	58.8	82.2	48.4
PA	624	353	353	294	56.6	83.3	47.1
RI	44	30	29	22	68.2	75.9	51.7
SC	86	55	51	51	64.0	100.0	64.0
SD	178	120	119	103	67.4	86.5	58.3
TN	143	121	121	121	84.8	100.0	84.8
TX	1,177	771	771	681	65.5	88.3	57.9
UT	79	60	58	52	76.3	89.0	67.9
VA	138	89	89	80	64.6	89.2	57.6
VT	203	109	103	99	53.8	96.2	51.7
WA	285	193	193	172	67.7	89.2	60.3
WI	437	280	280	263	64.0	93.9	60.1
WV	56	42	41	39	75.0	95.1	71.3
WY	47	33	33	31	70.2	93.9	66.0

Source: Kitchen Infrastructure and Training for Schools Survey, 2012

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## Data cleaning and coding

Data were cleaned to check for out-of-range values, valid identification numbers, duplicate entries, and inconsistent responses within the questionnaire. For example, in answering the equipment questions, some respondents said they needed a certain type of equipment but then typed “0” as the number of pieces needed. In this case, the cleaning rule resulted in recoding the “yes” response to a “no,” assuming that the zero was correct and the respondent did not need that particular piece of equipment. Trained staff coded open-ended responses. Project staff reviewed coded responses for accuracy.

## Data analysis

Sampling weights were used to adjust all estimates for unequal selection probabilities and nonresponse associated with known characteristics of the SFAs. Thus, the data presented in this report can be generalized to all public SFAs. Likewise, the KITS data for individual states (reported separately) can be generalized to all public SFAs in those states and regions, respectively.

Descriptive analyses of all data collected in the KITS survey were conducted. The focus was on the proportions of SFAs that reported their perceived readiness for and barriers to meeting the updated lunch requirements, need to replace or add new equipment or upgrade kitchen infrastructures, and need to train staff. Analyses of the estimated costs of reported equipment needs included tabulations of total costs; the median, range, and distribution of costs per SFA; and the distribution and mean costs per school. Data on distributions of SFA characteristics from the sample frame were also tabulated.

## Subgroup analysis

Key findings were examined for statistically significant differences among subgroups of SFAs defined as follows:

- **SFA size.** SFAs were grouped into five categories based on data from the Food and Nutrition Service-742 file on the number of enrolled students: very small (fewer than 1,000), small (1,000 to 2,499), medium (2,500 to 9,999), large (10,000 to 24,999), and very large (25,000 or more).
- **Community type.** Survey respondents were asked to characterize the location of “the majority of schools” in their SFAs as urban, suburban, or rural.
- **Food and Nutrition Service region.** The Food and Nutrition Service administers the National School Lunch Program through seven regions across the United States: Northeast, Mid-Atlantic, Southeast, Midwest, Southwest, Mountain Plains, and Western region. SFAs were grouped accordingly.
- **Poverty category.** SFAs were categorized into three groups based on data from the Food and Nutrition Service-742 on the percentage of enrolled students approved for free or reduced-price meals:\* low (less than 40 percent approved for free or reduced-price meals), intermediate (40 to 60 percent approved for free or reduced-price meals), and high (greater than 60 percent approved for free or reduced-price meals).

We used t tests to determine whether there were statistically significant differences in estimates within subgroups of SFAs. Each group of SFAs was compared with all other SFAs combined. For example, SFAs within

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\* In the NSLP and School Breakfast Program, children from families with household incomes at or below 130 percent of the federal poverty threshold are eligible to receive free meals; those from households with incomes between 131 and 185 percent of the federal poverty level are eligible to receive meals at a reduced price.

the high-poverty category were compared with low- and intermediate-poverty SFAs combined.\* Differences were considered statistically significant at the  $\alpha = .05$  level.

All statistical procedures were conducted using Stata Statistical Software (Release 12, StataCorp LP, College Station, TX, 2011). In estimating the standard errors of the estimates for subgroups, we accounted for the complex sample design (stratification), the use of sampling weights, and the finite population correction factor, or FPC. We applied the FPC to account for the fact that a large proportion of the target population was sampled (to allow for representative estimates in individual states). Standard errors were computed by taking a weighted sum of the variances from each sampling stratum.

Embargoed until Tuesday, August 18, 2015, 12:01am Eastern Time

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\* Similarly, for the individual state reports, the state was compared with all other states combined.

## Appendix D: Strengths and limitations of the study

In drawing conclusions from the KITS study, both its strengths and limitations should be considered. The major strengths of this study lie in its large representative sample of SFAs, the techniques the study team employed to create a robust survey, and the timeliness of the findings. KITS was designed to be representative of public SFAs at both the national and state levels.\* The state-level samples allowed the study to develop and disseminate individual state profiles. Efforts were made during data collection to ensure that the targeted number of SFA directors (or their designees) responded from all 50 states and the District of Columbia. Although the overall response rate for the national sample was 54 percent (57 percent unweighted), the sample was weighted to make it characteristic of the full population and to account for potential nonresponse bias associated with known characteristics of the SFAs. The weighted estimates presented in this report can thus be generalized to all public SFAs.† The sample was larger than needed to provide precise national estimates.

The KITS survey was developed with the assistance of a consultant who provided important substantive expertise. She is a former SFA director, was a member of the Institute of Medicine committee that developed recommendations for the updated meal patterns and nutrient standards, and consults with SFAs across the country on creating action plans to enhance the nutritional quality of school meals and meet operational goals. In addition, the study team assembled an eight-person panel with expertise in child nutrition and school food service to help define the essential equipment, infrastructure, and types of staff training that SFAs might need to meet the updated meal requirements and to frame the questions appropriately. Two versions of the questionnaire were pilot-tested with SFA directors to help ensure that the questions were clear and that the survey would not be overly burdensome to complete.

The relevance and timeliness of the findings are also major strengths of the KITS study. It provides policymakers, school food service operators, and other stakeholders with concrete feedback on SFAs' experiences in implementing the updated meal requirements at the time the initial changes were being made. Information about SFAs' needs for equipment, infrastructure, and training is directly relevant to current and future endeavors to identify additional funding for the SFAs and schools that most need it. Moreover, the study makes a unique contribution to our understanding of SFAs' needs as they implement the updated requirements so that USDA, Congress, and others can address them. One limitation of the study is that findings related to equipment needs are based on respondents' perceptions and projected average costs, rather than a standardized needs assessment. The questionnaire asked respondents to review a list of equipment and to indicate the items needed as well as their "best estimates" of the number of pieces needed across all kitchens in their SFA. Some SFAs may have overestimated or underestimated their actual needs. In addition, because the equipment list did not include detailed specifications (such as size or capacity), and because costs vary due to factors such as state taxes, delivery costs, and discounts, professional judgment was used to determine representative costs. Although it is difficult to predict the direction of any resulting bias in the cost estimates, the estimates could be high if, despite instructions to the contrary, SFAs identified some equipment that "would be nice to have" but was not essential to meeting the updated meal requirements.

A second limitation relates to the timing of the data collection period. The survey was fielded shortly after the start of SY 2012-13, when the updated requirements for school lunches first went into effect. This was an extremely busy time for SFA directors and, to avoid the added burden of completing a survey, some directors

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\* The study also drew a special sample within the state of California to be able to report KITS findings for each of the state's three regions: Central, North, and South.

† Assumes that the weights corrected for potential bias and the survey data provided unbiased estimates.

might have delegated the survey to less-knowledgeable staff. This could explain, in part, the relatively large proportion of respondents who did not identify themselves as SFA directors (about 30 percent) and some of the “don’t know” responses to questions about equipment and training budgets and missing data on infrastructure needs. On the other hand, the subject matter of the KITS survey might have been perceived as particularly salient to SFA directors once they had begun to implement the updated requirements; the timing of the study could have led to a higher response rate than might have been realized if the survey had been fielded earlier.

Nearly all SFAs had started making changes to meet the updated meal requirements by the time they completed the survey. However, there was a great deal of variability on when SFAs started to make these changes. More than half of all SFAs (54 percent) began making changes before January 2012, when the final rule was published. Respondents from these SFAs may have been in a better position to assess their equipment, infrastructure, and training needs than those that made changes after the final rule was published or at the start of SY 2012-13. If the study is replicated at a later time, results may differ from those reported here because SFAs will be further along in implementing changes to meet the requirements.

## Appendix E: KITS questionnaire

### Mathematica Policy Research

#### Kitchen Characteristics

1. Please indicate the number of schools (by level and total) served by your school nutrition program. Please use the same definitions for level of school as registered with the State Child Nutrition agency for the National School Lunch Program. Do not include any stand-alone Pre-Kindergarten or Head Start programs. Count each school in one category only.

	Number of
a. Elementary schools	<input type="text"/>
b. Middle or junior high schools	<input type="text"/>
c. High schools	<input type="text"/>
<b>TOTAL NUMBER OF SCHOOLS SERVED BY YOUR SCHOOL NUTRITION PROGRAM</b>	<input type="text"/>

2. Thinking about all the schools in your School Food Authority (SFA) or district, would you say the **majority** of your schools are ...

*Select one only*

- 1  Located in urban areas,
- 2  Located in suburban areas, or
- 3  Located in rural areas?

3. Which of the following best describes your food service management approach?

*Select one only*

- 1  A self-operated program, or
- 2  A program contracted (all or part) to a food service management company

4. Please indicate the types of food production systems in use in your SFA/district and the number of each. (Your best estimate at the number is fine.) *Select one per row*

Type of production systems used in your SFA/district	Present in SFA/district		Number of each within SFA/district
	Yes	No	
<b>a. Central production facility or commissary</b> Meals are prepared in central facility (not a school) and shipped to schools, either pre-portioned or in bulk	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<b>b. On-site production kitchen</b> Meals are prepared at a school and sent to other schools in the district as well as served at own school	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<b>c. Finishing or satellite kitchens</b> Meals are prepared in a different location and sent to the school kitchen where meals are served. Meals may or may not need to be heated or portioned	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<b>d. Full-service kitchens</b> Meals are prepared and served in the school kitchen. Do not include production kitchen(s) already counted in 4b	<input type="radio"/>	<input type="radio"/>	<input type="text"/>

5. IF ANY FINISHING/SATELLITE KITCHENS: How many of your finishing or satellite kitchens are served by central production facilities/commissaries and how many by on-site production kitchens at other schools?

	Number
<b>a. Number of finishing/satellite kitchens served by central production facilities/commissaries</b>	<input type="text"/>
<b>b. Number of finishing/satellite kitchens served by on-site production kitchens at other schools</b>	<input type="text"/>

### Menu Planning

6. Who planned your menus for the 2012-13 school year? *Select all that apply*

- 1  You
- 2  Someone else on your staff, such as a dietitian, kitchen manager, lead cook, or an area supervisor
- 3  Someone at the food service management company
- 4  An outside consultant
- 5  A food vendor
- 6  Other (PLEASE SPECIFY) \_\_\_\_\_

7. Have any of your schools participated in or been recognized by any of the following health and nutrition award programs? *Select one per row*

	Yes	No
a. Alliance for a Healthier Generation	<input type="radio"/>	<input type="radio"/>
b. Team Nutrition	<input type="radio"/>	<input type="radio"/>
c. Healthier US School Challenge (HUSCC) award winner	<input type="radio"/>	<input type="radio"/>
d. State-based nutrition or health promotion award program	<input type="radio"/>	<input type="radio"/>
e. School Nutrition Association (SNA) District of Excellence	<input type="radio"/>	<input type="radio"/>
f. Other (PLEASE SPECIFY) _____	<input type="radio"/>	<input type="radio"/>

### Planning for New Meal Requirements

As you are aware, new meal pattern and nutrient requirements go into effect starting in the 2012-13 school year. SFAs/districts certified as meeting the new meal requirements for lunches are eligible to receive an additional 6-cent meal reimbursement. Some people started planning for the changes a while ago, while others may just now be starting to think about what needs to be done to meet and implement the new requirements.

8. Which of the following best describes how close you feel your SFA/district is to being able to meet the new meal pattern and nutrient requirements **as specified for lunch** in the 2012-13 school year? *Select one only*
- 1  We will be able to meet all or nearly all of the lunch requirements by the start of the 2012-13 school year
  - 2  We expect to be able to meet the lunch requirements by the end of the 2012-13 school year
  - 3  It will likely take us until the 2013-14 school year or beyond to meet the lunch requirements
  - 4  I am not sure when we'll be able to meet the lunch requirements
9. Which of the following best describes when you began making changes in preparation for implementing the new meal requirements for lunch? *Select one only*
- 1  Started making changes prior to proposed regulations (before January 2011)
  - 2  Started making changes when regulations were first proposed (between January 2011 and January 2012)
  - 3  Started making changes after final regulations were published (after January 2012)
  - 4  Have not yet made changes

10. Which of the following do you consider to be barriers to being able to fully implement the new meal requirements for lunch by the start of the 2012-13 school year? *Select one per row*

Barrier to fully implementing by start of 2012-13 school year	Yes	No
a. Understanding new meal requirements	<input type="radio"/>	<input type="radio"/>
b. Purchasing foods to meet the new meal requirements (cost and availability)	<input type="radio"/>	<input type="radio"/>
c. Needing additional staff or labor hours	<input type="radio"/>	<input type="radio"/>
d. Training of staff	<input type="radio"/>	<input type="radio"/>
e. Needing additional equipment	<input type="radio"/>	<input type="radio"/>
f. Training of staff	<input type="radio"/>	<input type="radio"/>
g. Other (PLEASE SPECIFY)	<input type="radio"/>	<input type="radio"/>

11. DISPLAY BARRIERS SELECTED IN Q.10.

And how would you rank each of the barriers? Please enter a "1" next to what you consider the biggest barrier to your SFA/district being able to fully implement the new meal requirements for lunch. Enter a "2" next to what you consider to be the second greatest barrier, and continue until all barriers are assigned a ranking.

Barrier to fully implementing by start of 2012-13 school year	Ranking
a. Understanding new meal requirements	<input type="text"/>
b. Purchasing foods to meet the new meal requirements (cost and availability)	<input type="text"/>
c. Needing additional staff or labor hours	<input type="text"/>
d. Training of staff	<input type="text"/>
e. Needing additional equipment	<input type="text"/>
f. Needing to remodel or upgrade kitchens	<input type="text"/>
g. Other (PLEASE SPECIFY)	<input type="text"/>

12. There are a number of different ways that SFAs/districts might change their production approach to meet the new meal requirements. For each of the following, please indicate if this is a change your SFA/district made or expects to make in order to implement the new meal requirements for lunch.

	Yes	No
a. Move to central facility/commissary or production kitchen(s)	1 <input type="radio"/>	0 <input type="radio"/>
b. Implement standard recipes and/or work methods	1 <input type="radio"/>	0 <input type="radio"/>
c. Move to more cooking from scratch	1 <input type="radio"/>	0 <input type="radio"/>
d. Move to buying ready-to-eat foods from vendors	1 <input type="radio"/>	0 <input type="radio"/>
e. Other (PLEASE SPECIFY) _____	1 <input type="radio"/>	0 <input type="radio"/>

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## Training

13. Which of the following types of training do you feel are essential for food service staff, including yourself, in order to successfully operate your school nutrition program, including implementing the new meal requirements? *Select all staff that apply for each row*

Types of training	Training needed for ...			Training not needed in this area
	Director or food service management team	Kitchen or cafeteria managers	Cooks or front-line servers	
a. Developing or modifying menus	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
b. Modifying and/or standardizing recipes	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
c. Revising food purchasing specifications	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
d. Assessing equipment and infrastructure needs	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
e. Purchasing new equipment	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
f. Using/operating new equipment	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
g. Understanding compliance with meal pattern and nutrient requirements	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
h. Basic cooking skills, including hands on training and standardized work methods	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
i. Basic nutrition training	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
j. Basic food safety/ServSafe training	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
k. Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
l. Completing production records	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
m. Marketing and promoting the new meal requirements	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>
n. Other (PLEASE SPECIFY) _____	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>

14. Does your SFA/district have a budget for staff development and training?

1  Yes

0  No

d  Don't know

GO TO Q.16

15. IF TRAINING BUDGET: Thinking about your budget allocated for staff development and training and the amount of training needed for your staff to be able to implement the new meal requirements, would you say your training budget should be sufficient to meet ...

*Select one only*

1  All your training needs,

2  Some of your training needs,

3  Only a few of your training needs, or

4  None of your training needs?

16. How much of the new meal requirements training do you expect the state will provide (or has already provided)?

*Select one only*

1  All your training needs,

2  Some of your training needs,

3  Only a few of your training needs, or

4  None of your training needs?

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2015, 12:01am Eastern Time

## Preparing Meals

As you are aware, there are a number of changes in the new meal requirements that may have an impact on your SFA's/district's equipment needs. For each of the following changes in the meal pattern and nutrient requirements for lunch, please indicate the adequacy of your equipment in terms of receiving and storage, production, holding and transporting, and the meal service area.

IF CENTRAL PRODUCTION FACILITY/COMMISSARY, PLEASE ANSWER Q.17 AND Q.18.

17. First thinking only about your **central production facility/commissary**, how would you characterize your SFA's/district's equipment needs as they relate to ...

Select one per row

	Adequate either as is or using a workaround	Inadequate but making do with a workaround	Inadequate and no workaround
<b>More fruit and vegetable items on daily menus</b>			
a. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
b. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
c. Holding and transportation	1 <input type="radio"/>	0 <input type="radio"/>	0 <input type="radio"/>
d. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>Greater variety and forms of fruits and vegetables</b>			
e. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
f. Preparation (including assembly and packaging)	0 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
g. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
h. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>At least half of grains to be whole grain rich across the week</b>			
i. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
j. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
k. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
l. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>Differing portion sizes by grade groups</b>			
m. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
n. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
o. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
p. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>New calorie ranges, saturated fat, trans fat, and sodium targets</b>			
q. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
r. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
s. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
t. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>

18. Thinking now about specific pieces of equipment, please indicate whether or not you would need a new or additional piece of this equipment **at any central production facility/commissary** to meet the new meal requirements for lunch and, if so, how many pieces of the equipment are required. Please think only about what you really need, as opposed to what would be nice to have.

	Piece of equipment needed		Number of this equipment required <i>(Your best estimate is fine)</i>
	Yes	No	
<b>Receiving and storage</b>			
a. Central production facility or commissary	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
b. Scales, large or floor	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
c. Dry storage shelving units	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
d. Walk-in refrigerators	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
e. Walk-in freezers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Production</b>			
f. Fruit and vegetable preparation sinks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
g. Stainless steel work tables	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
h. Slicers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
i. Automatic can openers	<input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
j. Food processors	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
k. Vertical cutters	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
l. Mixers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
m. Sets of knives with cutting boards	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
n. Roll-in convection oven	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
o. Rolling sheet pan and steam table racks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
p. Steam jacketed kettles with pumps/filler	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
q. Blast or tumble chillers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
r. Conveyor/wrapper system with containers configured to menu	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
s. De-nester and fillers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
t. Meal baskets and dollies	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Holding and transportation</b>			
u. Walk in cooler (separate from receiving/storage walk-in refrigerators)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
v. Hot holding mobile carts	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
w. Non-refrigerated trucks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
x. Refrigerated trucks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Administrative</b>			
y. Computer	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
z. Software programs	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
aa. Other (PLEASE SPECIFY) _____	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>

ASK ALL: [INSERT (other) IF SFA HAS CENTRAL FACILITY]

19. Focusing on all your (other) production systems and kitchen types combined—that is, any production kitchens that prepare meals for other schools, finishing or satellite kitchens, and full-service kitchens that prepare their own meals—how would you characterize your SFA's/district's equipment needs as they relate to ...

Select one per row

	Adequate either as is or using a workaround	Inadequate but making do with a workaround	Inadequate and no workaround
<b>More fruit and vegetable items on daily menus</b>			
a. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
b. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
c. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
d. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>Greater variety and forms of fruits and vegetables</b>			
e. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
f. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
g. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
h. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>At least half of grains to be whole grain rich across the week</b>			
i. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
j. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
k. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
l. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>Differing portion sizes by grade groups</b>			
m. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
n. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
o. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
p. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
<b>New calorie ranges, saturated fat, trans fat, and sodium targets</b>			
q. Receiving and storage	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
r. Preparation (including assembly and packaging)	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
s. Holding and transportation	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>
t. Meal service area	1 <input type="radio"/>	2 <input type="radio"/>	0 <input type="radio"/>

20. Thinking now about specific pieces of equipment, please indicate whether or not you would need a new or additional piece of this equipment in any **production kitchens, satellite or finishing kitchens, or full-service kitchens** to meet the new meal requirements for lunch and, if so, how many pieces of the equipment are required. Please think only about what you really need, as opposed to what would be nice to have.

	Piece of equipment needed		Number of this equipment required (Your best estimate is fine)
	Yes	No	
<b>Receiving and storage</b>			
a. Platform and hand trucks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
b. Scales	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
c. Dry storage shelving units	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
d. Dunnage racks	<input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
e. Basket dollies	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
f. Walk-in refrigerators	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
g. Walk-in freezers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Production</b>			
h. Fruit and vegetable preparation sinks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
i. Stainless steel work tables	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
j. Utility sinks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
k. Slicers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
l. Can openers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
m. Food processors	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
n. Mixers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
o. Sectionizers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
p. Sets of knives with cutting boards	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
q. Rolling (mobile) sheet pan or steam table pan racks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
r. Utility carts	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
s. Convection ovens (double deck)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
t. Steam-jacketed kettles	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
u. Tilting skillet	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
v. Combi ovens	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
w. Convection (pressureless) steamer	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
x. Pressure steamer	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>

	Piece of equipment needed		Number of this equipment required <i>(Your best estimate is fine)</i>
	Yes	No	
y. Re-thermalization and holding ovens	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
z. Commercial microwave	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
aa. Blast chillers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
bb. Reach-in freezers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
cc. Reach-in refrigerators	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
dd. Hot holding cabinets	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ee. Conveyor/wrapper system with containers configured to menu	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ff. Meal baskets and dollies	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Holding and transportation</b>			
gg. Walk-in cooler (separate from receiving/storage walk-in refrigerator)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
hh. Hot and/or cold transport containers or carts	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ii. Non-refrigerated trucks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
jj. Refrigerated trucks	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Meal serving area</b>			
kk. Cold food merchandisers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ll. Utility serving counters (5-foot length)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
mm. Mobile milk coolers	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
nn. Mobile utility serving counter (5-foot length)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
oo. Hot food serving line counters (4-5 wells)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
pp. Cold food serving line counters (5 foot pan)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
qq. Salad or fruit/vegetable bar (free-standing, self serve)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
rr. Student meal trays	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ss. Steam table pans (stainless steel or plastic)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
tt. Serving portion utensils	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
<b>Administrative</b>			
uu. Computer	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
vv. Software programs	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>
ww. Other (PLEASE SPECIFY)	1 <input type="radio"/>	0 <input type="radio"/>	<input type="text"/>

21. Does your school nutrition program have an equipment replacement and upgrade plan?
- 1  Yes  
 0  No  
 d  Don't know
22. Do you have a line item for capital equipment purchases in your annual budget? By capital we mean purchases of equipment, usually at least \$1,000, that can be depreciated over time.
- 1  Yes  
 0  No  **GO TO Q.24**  
 d  Don't know
23. IF YES: Is the budgeted amount for capital purchases adequate to purchase the equipment required to implement the new meal requirements for lunch?
- 1  Yes  
 0  No  
 d  Don't know

### Infrastructure

ASK Q.24 ONLY IF SFA HAS CENTRAL PRODUCTION FACILITY. IF NO CENTRAL PRODUCTION FACILITY, GO TO Q.25.

24. Thinking about the changes needed to implement the new meal requirements for school lunch, which of the following infrastructure changes are essential at your central production facility/commissary? Please only think about what is critical as opposed to items that would be nice to have but are not essential to meet the new meal requirements.

Does your central production facility/commissary need ... *Select one per row*

	Yes	No	Don't know
<b>More fruit and vegetable items on daily menus</b>			
a. More physical space for storage, preparation, or serving?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>
b. More electrical such as more amps, voltage, or locations of outlets?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>
c. More natural gas, such as increased pressure or location of pipes?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>
d. More plumbing, such as water supply or location of sinks and drains?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>
e. More ventilation, such as exhaust hoods or fire suppression systems?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>
f. Remodeling that would require bringing the facility up to local health department code?	1 <input type="radio"/>	2 <input type="radio"/>	d <input type="radio"/>

IF CENTRAL KITCHEN, USE 25.1 WORDING; ALL OTHERS USE 25.2.

25.1 Are the following kitchen infrastructure changes needed at any of your schools? And if so, at how many schools would the infrastructure changes be needed? Please only think about what is essential as opposed to items that would be nice to have but are not essential to meet the new meal requirements for lunch.

25.2 Thinking about the changes needed to implement the new meal requirements, are the following kitchen infrastructure changes needed at any of your schools? And if so, at how many schools would the infrastructure changes be needed? Please only think about what is essential as opposed to items that would be nice to have but are not essential to meet the new meal requirements for lunch

Are infrastructure changes needed at any school kitchens in the area of ...

	Yes	No	Don't know	Number of schools requiring infrastructure upgrade
a. More physical space for storage, preparation, or serving?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
b. More electrical, such as more amps, voltage, or locations of outlets?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
c. More natural gas, such as increased pressure or location of pipes?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
d. More plumbing, such as water supply or location of sinks and drains?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
e. More ventilation, such as exhaust hoods or fire suppression systems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
f. Remodeling that would require bringing the facility up to local health department code?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>

26. What level of financial resources do you think your local education agency (LEA) is able to allocate to make the kitchen infrastructure and remodeling changes you believe are necessary to implement the new meal requirements for school lunch? *Select one only*

- 1  All or nearly all the resources needed to upgrade kitchen infrastructure
- 2  About three-fourths of the resources needed
- 3  About half
- 4  About a quarter
- 5  Less than a quarter
- 0  None
- 4  Don't know

**GO TO Q.28**

27. IF GETTING ANY RESOURCES IN Q.26: What is your best estimate of the time frame for when kitchen remodeling would be completed? *Select one only*

- 1  During this school year (2012-13)
- 2  In the next two to three years
- 3  In the next four to 10 years
- 4  More than 10 years from now
- 4  Don't know

### Background Questions

28. What is the title of your position within the local education agency? (If you have multiple titles and one is director, please select "director") *Select all that apply*

- 1  School Food Service Director or School Nutrition Director
- 2  Area Supervisor, Area Manager, or Area Coordinator
- 3  Contract company's Food Service Manager
- 4  Kitchen/Cafeteria/Food Service Manager or Lead Cook
- 5  Business Manager
- 6  Dietitian or Nutritionist
- 99  Other (PLEASE SPECIFY) \_\_\_\_\_

29a. IF DIRECTOR, ASK: How long have you been a school food service or school nutrition director?

\_\_\_\_\_ and/or \_\_\_\_\_ **GO TO Q.30**  
YEARS MONTHS

29b. IF NOT DIRECTOR, ASK: How long have you been a [FILL FROM Q.28]?

\_\_\_\_\_ and/or \_\_\_\_\_  
YEARS MONTHS

30. Do you work for the local education agency (LEA) or a food service management company? *Select one only*

- 1  LEA
- 2  Food service management company
- 99  Other (PLEASE SPECIFY) \_\_\_\_\_

31. Which of the following credentials do you hold? *Select all that apply*

- 1  Associate degree in consumer science, food service management, baking culinary arts, etc.
- 2  Bachelor's degree in consumer science, nutrition, food service management, hotel/restaurant management, baking/culinary arts, etc.
- 3  Advanced degree in business, foods and nutrition, public health
- 4  On-the-job training
- 5  Registered dietitian
- 6  School Nutrition Specialist (SNA certified)
- 7  SNA Certified Level I
- 8  SNA Certified Level II
- 9  SNA Certified Level III
- 10  State food service certificate
- 99  Other (PLEASE SPECIFY) \_\_\_\_\_

**ANSWER Q.32a AND Q.32b IF MIDDLE RESPONSE "INADEQUATE BUT MAKING DO" TO ANY ITEM IN Q.17 OR Q.19**

32a. Earlier in the survey we asked about adequacy of equipment to meet the new meal standards, and you indicated that in some areas your equipment was inadequate to meet standards but that you were making do with a workaround ...

Could you give some examples of workarounds that you are using that, while helping you make do, are still inadequate to meet the new meal standards?

(PLEASE SPECIFY) \_\_\_\_\_

32b. Which of the following are reasons you feel your workarounds are inadequate to meet the new meal standards? *Select all that apply*

- 1  Expensive
- 2  Inefficient
- 3  Unsustainable
- 4  Can't meet increasing needs
- 5  Too labor intensive
- 99  Other (PLEASE SPECIFY) \_\_\_\_\_

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If you used this PDF version of the KITS Study questionnaire as a worksheet to collect and/or organize information about your school food authority/school district, please go to the website <https://www.kitsstudy.com> and enter your answers.

Or you can fax or mail the completed questionnaire to:

Mathematica Policy Research  
P.O. Box 2393  
Princeton, NJ 08543-2393  
Attention: Jennifer McGovern  
Fax number: 609-799-0005

**Please complete the following information:**

SFA name: _____
State: _____
Your name: _____
Email address: _____
Phone number: _____

We will contact you only if we have questions about your responses.

If you have any questions about the survey or the KITS Study, please call our toll-free study hotline at 1-855-528-4550 or send an email to the study mailbox [KITSSstudy@mathematica-mpr.com](mailto:KITSSstudy@mathematica-mpr.com).

Thank you for your interest in the KITS Study!

## Appendix F: Food service staff training topics and description

### Developing or modifying menus

*For SFA directors or food service management team:* A course on principles of menu planning for K-12 schools participating in the National School Lunch Program and School Breakfast Program. The primary focus is on planning menus to comply with the USDA meal patterns and nutrient standards for each grade group, emphasizing modifying food item specifications, recipe ingredients, portion sizes, and cooking methods. Course addresses use of cycle menus, incorporating USDA Foods, measuring customer acceptance, pre-costing of menus, evaluating culinary skill level of employees, and determining adequacy of kitchen equipment and space to handle different forms and amounts of foods.

### Revising food purchasing specifications

*For SFA directors or food service management team:* Review of USDA procurement policies and industry standards for content to include in food item specifications with emphasis on adding child nutrition (CN) specifications for the product's desired creditable component portion size as well as target calorie, saturated fat, and sodium content per serving. Related content may include pre-bid methods for evaluating different forms and brands of selected food items for nutrient composition, estimates of portion cost, and customer acceptance to more accurately write product specifications that meet desired menu goals.

### Completing applications/paperwork for additional reimbursement and Coordinated Review Effort (CRE) reviews

*For SFA directors or food service management team:* Menu certification training details state-specific procedures for the SFA to follow in submitting one week of planned lunch menus for each grade group served for state agency (or contractor designee) review and approval to receive an additional 6 cents of reimbursement per lunch. Companion workshops outline the SFA selection process and procedures to be used by the state agency in conducting menu validation reviews. Administrative review (formerly CRE/SMI) training, conducted by the state agency, describes the revisions in USDA requirements for monitoring SFA's meal program compliance every three years. Topics covered include selection of SFA and school sites, off- and on-site assessment procedures, areas of compliance to be reviewed, and required areas of corrective actions.

### Marketing and promoting the new meal requirements

*For SFA directors or food service management team:* Training to enable directors to foster student and community stakeholder support for local menu changes, as necessary, to comply with new USDA meal requirements. Content to provide technical assistance, strategies, and resources for promoting school menus in traditional media as well as social media venues. Training may also include ideas for empowering cafeteria managers to develop menu marketing aimed at students, parents, and food service staff.

### Understanding compliance with meal pattern and nutrient requirements

*For SFA directors or food service management team:* An overview of the procedures and documents to be gathered by the state agency to determine SFA compliance with meal pattern and nutrient standards for lunch and breakfast. Course addresses management staff responsibility for providing job-specific compliance training and monitoring. Topics may include food item bid specifications; documenting product nutrient values; modifying standardized recipes; staff training on menu compliance; production record requirements; serving line signage for reimbursable meal requirements; and portion control methods.

*For kitchen or cafeteria managers:* Training content to include rationale, technical knowledge, and development of skills enabling site managers to ensure that the daily menu is produced and served as planned and is compliant with the meal requirements. Content may include food ordering and receiving procedures; standardizing recipes; modifying food production methods; controlling portion sizes; training cashiers to recognize a reimbursable meal; and communicating meal components and food item selection requirements to students.

*For cooks or front-line servers:* Training to provide a brief overview of meal pattern and nutrient requirements with emphasis on explaining how an employee's job-specific tasks are critical to ensuring that the menu as planned is produced and served. Training goal is to develop employee skills in recognizing whether the food items on a student's tray comprise a reimbursable meal. Course may include receiving procedures; reading product labels to ensure using correct product; following standardized recipes to prepare menu items; using portion control methods for serving menu items; setting up serving line with reimbursable meal component signage; and recording reimbursable and nonreimbursable meals at the point of service.

### **Modifying and/or standardizing recipes**

*For kitchen or cafeteria managers:* Experiential training to foster development of site manager's ability to create and modify standardized recipes that ensure the production of consistent batch yields of a predetermined number of required portions for that menu item. Additional content may focus on specific ingredient modifications that can be made to reduce the calories, saturated fat and/or sodium content of menu items.

### **Basic cooking skills**

*For kitchen or cafeteria managers:* Training to further develop manager's understanding of the basic principles of food handling, storage, preparation, and service that are essential to producing healthful, attractive, and tasty meals. "Train the trainer" educational methods would be desirable to enable site manager to demonstrate and reinforce best practice methods with kitchen employees.

*For cooks or front-line servers:* Training to introduce and develop skills in applying basic principles of food handling, storage, preparation, and service that are essential to producing healthful, attractive, and tasty meals and hands-on teaching/learning methods that are the most effective approach to mastering culinary skills.

### **Completing production records**

*For kitchen or cafeteria managers:* Training and methods to provide interactive learning to reinforce site managers' understanding of USDA production record requirements and develop their skill in effectively using the production record as a planning and communication tool to produce and serve meals meeting the meal requirements.

*For cook or front-line servers:* Training to introduce and promote using the production records as a daily menu and food production communication tool between the kitchen/cafeteria manager and kitchen staff. Emphasis is on assisting food service employees to use specific menu item information found on the production record to complete food production and serving tasks that result in correctly serving, counting, and claiming reimbursable meals.

### **Basic nutrition training**

*For cooks or front-line servers:* An introduction to basic nutrition principles with a focus on the role of an individual's food choices in promoting health as well as contributing to chronic disease. Course may focus on personal health as well as child nutrition and concerns of childhood obesity and early onset of chronic diseases.

Training would support the rationale for USDA in implementing the new meal pattern and nutrient standards to support family and community efforts and foster healthier eating behaviors in children.

**Basic food safety/ServSafe training**

*For cooks or front-line servers:* Training in basic food safety and sanitation, including following HACCP standard operation procedures, critical control record-keeping, and employees' responsibility for taking corrective action as determined by SFA's HACCP plan. SFA training requirements may include employees taking an exam to become ServSafe certified.

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## Endnotes

- 1 U.S. Department of Agriculture, Food and Nutrition Service, "National School Lunch Program: Participation and Lunches Served (Data as of June 5, 2015)," <http://www.fns.usda.gov/sites/default/files/pd/slsummar.pdf>.
- 2 U.S. Department of Agriculture, Food and Nutrition Service, "School Breakfast Program Participation and Meals Served (Data as of June 5 2015)," <http://www.fns.usda.gov/sites/default/files/pd/sbsummar.pdf>.
- 3 Mary Story, "The Third School Nutrition Dietary Assessment Study: Findings and Policy Implications for Improving the Health of US Children," *Journal of the American Dietetic Association* 109, no. 2 (2009): S7-S13, doi: 10.1016/j.jada.2008.11.005.
- 4 U.S. Department of Agriculture and U.S. Department of Health and Human Services, *Dietary Guidelines for Americans 2010*, 7th ed., <http://www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm>.
- 5 Institute of Medicine, *School Meals: Building Blocks for Healthy Children* (Washington, DC: National Academies Press, 2009).
- 6 Federal Register (2015), 7 CFR Parts 210 and 235, "Professional Standards for State and Local School Nutrition Programs Personnel as Required by the Healthy, Hunger-Free Kids Act of 2010: Final Rule," U.S. Department of Agriculture, 80 (40) (March 2, 2015), <https://www.federalregister.gov/articles/2015/03/02/2015-04234/professional-standards-for-state-and-local-school-nutrition-programs-personnel-as-required-by-the>.
- 7 National Center for Education Statistics, "Schools and Staffing Survey (SASS) 2011-12," accessed Jan. 16, 2015, [http://nces.ed.gov/surveys/sass/tables/sass1112\\_2013312\\_s12n\\_001.asp](http://nces.ed.gov/surveys/sass/tables/sass1112_2013312_s12n_001.asp).
- 8 Federal Register (2012), 7 CFR Parts 210 and 220, "Nutrition Standards in the National School Lunch and School Breakfast Programs: Final Rule," U.S. Department of Agriculture, 77 (17) (Jan. 26, 2012), <https://www.federalregister.gov/articles/2012/01/26/2012-1010/nutrition-standards-in-the-national-school-lunch-and-school-breakfast-programs>.
- 9 Federal Register, "Professional Standards for State and Local School Nutrition Programs Personnel as Required by the Healthy, Hunger-Free Kids Act of 2010: Final Rule."
- 10 The Pew Charitable Trusts, Kids' Safe and Healthful Foods Project, *Serving Healthy School Meals: Despite challenges, schools meet USDA meal requirements* (2013), <http://www.pewtrusts.org/en/research-and-analysis/reports/2013/09/30/serving-healthy-school-meals>.
- 11 U.S. Department of Agriculture and U.S. Department of Health and Human Services, *Dietary Guidelines for Americans 2010*.



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