

## School Nutrition Employees' Perceptions of Farm to School (FTS) Activities Differ Based on Management Type and FTS Participation Length

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### ABSTRACT

#### Purpose

The purpose of this study was to explore school nutrition employees' perceptions of FTS activities and whether the numbers of activities differ based on management type of school foodservice operation and length of FTS participation.

#### Methods

The state with the most FTS programs from each of the eight national FTS regions was selected. A total of 369 questionnaires were distributed to school nutrition employees through school nutrition directors at 12 individual schools in each of the eight states (96 schools total). Employees self-reported FTS activities by selecting from a list of 13 FTS activities provided. Length of participation (three years or less, more than three years) and management type were also self-reported by employees. Paired sample t-tests were used to analyze differences between management type and number of FTS activities, as well as between different lengths of FTS participation and number of FTS activities.

#### Results

A total of 239 questionnaires were returned (64.8% response rate) representing 75 different schools. Out of 239 questionnaires returned, 214 participants responded to the question about management type with 78.9% ( $n=169$ ) of participants indicating self-operated management and 21.1% ( $n=45$ ) reporting contract management. When comparing the number of FTS activities between types of management, a statistically significant difference ( $p=0.028$ ;  $p<0.05$ ) was found with self-operated school nutrition employees reporting about one more FTS ( $M=3.82$ ) activity than contract managed ( $M=2.95$ ). In terms of length of FTS participation, 141 answered the question and of those, 57.4% ( $n=81$ ) reported three years or less participation while 42.6% ( $n=60$ ) reported more than three years participation. When comparing the number of FTS activities and length of FTS participation, a significant difference was found ( $p<0.001$ ;  $p<0.05$ ); those with more than three years participation ( $M=5.25$ ) reported about one more FTS activity than those with three years or less ( $M=3.83$ ).

#### Applications to Child Nutrition Professionals

More established FTS programs or those that were self-operated engaged in more FTS activities, thereby providing opportunities for students' increased interest in fresh local products. Schools looking to implement and/or enhance FTS efforts may look to programs in existence for more than three years to glean ideas.

**Keywords:** contract management; Farm to School activities; local foods; school nutrition programs; self-operated

## INTRODUCTION

The concept of sustainability in food systems has been acknowledged at many levels—from international fair trade initiatives to local food movements in a single community. Local food movements come in various forms, including direct-to-consumer marketing, farmers' markets, community-supported agriculture, "pick-your-own" farms and farm to school programs. Farm to School programs (FTS) were initially authorized by the Child Nutrition and WIC Reauthorization Act of 2004 with the overall goal of increasing fresh, local produce in school meals through farm-to-cafeteria activities (U.S. Department of Agriculture [USDA], Food and Nutrition Service [FNS], 2013). These programs provide local production and distribution networks between farmers and consumers, and are an important part of the institutional market for local foods (Martinez, et al., 2010). While there is no universally accepted definition of local foods, operational definitions are generally in terms of geographic distance (e.g., 200 miles or within a three state region) from the purchasing operation (Martinez, et al., 2010). FTS programs are envisioned as one way to improve student health and the environment while promoting sustainable community food systems (LaRowe et al., 2012; National Farm to School Network, 2014). FTS programs have also been linked with improving students' nutritional intake (Joshi, Azuma & Feenstra, 2008) and promoting sustainability by helping community food systems provide local produce to students (Izumi, Alaimo & Hamm, 2010). Others view FTS programs as a possible solution to community food insecurity (McCullum, Desjardins, Kraak, Ladipo & Costello, 2005).

In 1998, fewer than ten FTS programs existed, but by 2015, 42,587 schools in 5,254 districts had FTS programs; these programs serve more than 23 million students (USDA-FNS, 2015a). Joshi and Beery (2007) enumerated the key influences of FTS programs in increasing school meal participation, improving students' consumption of fruits and vegetables, boosting local food procurement, increasing farmers' incomes and strengthening school foodservice financial viability. In terms of local food procurement for FTS programs, according to a USDA report, nearly two-thirds of public school districts responded (N=9,887) that local foods were obtained through traditional distributors for their FTS activities, while 44% of public school districts that participated in FTS activities responded that they obtained local foods directly from producers (USDA, Economic Research Service [ERS], 2015).

The FTS program allows schools to incorporate school nutrition programs, community involvement and school activities into student education (Joshi & Beery, 2007; Benson, 2014). Visiting local farms, growing school gardens, demonstrating cooking, educating students about local produce and/or incorporating local produce into school meals (Izumi, Wright & Hamm, 2010; Stokes, Arendt & Strohbehn, 2015) are all activities schools with FTS programs use to encourage student consumption of local produce (Parmer, Salisbury-Glennon, Shannon & Struempler, 2009), as well as to increase students' knowledge about healthy diets (Rosenberg & Broad Leib, 2011). Joshi et al. (2008) determined that the dietary behaviors of students positively changed as a result of their schools' participation in FTS programs. Findings from a study by Stokes et al. (2015) also showed school foodservice employees feel valued when they are working on FTS activities with the overall goal of improving students' health.

A school nutrition program is complex to manage given various federal, state and local laws and policies affecting school districts (Sackin, 2006). School foodservice operations are either self-operated or contract managed (Sackin, 2006). Contract management has potential advantages, such as competitive salaries for managers, efficient cost control, cost-effective benefit packages, application of systemized management, structured reporting systems and superior procuring

power (LeBruto & Farsad, 1993; Soat, 1986). Therefore, school foodservice operations often view contract management as an efficient solution when problems are encountered. However, be that as it may, contracting may lead to loss of income (Gregoire, 2013) if contract fees are set up as a percentage of sales. In addition, vision and objectives of the contracting company may differ from those the foodservice organization holds (Gregoire, 2013). Sackin (2006) stated additional drawbacks with contract management, such as less flexibility to update menus, obtain reimbursement for expenses and use a variety of channels for procurement because of the hierarchical management system. By contrast, self-operated programs may have more opportunities for implementing marketing and educational strategies. Although there are no known published databases that identify which schools have contract managed operations and which are self-operated, research studies that collect this type of demographic data find that the majority of participants come from self-operated school nutrition programs. For example, in their Michigan FTS study, Colasanti, Matts and Hamm (2012) found there were more self-operated (77.9%) school foodservice management participants than contracted (22.1%) school foodservice management participants.

Although several studies have been conducted on FTS programs, no known academic works, to date, have focused on how the two school foodservice management types differ in terms of number of FTS activities. Therefore, the purpose of this study was to seek out employee perceptions to determine whether school foodservice management type and length of FTS program participation were related to the frequency of FTS activities. The specific objectives of this study were twofold: (1) to identify school nutrition employees' perceptions about the number of FTS activities between the two types of school foodservice management and (2) to identify school nutrition employees' perceptions of the number of FTS activities based on the length of FTS program participation.

## **METHODOLOGY**

### **Sample**

The eight geographic classifications of the National Farm to School Network (2015) consisting of West, Midwest, Great Lakes, Northeast, South, Southeast, Mid-Atlantic and Southwest regions were used for this study. The state with the most FTS programs in each region, based on the regional information provided by the National Farm to School Network (2013), was selected. Lists of schools participating in FTS programs for each of the eight selected states were obtained, along with the contact information of the school nutrition directors. This information was obtained from multiple sources including: FTS program contacts, state FTS websites and school website. This study was designed as a part of a larger study that explored obstacles and strategies for implementing FTS programs regarding perspectives of hourly school foodservice employees (Stokes & Arendt, 2016; Stokes et al., 2015).

### **Questionnaire**

After reviewing the literature (e.g., Colasanti et al., 2012; Joshi et al., 2008) and conducting open-ended interviews with six hourly employees, the researchers developed a paper-based FTS questionnaire containing questions about FTS activities, type of management and length of participation; additional questions related to challenges and barriers of FTS programs were also included, but results are reported elsewhere (Stokes & Arendt, 2016; Stokes et al., 2015). The pilot testing process consisted of two phases. First, the questionnaire was distributed to five

school nutrition experts in four different states (i.e., California, Georgia, Iowa and Pennsylvania) and the questionnaires were returned with feedback. The questionnaire was then revised based on feedback. As the second phase of the pilot test, the revised questionnaires were sent back to the same five experts for distribution to three of their foodservice employees. A total of twelve questionnaires were returned from the second phase. The questionnaire was revised again based on feedback. Participant responses from the pilot test were excluded for the final analysis.

The final FTS questionnaire included three items plus a request for demographic information. The first item contained 13 specific FTS program activities (e.g., visits to farmers' markets, taking students to visit farms, farmers visiting classrooms, growing a school garden and/or incorporating local produce into the school meal). The second item asked participants about the length of their school participation in the FTS program (i.e., up to three years or more than three years). The third item was designed to assess the types of school foodservice management (i.e., self-operated and contract managed).

### **Data Collection**

Prior to collecting data, approval from the Institutional Review Board of the university where researchers were employed was obtained. First, the State Farm to School Coordinators of school nutrition programs from each of the eight states were contacted to get information regarding schools with FTS programs. Second, based on this list, school nutrition directors were recruited to participate in this study and asked to provide information regarding the schools in their districts. Individual schools were selected instead of school districts because some schools in a district may not participate in FTS programs and/or similar FTS activities. Initially, researchers targeted recruitment of at least 24 school nutrition directors from each state because all directors contacted were not expected to participate. School nutrition directors were asked to provide (1) a list of all elementary schools in their district that utilized local foods for school meals under FTS programs, (2) the number of employees at each school who had been working with local foods as part of FTS programs, (3) the estimated length of participation in FTS programs for each school and (4) contact information for mailing distribution. Using the information obtained from school nutrition directors, 12 individual schools from each state were selected based on location (schools from different cities within a district) and number of employees (schools with the highest number of school nutrition employees). The number of participating school nutrition employees varied per school. A total of 369 questionnaires were distributed to school nutrition employees through the school nutrition directors at the 96 schools. As suggested by Dillman, Smyth and Christian (2009), a reminder was emailed to all school nutrition directors after two weeks. A \$35.00 gift was sent to each school that participated.

### **Data Analyses**

Data from the collected questionnaires were entered into a Microsoft Office Excel spreadsheet and then transferred to the Statistical Package for Social Sciences (SPSS 22.0) for analysis. Descriptive statistics (i.e., frequencies, means and percentages) were used to summarize the distribution of data with respect to the FTS program activities at each school. Paired samples *t*-tests were used to compare the differences in the number of FTS activities and type of management. The differences in the number of FTS activities and length of FTS participation were also compared using *t*-tests.

## RESULTS AND DISCUSSION

### Demographics and School Nutrition Employees' Perceptions of FTS Programs

Of the 369 questionnaires distributed, 239 questionnaires were returned from 75 schools in eight different states for a response rate of 64.8%. The number of school nutrition employees per school varied (range of 1-7 employees per participating school). The demographic characteristics of participants are provided in Table 1. Forty-two percent of participants ( $n=98$ ) were in the age range 50-64 years, and 37.8% ( $n = 88$ ) were in the age range 35-49 years. The majority of the participants were female (96.2%,  $n = 227$ ). Similar demographic characteristics in hourly school foodservice employees in the United States were observed in recent studies with 95% female participants and 55.8% participants between the ages of 41 and 60 in one study (Strohbehn, Jun & Arendt, 2014) and another study (Fatimah, Arendt & Strohbehn, 2014) with 89.6% ( $n=517$ ) female between 40-60 years old (64.2%,  $n=374$ ) (Fatimah et al., 2014). Participants identified themselves as Caucasian or White (73%,  $n = 170$ ), Hispanic (13.3%,  $n = 31$ ) and African-American or Black (8.6%,  $n = 20$ ). Approximately half (46.8%,  $n = 110$ ) of the participants had a high school diploma or its equivalent, and 30.6% ( $n = 72$ ) had attended college but did not earn a degree.

With regard to the use of local foods and the length of time working in school nutrition, 35.6% ( $n = 83$ ) indicated they worked one to five years and the majority (64.4%,  $n = 150$ ) worked more than five years. Regarding length of time working in a FTS program, the majority (60.7%,  $n = 125$ ) of participants indicated they worked for less than or equal to three years and 39.3% ( $n = 81$ ) of participants indicated they worked for more than three years.

When asked about their frequency of visits to seasonal farmers' markets for personal reasons, the majority (76%,  $n = 171$ ) used them at least once a year or more frequently while 24% ( $n=55$ ) never used farmers' markets. Likewise, the majority of the participants indicated that purchasing local foods for personal use is "important or extremely important" (62.1%,  $n = 148$ ) and only 12 participants (5.1%) indicated it was not at all important.

### FTS Activities

The questionnaire presented participants with a list of 13 different FTS activities and asked the participants to check all that applied (Table 1). The majority of participants identified "Incorporating local produce into the school lunch program" as the most common FTS activity (71.5%,  $n = 171$ ). "Purchasing fresh produce from local farmers" and "Educating students about local produce" followed as the next highest responses, with 66.9% ( $n = 160$ ) and 46.9% ( $n = 112$ ), respectively. In contrast, "Farmers visiting classrooms," "Chefs visiting classrooms" and "Visits to farmers' markets" were reported as the least frequent FTS activities with 3.8% ( $n = 9$ ), 5% ( $n = 12$ ) and 7.1% ( $n = 17$ ), respectively.

In a report to Congress, the United States Department of Agriculture (USDA-FNS, 2014) indicated more than four in ten public school districts participated in FTS activities during the 2011-2012 school year. The majority (83%,  $n = \sim 8,200$ ) of those districts also incorporated at least one local food into school meals, which was the most frequently reported FTS activity (USDA-ERS, 2015). Other FTS activities frequently reported by districts included promoting local foods through themes or brands (e.g., Harvest of the Month) (42%), tasting local foods (38%), growing school gardens (31%) and visiting farms (30%) (USDA-ERS, 2015).

**Table 1. School Nutrition Employee Demographic Characteristics and Perceptions of Farm to School (FTS) Activities (n=206–239)**

<b>Demographic Characteristics</b>	<b>n</b>	<b>%</b>
<b>Gender<sup>a</sup></b>		
Male	9	3.8
Female	227	96.2
<b>Age (years)<sup>a</sup></b>		
18-25	4	1.7
26-34	29	12.4
35-49	88	37.8
50-64	98	42.1
65 and over	14	6.0
<b>Education<sup>a</sup></b>		
Some high school	11	4.7
High school diploma (or equivalent)	110	46.8
Some college	72	30.6
Associate's degree	27	11.5
Bachelor's degree	11	4.7
Graduate degree	4	1.7
<b>Ethnicity<sup>a</sup></b>		
American-Indian or Alaska native	2	0.9
African-American or Black (Non-Hispanic origin)	20	8.6
Asian	3	1.3
Caucasian/White	170	73.0
Hispanic	31	13.3
Other	7	2.9
<b>Length of time working in school nutrition (years)<sup>a</sup></b>		
1 to 5	83	35.6
6 to 10	56	24.0
11 to 15	40	17.2
16 to 20	26	11.2
More than 20	28	12.0
<b>Perceptions of FTS Activities</b>	<b>n</b>	<b>%</b>
<b>Length of time with a FTS program at school (years)<sup>a</sup></b>		
1 or less	43	20.9
1 to 2	34	16.5
2 to 3	48	23.3
More than 3	81	39.3



**Table 1.** (Continued)

<b>Importance of purchasing local foods for personal use <sup>a</sup></b>		
Extremely important	57	23.9
Important	91	38.2
Neither important nor unimportant	49	20.6
Somewhat important	29	12.2
Not at all important	12	5.1
<b>Frequency of visits to seasonal farmer's markets for personal reasons <sup>a</sup></b>		
	n	%
Twice a week	2	0.9
Weekly	33	14.7
Bi-weekly	20	8.9
Monthly	63	28.0
Twice a year	28	12.4
Once a year	25	11.1
Never	54	24.0
<b>Participation in FTS activities <sup>b</sup></b>		
Incorporating local produce into the school lunch program	171	71.5
Purchasing fresh produce from local farmers	160	66.9
Educating students about local produce	112	46.9
Incorporating local produce into school breakfast program	97	40.6
Taste testing local produce	78	32.6
Incorporating local produce into a la carte offerings	75	31.4
Offering local produce as part of "snack time"	59	24.7
Taking students to visit farms	46	19.2
Growing a school garden	40	16.7
Visits to farmer's markets	17	7.1
Chefs visiting classrooms	12	5.0
Farmers visiting classrooms	9	3.8
Other (please specify)	5	2.1

<sup>a</sup> Percentages were calculated using the total number of respondents for each question

<sup>b</sup> Total responses exceed 239 due to multiple responses

### **Length of FTS Program Participation**

In terms of the length of FTS program participation, of those who responded to the question ( $n = 141$ ), 57.4% ( $n = 81$ ) participants indicated participation of three years or less and 42.6% ( $n = 60$ ) indicated more than three years. The comparison of reported FTS activities based on length of FTS participation is presented in Table 2. The survey questions were not designed to ask specified length of participation; therefore, the average participation length could not be calculated. However, those who reported participating in FTS activities for three years or less identified the following as the most frequent activities: (1) purchasing fresh produce from local farmers (76.5%,  $n = 62$ ), (2) incorporating local produce into the school lunch program (72.8%,  $n = 59$ ) and (3) educating students about local produce (48.1%,  $n = 39$ ). Meanwhile, participants who reported that they participated in FTS activities for more than three years identified the following as the most frequent activities: (1) incorporating local produce into the school lunch program (93.3%,  $n = 56$ ), (2) purchasing fresh produce from local farmers (86.7%,  $n = 52$ ) and (3) educating students about local produce (75.0%,  $n = 45$ ). The most frequent FTS activities were reported differently with respect to length of FTS participation. By comparing the number

of reported FTS activities and the length of FTS participation, a statistically significant difference was observed, with those who reported more than three years of participation also reporting approximately one more FTS activity than those with up to three years of participation ( $p < 0.001$ ;  $p \leq 0.05$ ) (Table 3).

**Table 2. School Nutrition Employees' Perceptions of Farm to School (FTS) Activities by Length of FTS Program Participation (n=141–239)**

<b>Length of FTS Program Participation<sup>a</sup></b>	<b>n</b>		<b>%</b>	
Up to three years	81		57.4	
More than three years	60		42.6	
<b>FTS Activities by Length of FTS Participation<sup>b</sup></b>	<b>Up to 3 yrs.</b>		<b>Over 3 yrs.</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Purchasing fresh produce from local farmers	62	76.5	52	86.7
Incorporating local produce into the school lunch program	59	72.8	56	93.3
Educating students about local produce	39	48.1	45	75.0
Incorporating local produce into school breakfast program	38	46.9	37	61.7
Taste testing local produce	31	38.3	26	43.3
Incorporating local produce into a la carte offerings	22	27.2	28	46.7
Offering local produce as part of "snack time"	20	24.7	20	33.3
Taking students to visit farms	13	16.0	19	31.7
Growing a school garden	15	18.5	15	25.0
Visits to farmer's markets	3	3.7	6	10.0
Chefs visiting classrooms	3	3.7	6	10.0
Farmers visiting classrooms	4	4.9	4	6.7
Other (please specify)	2	2.5	1	1.7

<sup>a</sup> Percentages were calculated using the total number of respondents for each question

<sup>b</sup> Total responses exceed 239 due to multiple responses

**Table 3. Differences in Numbers of Farm to School (FTS) Activities Based on Management Type and Length of Participation (n=141–239)**

Item	Number of Activities		<i>t</i>	<i>p</i> -value
	<i>M</i>	<i>SD</i>		
<b>Types of Management</b>				
Self-operated	3.82	2.27	0.233	0.028*
Contract managed	2.95	2.56		
<b>Length of FTS Participation</b>				
Up to three years	3.83	2.34	0.340	<0.001*
More than three years	5.25	2.13		

\*Significant at  $p < 0.05$

Although previous studies have not examined the relationship between the length of FTS participation and FTS activities, benefits from FTS activities have been analyzed. FTS activities serve not only as a model for improving health of students by providing fresh local produce but also as a channel for education concerning local produce, school gardening and supporting local family farms (Joshi & Beery, 2007). A variety of school activities under a FTS program can positively influence the interest of students in consuming fresh local produce (Parmer et al., 2009). The results of this study indicate the longer a school participates in FTS, the more FTS activities can be expected to be implemented.



### Foodservice Management Type

Of the 214 participants who indicated management type, 78.9% ( $n = 169$ ) were from self-operated programs and 21.1% ( $n = 45$ ) were from contract-managed operations (Table 4). Colasanti et al. (2012) found similar ratios in management types (77.9% self-operated and 22.1% contract managed) for their sample.

**Table 4. School Nutrition Employees Perceptions' of Participation in Farm to School (FTS) Activities by School Foodservice Management Type** ( $n=214-239$ )

School Foodservice Management <sup>a</sup>	N		%	
	n	%	n	%
Self-Operated (Self-Op)	169	78.9		
Contract Managed (Contract)	45	21.1		
FTS Activities by School Foodservice Management <sup>b</sup>	Self-Op		Contract	
	n	%	n	%
Incorporating local produce into the school lunch program	122	72.2	28	62.2
Purchasing fresh produce from local farmers	120	71.0	22	48.9
Educating students about local produce	84	49.7	16	35.6
Incorporating local produce into school breakfast program	70	41.4	18	40.0
Taste testing local produce	57	33.7	8	17.8
Incorporating local produce into a la carte offerings	57	33.7	10	22.2
Offering local produce as part of "snack time"	43	25.4	9	20.0
Taking students to visit farms	32	18.9	9	20.0
Growing a school garden	32	18.9	4	8.9
Visits to farmer's markets	13	7.7	3	6.7
Chefs visiting classrooms	7	4.1	3	6.7
Farmers visiting classrooms	6	3.6	2	4.4
Other (please specify)	3	1.8	1	2.2

<sup>a</sup> Percentages were calculated using the total number of respondents for each question

<sup>b</sup> Total responses exceed 239 due to multiple responses

When comparing the number of reported FTS activities to the school foodservice management type, a significant difference was observed, with those working in self-operated school foodservice reporting one more FTS activity than those working in contract-managed operations ( $p = 0.028$ ;  $p \leq 0.05$ ) (Table 3). Table 4 shows that employees of self-operated foodservices identified the following FTS activities most frequently: (1) incorporating local produce into the school lunch program (72.2%,  $n = 122$ ), (2) purchasing fresh produce from local farmers (71.0%,  $n = 120$ ) and (3) educating students about local produce (49.7%,  $n = 84$ ). Employees from contract-managed operations identified (1) incorporating local produce into the school lunch program (62.2%,  $n = 28$ ), (2) purchasing fresh produce from local farmers (48.9%,  $n = 22$ ) and (3) incorporating local produce into school breakfast programs (40.0%,  $n = 18$ ) as the most frequent FTS activities.

Findings with regard to FTS activities and the type of management are similar to the findings with regard to FTS activities and length of FTS participation. Employees perceived the most frequently implemented activities related to the type of management and length of FTS participation were: (1) incorporating local produce into the school lunch or breakfast, (2) purchasing fresh produce from local farmers and (3) educating students about local produce.

Another study found similar results whereby incorporating local foods in school meals was the most frequently reported FTS activity (USDA-ERS, 2015). It should be noted that the respondents for this USDA report were School Food Authorities, not hourly employees.

## **CONCLUSIONS AND APPLICATION**

This study based on perceptions of school nutrition employees suggests that type of school nutrition management and length of FTS program participation may affect the number of FTS activities implemented. As such, these findings could be beneficial for school administrators, school nutrition directors, supervisors, managers, employees and representatives of organizations interested in FTS activities and management structures within school nutrition programs.

### **Types of School Nutrition Management**

Findings revealed that schools with self-operated nutrition management programs had approximately one more FTS activity than did schools with contract management. This information could be important to school administrators and organization or industry representatives in assessing the types of school nutrition management associated with an FTS program. Understanding the characteristics between two management types of school foodservice will be helpful in establishing a framework to increase participation in FTS activities.

School nutrition directors and/or organization or industry representatives can assess the findings from this study when devising an effective framework for institutionalizing FTS activities. For example, schools with self-operated management may have more flexibility to implement FTS activities because changes in production and service are typically not bound by contract policy and procedures. In contrast, schools with contract management may not have this flexibility due to corporate protocols that school nutrition contractors may need to follow (Porter, 2006). Therefore, an effective framework for institutionalizing FTS activities can be provided by assessing the beneficial factors of each management type (e.g., flexibility in self-operated management, efficient cost control in contract management).

### **Length of FTS Participation**

Study findings indicate the longer a school participates in a FTS program, the greater the number of FTS activities implemented. This understanding may be important to school administrators and school nutrition directors when they are faced with decisions regarding the maintenance or discontinuation of FTS programs. For example, procuring local foods directly from local producers is a challenge for school nutrition directors due to lack of information about buyers and products (Strohbehn & Gregoire, 2003). Schools with longer participation in a FTS program would likely have more accurate and diverse contact lists of local food sources, visiting chefs, local farmers, farmer's markets and other community members willing to help a FTS program be successful than one that had recently implemented a FTS program.

Izumi, Rostant, Moss and Hamm (2006) identified finding local vendors to procure local foods for school nutrition might require additional efforts by school nutrition professionals. Having maintained and updated contact lists of sources for local foods might reduce such efforts. In terms of maintaining updated information sources for local foods, Strohbehn and Gregoire (2003) suggested developing a weekly update that communicates available products by

providing buyers information about sources of local foods. FTS programs with longer participation may have beneficial information for schools looking to implement a greater number of FTS activities. School administrators and organization representatives can use the findings from the current study to assess the advantages of staying in FTS programs and eventually increase the number of FTS activities.

### **Educating School Nutrition Employees**

Results from this study provide meaningful information for school administrators and child nutrition professionals about implementing and maintaining FTS activities as a training topic for hourly school nutrition employees. These employees are pivotal in the success of any FTS program as they are the ones who prepare, serve and have direct points of contact in providing FTS activities to students. The findings on the frequency of visits to farmers' markets showed about one-fourth of the participating school nutrition employees had never visited a farmer's market for personal reasons. That stated, this does not mean that they were unwilling to purchase or utilize local foods as they may have a home garden or other means of acquiring local foods for home use. However, more access and personal use of local foods may create employees' awareness about the benefits of local food use in schools. Although this knowledge transfer from home application to work application has not been studied in this context before, transfer of home knowledge and usage has been studied in other contexts. One study explored individuals' energy conservation behaviors and found that home behaviors transferred to work settings (Scherbaum, Popovich & Finlinson, 2008).

To increase the use of local foods, Gregoire, Arendt and Strohbehn (2005) suggested Cooperative Extension Programs may play a key role in educating producers to promote the sales of local produce to school nutrition establishments. In addition, educating school nutrition employees through Extension Programs may be pivotal to increasing knowledge and interest in local produce. For example, some Extension specialists share nutritional benefits of using local foods and educate school nutrition employees about preparing local foods through cooking demonstrations (Iowa State University Extension and Outreach, 2012). Similarly, Ng, Bednar and Longley (2010) found limited skill of employees in preparing local foods is one challenge to implementing farm-to-cafeteria programs in colleges and universities. Therefore, school administrators and organization representatives may need to provide additional opportunities to educate school nutrition employees and increase their engagement in using local foods. Increasing knowledge and interest of school nutrition employees toward local foods may motivate employees to be more engaged in FTS programs. Albeit, costs need to be a paramount consideration, as well. Both the food costs of purchasing local foods and labor costs for additional training and added processing time (e.g., cleaning, chopping) add to overall operational expenses.

### **Limitations and Future Studies**

Although the data collected from different regions across the United States can be used by school nutrition directors or organization/industry representatives, the sample size based on geographic location may not be large enough to generalize meaning. Future research may aim to investigate larger samples of hourly school nutrition employees in additional geographic locations. In addition, because schools rather than districts were used for the sampling frame, it is likely that schools within a district would be participating in the same activities and utilize the same management type (self-op, contract), thereby potentially skewing the data. While it was anticipated that the school nutrition employees would know what FTS activities were happening

in the school, it is plausible that they did not. Given that there were different numbers of school nutrition employees per school participating in the study, this might cause skewing of the data when analyzing management type and length of participation in FTS activities.

Future research may focus on examining how school nutrition employees' awareness and personal use of local foods influences their engagement in FTS programs. Extension programs in each state may explore the idea of establishing a platform to educate school nutrition employees to increase their engagement in FTS activities. Recognizing that the directors are the ones who ultimately impact decision making regarding farm to school implementation and continuation, it might be of interest to look at whether their personal use of local foods influences engagement in FTS activities. Lastly, Bagdonis, Hinrichs and Schafft (2009) found that, compared to the FTS activities in an urban area, such activities in a rural area are highly dependent on the school nutrition directors to initiate and coordinate FTS programs. Therefore, investigating variance in the number of FTS activities for different regions (i.e., urban, rural) may be worthy of further exploration.

As a first step, this study addresses perceptions of employees working with FTS programs regarding the number of FTS activities differentiated by type of management and program length. Findings from this research can aid school nutrition directors in deciding whether they should retain an FTS program. This is important because 66% of schools that participated in FTS activities reported at least one of the following benefits: more support from parents and the community (38%), lower food costs for local produce (21%), less food waste (18%) and more students receiving school meals (17%) (USDA-FNS, 2015b). Schools offering a wide variety of FTS activities will maximize the benefits of FTS programs.

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