

Current Practices for School Field Trip Meals

Summary Report



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Current Practices for School Field Trip Meals Summary Report

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EXECUTIVE SUMMARY

The Healthy, Hunger Free Kids Act of 2010 extends the requirements for a food safety plan to wherever food is stored, prepared, or served. This requirement would extend to meals served on field trips, yet there is little known about what foods are served and how they are transported to maintain safe time and temperature requirements. Thus, this study focuses on what foods are sent for field trip meals, how those foods are transported and stored, and what standard operating procedures are in place to guide school nutrition personnel and teachers in providing safe meals.

Two surveys were developed for collecting information from a national sample of school nutrition managers and teachers. A total of 192 school nutrition managers and 80 teachers responded. The response rates were low; therefore, we view this as a qualitative exploratory study.

Conclusions

Based on the responses to these two surveys, we have concluded the following:

1. Food safety for meals served on field trips was not a concern for school nutrition managers or for teachers.
2. Few teachers reported to receive information or training about handling food safely on field trips.
3. There are time and temperature control for safety (TCS) foods served on field trips, especially large numbers of deli sandwiches made of ham, turkey, or other deli meats.
4. Most school nutrition managers reported to transport food in coolers with ice or ice packs. Those who do not use coolers may be ones who provide foods such as nut butter sandwiches that do not require refrigeration.

Recommendations

These conclusions lead to a number of recommendations:

1. School nutrition personnel, teachers, and volunteers need training resources. Resources include fact sheets on topics specific to each of these groups, standard operating procedures, and educational stickers that could be affixed to wrapped food items.
2. Simulation studies must determine the time and temperature issues associated with various foods and practices.
3. Microbiological studies must determine the impact of time and temperature on the microbiological quality of food items served on field trips.

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Introduction

Food safety has been a major focus in school nutrition programs for many years. The WIC [Women, Infants, and Children] and Child Nutrition Reauthorization Act of 2004 (S. 2507, 2004) included a requirement that all schools have a food safety program based on Hazard Analysis and Critical Control Points (HACCP) principles and two health inspections each year. Section 302 of the Healthy, Hunger Free Kids Act of 2010 extended the requirement for a food safety program to the entire school campus wherever food is stored, prepared, or served (S. 3307, 2010). Meals served on field trips are covered under this requirement.

While temperature control of food can be a challenge in any school nutrition operation, it is even more challenging for meals served off premises on field trips. These meals are no longer under the control of the school nutrition staff, available equipment may be inadequate to maintain safe temperatures, lunch times may be delayed, hand washing facilities may be inadequate, and higher ambient air temperatures associated with field trips during some seasons could support microbial growth. No studies have determined food safety practices needed for school field trip meals. Thus, this study had three objectives:

1. Identify foods that are frequently served on field trips.
2. Discover how field trip meals are transported and stored.
3. Identify current school policies and standard operating procedures (SOPs) related to field trip meals.

Definition of Terms

Field trip: times when students leave their normal classroom routine and resources (such as the school cafeteria) to supplement their learning (e.g., going to a museum, park, or field day).

Time/Temperature Control for Safety (TCS) Food: a food that requires time/temperature control for safety to limit pathogenic microorganism growth or toxin formation (HHS, 2013). Examples of TCS foods include animal foods that have been heat-treated (for example, cold cuts), cut leafy greens, cut tomatoes, or cut cantaloupe.

Methods

Sample

Two samples were included in the study, school nutrition managers and teachers. The school-level nutrition manager was selected rather than the district-level director because they would have more direct knowledge of what actually happens at the school when meals must be served off site. A sample of teachers was included because they would know how food is handled after it leaves the school kitchen. Both perspectives were important to understanding the scope of food handling for school field trip meals. Random samples were purchased from MDR (2014), a marketing company that maintains databases for various groups. The survey was sent to 3,926 school-level managers and 4,083 teachers.

Questionnaires

Two research questionnaires were developed, one for school nutrition managers and one for teachers. Both questionnaires were developed and distributed using Qualtrics®, the on-line survey system utilized by Kansas State University. Some questions for the survey of school nutrition managers were generated by a committee of staff members from the U.S. Department of Agriculture (Agricultural Research Service, Economic Research Service, Food and Nutrition Service, and Food Safety and Inspection Service) and the U.S. Department of Health and Human Services (Food and Drug Administration). The Center of Excellence for Food Safety Research in Child Nutrition Programs staff developed a draft questionnaire, which was reviewed by the Federal committee. Changes were made to the questionnaire based on committee suggestions. After the changes were made, the questionnaire was pilot tested with 12 school nutrition managers; additional modifications were made using their comments. The final survey is in Appendix A.

The teacher survey was developed from the school nutrition manager survey. Researchers eliminated all questions related to foodservice operations, focusing instead on menu items, how foods are transported and stored, time elapsed before students eat their lunch, hand washing and sanitizing behaviors, and food handling procedures. The survey was pilot tested with a group of four teachers in Kansas. The final survey is in Appendix B.

Research Approval

The research protocol was approved by the Kansas State University Institutional Review Board before data were collected. All researchers involved in the study have completed mandatory human subjects training.

Data Collection

Researchers provided MDR with a cover letter for school nutrition managers (Appendix C) and one for school teachers (Appendix D). The cover letters explained the purpose of the study, encouraged recipients to participate in the survey, explained the rights of human subjects, provided contact information if participants had questions, and provided a link to take the survey. MDR sent the cover letter as an email to the study samples.

A follow-up email was developed for non-responders. This letter encouraged participation. MDR sent the follow-up letters to all non-responders one week after the original survey was deployed.

Data Analysis

Data for both questionnaires were exported from Qualtrics® as SPSS files. SPSS was used for calculating descriptive statistics (frequencies and percentages).

Results and Discussion

School Food Service Managers

A total of 267 school nutrition managers started the survey, a response rate of 7%. The initial question determined which managers were employed in schools that provided meals for field trips. Of those, 224 (86%) reported providing meals for field trips and 35 (14%) reported that they did not. A total of 192 (86%) managers who provided field trip meals completed the survey. This is a very low response rate, even though a follow-up email was sent. The low response rate may be due to factors such as the quality of the database, time of year the survey was deployed, interest by the school manager, or lack of involvement in providing meals for field trips. Moreover, managers at the school level may not typically be involved in research, respond to surveys, or may not feel empowered to respond. In fact, two district school nutrition directors contacted the researchers wanting to know why their managers were contacted. Thus, this study should be viewed as a qualitative exploratory study, not a quantitative study because of the low response rate. The results do provide insight into what foods are served on field trips and how the foods are transported.

The types of foods typically used for field trips are summarized in Table 1. Nearly half of the respondents indicated that they provided nut butter and jelly sandwiches and deli sandwiches in field trip meals. A very small percent provided green salads, and few reported adding lettuce or tomato to deli sandwiches. Whole fruit and commercially packaged vegetables also were common.

Table 1. Frequency of food items used for field trip meals (N=192)

Food Items	Frequently	Occasionally	Not at All	n
Sandwiches/wraps				
Nut butter and jelly sandwiches	79	27	56	162
Turkey, ham, and other deli meat	78	37	56	171
Low sodium turkey, ham, and other deli meat	48	27	74	149
Tuna, chicken, or egg salad	1	6	134	141
With cheese added	71	31	60	162
With lettuce added	11	9	124	144
With tomato added	8	6	130	144
Other	6	5	76	87
Green (lettuce-based) salads				
With deli meat	16	6	150	172
With other meat	4	3	149	156
With cheese	26	9	128	163
With cut tomatoes	7	5	147	159
Other	3	0	120	123
Other protein items				
String cheese	30	44	102	176
Yogurt	2	12	149	163
Cold pizza	1	1	160	162
Hot pizza	0	0	159	159
Fruits				
Whole fruit	157	15	10	182
Individual, prepackaged fruit (e.g., applesauce)	33	44	83	160
Sliced or chopped fresh fruits (commercially prepackaged)	32	40	83	155
Sliced or chopped fresh fruits (school prepared)	23	16	116	155
Dried fruit	22	39	92	153
Other	3	2	70	75
Vegetables				
Commercially prepared, individually packaged (e.g., baby carrots)	99	29	38	166
School prepared other cut vegetables (e.g., carrots, celery, cucumbers)	39	34	88	161
School prepared whole, uncut vegetables (e.g., baby carrots, cherry tomatoes)	35	25	98	158
School prepared cut lettuce	8	6	141	155
School prepared cut tomatoes (with or without salad)	6	8	141	155

Table 1. Frequency of food items used for field trip meals (N=192)

Food Items	Frequently	Occasionally	Not at All	n
Beverages				
Pasteurized fluid milk needing refrigeration	123	21	32	176
Juice	66	43	46	155
Ultra-high-temperature (UHT) milk	4	7	121	132

Table 2 reports methods of preparation for field trip meals. Most managers reported that meals are prepared the day of the field trip. Most reported packaging meals in individual sacks or boxes. Surprisingly, more than expected did not package TCS foods separately to reduce the amount of cooler space required for keeping those items chilled. The largest number reported transporting milk in a cooler with ice or ice packs, but some reported packaging the milk without ice or ice packs.

Table 2. Frequency of practices for preparing, packaging, and transporting field trip meals (N=192)

	Frequently	Occasionally	Not at All	n
When field trip meals are prepared				
The day of the field trip	135	29	7	171
One day before the field trip	48	37	64	149
Two days before the field trip	4	2	128	134
Other	2	1	70	73
Packaging of field trip meals				
All meal items packed together in an individual sack/box	110	17	32	159
Nonperishable items in an individual sack/box with perishables in bulk coolers	64	27	64	155
All items sent in bulk	13	15	109	137
Methods for transporting milk for field trips				
In a cooler with ice	83	19	62	164
In a cooler with ice packs	43	23	84	150
Individually with other lunch items	34	13	94	141
In a cooler without ice or ice packs	7	8	121	136
Frozen	7	3	127	137
Other	1	3	69	73

General practices for preparing field trip meals are summarized in Table 3. One-third of school managers typically prepare 20 or fewer meals and 57% prepare 40 or fewer meals. A small percentage reported washing and cutting/slicing fresh fruits. School nutrition managers reported that typically field trip meals are picked up after sitting at room temperature after preparation for no more than one hour. Nearly all (97%) reported that leftovers are discarded.

Table 4 presents a summary of the equipment used for transporting field trip meals. Most (71%) reported using insulated containers, usually hard plastic, for transporting cold foods. Several brands of coolers were used. Very few reported to provide hot items for field trip meals.

School nutrition managers were asked if they have concerns about food safety for meals served on field trips, and 135 (77%) responded no. The survey asked several questions about training for teachers and volunteers. Only 21% provided any such training for teachers or field trip volunteers (see Table 5). In addition to the barriers listed in Table 5, the perception that food safety is not a concern may influence decisions about providing training for teachers and volunteers.

Managers seemed to respond to the remaining training questions as if they were about general training. Informal face-to-face training was by far the most common type of training provided (77% of respondents).

Table 3. Preparation practices for field trip meals (N=192)

	n	%
For a typical field trip, number of meals		
20 or fewer meals	50	33
21-40 meals	36	24
41-60 meals	29	19
61-80 meals	21	14
81-100	9	6
More than 101 meals	8	5
Condiments provided		
Yes	133	71
No	54	29
Condiments are:		
Applied to food items by school nutrition staff	4	3
Provided as single-serving packets	125	97
Condiments offered		
Mayonnaise or salad dressing spread	119	92
Mustard	121	93
Ketchup	47	36
Salad dressing (e.g., ranch dressing)	45	35
Other	4	3
Fruits that school nutrition program employees wash and cut/slice for field trips		
Apples	16	67
Oranges	20	83
Pears	3	13
Bananas	8	33
Strawberries	4	17
Cantaloupe	4	17
Watermelon	5	21
Honeydew melon	2	8
Other	3	13
Typical length of time field trip meals are at room temperature between preparation and pick-up in the kitchen/cafeteria		
Less than 1 hour	160	89
1-2 hours	14	8
2-3 hours	6	3
More than 3 hours	0	0
Leftover items from school-prepared field trip meals served again		
Milk	3	2
Sandwiches	4	2
Fruits/Vegetables	4	2
Desserts	1	1
None, leftovers are discarded	171	97
Other	1	1

Table 4. Equipment use for transporting hot and cold foods on field trips (N=192)

	n	%
Use of insulated containers for transporting cold meal components		
Yes	53	71
No	22	29
Material for cold-holding containers		
Plastic	39	76
Styrofoam	4	8
Metal	1	2
Other	7	14
Cold-holding containers hard- or soft-sided		
Hard-sided	39	78
Soft-sided	9	18
Other	2	4
Brand of cold-holding containers		
Coleman™	18	38
Igloo™	10	21
Cambro™	7	15
Rubbermaid™	6	13
Other	7	15
Use of insulated containers for transporting hot meal components		
Yes	4	67
No	2	33
Material for hot-holding containers		
Plastic	3	75
Metal	0	0
Styrofoam	0	0
Other	1	25
Hot-holding containers construction		
Hard-sided	2	50
Soft-sided	2	50
Brand of hot-holding container		
Cambro™	1	25
Coleman™	1	25
Igloo™	0	0
Rubbermaid™	0	0
Other	2	50

Table 5. Training provided related to field trip meals (N=192)

	n	%
Food safety training for teachers and/or field trip volunteers		
Yes, training is required	15	10
Yes, training is optional	16	11
No	116	79
Type of training		
Informal face-to-face training	67	77
Formal/pre-arranged training prior to field trip (face-to-face)	11	13
Education materials	8	9
Online training	3	3
Other	8	9
Barriers to implementing training		
Teachers' time	65	52
Manager's time	53	43
Foodservice employees' time	37	30
Volunteers' time	34	27
Scheduling conflicts	26	21
Cost	18	15
Resources	15	12
None	38	31
Other	7	6
Tools or resources would help overcome these barriers		
Training materials/lesson plans	10	56
Webinars/online modules	5	28
Other	5	28

Teachers

A total of 80 teachers completed the questionnaire for a response rate of 2%. This is a very low response rate, even though a follow-up email was sent. The low response rate may be due to factors such as the time of year the survey was deployed (near the end of the school year), lack of interest, no involvement in field trips, little involvement in research, or seeing little relevance in this research to them. Teacher responses thus provide qualitative insight on field trips, not quantitative results because of the low response rate.

Table 6 presents descriptive characteristics of field trip practices in schools. Three-quarters of teachers who responded reported to take students on field trips, and approximately the same percentage reported that the field trip included meals. Most respondents were teachers in elementary schools.

Only about a quarter of the teachers reported having any information or training in food safety, and even fewer reported that they were provided with food handling guidelines or procedures for meals served on field trips. Only nine of 43 reported to have any concerns about the safety of food served on field trips. Thirty-four of the 43 teachers reported that leftover food was discarded, and five reported that students took the food home.

Table 6. Descriptive characteristics of field trip practices as reported by teachers (N=80)

	n
Provide student field trips	
Yes	59
No	21
Students meals (from the lunchroom or student sack lunches) are taken on field trips	
Yes	46
No	13
Source of students' field trip meals	
The school cafeteria	33
The student's home	33
Purchased from a vendor	4
Other	2
Age group of respondents' schools	
Elementary School	34
Middle/Junior High School	5
High School	7
Students on a typical field trip	
Less than 20	6
21-40	14
41-60	5
61-80	9
81-100	4
More than 101	8
Adult volunteers or school aides who chaperone	
None	0
1	2
2	2
3	11
4	8
5	6
6 or more	16

Table 6. Descriptive characteristics of field trip practices as reported by teachers (N=80)

	n
Length of field trip (including transportation time) before lunch	
Less than 2 hours	5
2 hours	10
3 hours	19
4 hours	3
5 hours	3
More than 5 hours	2
Availability of information or training about handling food safely on field trips	
Yes	11
No	32
Provided food handling guidelines or standard operating procedures for meals consumed at schools and/or on field trips	
Yes	9
No	34
Concerns regarding the safety of meals served on field trips	
Yes	9
No	34
Use of leftovers from school-prepared foods after the field trip	
Discarded	34
Returned to school cafeteria	1
Taken home by students	5
Volunteers consume	1
Other	2

Table 7 summarizes the types of foods that teachers reported were provided for field trips either by the school or brought from home. Deli sandwiches made with turkey, ham, or other deli meats were the item most often provided by the school (22 of 43 respondents) and were the item second most often brought from home (20 of 43). Convenience lunches (such as Lunchables™) were the food item reported brought from home most often (23 of 43 respondents). Milk was often provided with school meals but rarely provided in meals brought from home. Salads were typically not offered either in meals provided either by the school or those brought from home.

Table 7. Food items provided for field trip meals as reported by teachers (N=80)

	Frequently	Occasionally	Not at All	n
Food items provided by the school				
Turkey, ham, and other deli meat sandwiches	22	9	10	41
Milk	22	6	12	40
Nut butter and jelly sandwiches	13	12	15	40
String cheese	9	8	20	37
Tuna salad, chicken salad, or egg salad sandwiches	2	0	34	36
Pizza (hot or cold)	2	1	33	36
Green (i.e., lettuce) salads	1	3	31	35
Yogurt	0	2	33	35
Food items brought from home				
Convenience/pre-packaged lunches (e.g., Lunchables™)	23	12	4	39
Turkey, ham, and other deli meat sandwiches	20	13	6	39
Nut butter and jelly sandwiches	15	14	9	38
Yogurt	4	17	16	37
Tuna salad, chicken salad, or egg salad sandwiches	2	7	28	37
Green (i.e., lettuce) salads	2	6	29	37
Milk	2	8	27	37
String cheese	2	25	10	37
Pizza (hot or cold)	2	15	19	36

Table 8 summarizes methods for packaging, transporting, and storing food. Most teachers reported that field trip meals were packaged in boxes, bags, or tubs; only 14 of the 38 reported that the meals are transported in a cooler with ice or ice packs. Almost all field trips were taken on school buses, which also served to store meals, as reported by 19 of 38 teachers.

Table 8. Teachers' reported methods for packaging, transporting, and storing field trip meals (N=80)

	Frequently	Occasionally	Not at All	n
Packaging of field trip meals during transportation				
Cardboard box, bag, or plastic tub	27	9	7	43
In a cooler with ice or ice packs	14	10	14	38
Students' backpacks	7	5	21	33
In a cooler without ice or ice packs	4	5	25	34
Other	2	0	4	6
Modes of transportation for field trips				
Bus	43	0	0	43
Car	1	5	28	34
Other	1	1	9	11
Storage location at the field trip site				
On the bus	19	10	9	38
In a building (no refrigeration)	14	9	16	39
In a car	2	5	29	36
In refrigerators at field trip site	1	3	30	34
Other	2	2	8	12

The use of hand sanitizers is the most frequently reported hand hygiene practice (Table 9). Only 17 of the 42 teachers reported that students frequently wash their hands before eating, and 22 reported occasional hand washing before meals.

Table 9. Teachers' reported hand hygiene practices of students prior to eating their field trip meal (N=80)

	Frequently	Occasionally	Not at All	n
Wash hands	17	22	3	42
Use hand sanitizers	25	12	5	42

Conclusions

Food safety on field trips was not a concern for most school nutrition managers or teachers. Only about 20% of school nutrition managers provided food safety training for teachers or volunteers, citing teachers' and managers' time as barriers to training. A fourth of the teachers reported that they did not receive any information or training about handling food safely on field trips.

Reports from both school nutrition managers and school teachers show that TCS foods are included in meals provided for field trips, both by schools and in meals brought from home. Deli sandwiches made of turkey, ham, or other deli meats are the TCS foods most often taken on field trips. Most field trip meals provided by the school nutrition program are prepared on the day of the field trip.

Most school nutrition managers reported transporting food in coolers with ice or ice packs, yet nearly 30% do not. A variety of brands and types of coolers are used, but little is known about the effectiveness of these coolers in maintaining temperatures.

Recommendations

Based on the findings of this study, we make the following recommendations:

1. Training resources on food safety risks and practices are needed for school nutrition personnel, teachers, and volunteers for school field trip meals. Examples of resources include:
 - a. A fact sheet for school nutrition personnel on field trip meals, including an explanation of potential food safety risks and recommendations for methods of time and temperature control.
 - b. A standard operating procedure for school nutrition personnel on preparing and packing field trip meals to promote food safety through safe food choices and proper temperature control.
 - c. A fact sheet on field trip meals for teachers and volunteers, including potential food safety risks, the importance of time and temperature control, and the need for students to wash their hands before eating. This fact sheet could be used for training but could also be provided to the teacher or volunteer when meals are picked up. Distribution at this time might encourage its use to support safe food handling practices.
 - d. Colorful stickers for use on packaging of field trip meals to remind users to handle food properly. For example, a sticker could be placed on cold foods with a message to "keep cold foods cold"; hand washing stickers could also be included.
2. Conduct simulation studies to determine how well time and temperature are maintained for various foods and transportation techniques used most frequently.

3. Conduct a microbiological study to determine the impact of time and temperature on the microbiological quality of food items typically served on field trips. Those food items should include deli meat sandwiches (regular and low sodium meats), cut lettuce, and cut tomatoes. Because food is often transported without any cooling and in coolers with ice or ice packs, both methods should be studied to determine temperature changes over time. Further, the efficacy of home-style and commercial coolers should be determined. Based on the findings of these studies, more definitive recommendations can be made, and educational programs and resources can be developed.

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Appendix A:
Questionnaire for School Nutrition Managers

Foodservice Manager - Field Trip Meals

Q1 Does your school nutrition program prepare field trip meals for students?

1. Yes
2. No

Q2 What percent of meals served on field trips represent the following?

	Percent
Hot meals	
Cold Meals	
Room temperature meals (i.e., foods that don't need to be kept hot or cold)	
Combination of hot and cold meals	
Meals with frozen components (e.g., frozen sandwiches or juice packs)	

Answer If What percent of meals served on field trips represent the following? Hot meals - Percent Is Greater Than 0 Or What percent of meals served on field trips represent the following? Combination of hot and cold meals - Percent Is Greater Than 0

Q3 If hot meals are served, what menu items are offered?

Q4 How frequently are the following sandwiches/wraps and related ingredients served on field trips?

	Frequently	Occasionally	Not At All
Nut butter and jelly	3.	4.	5.
Turkey, ham or other deli meat	6.	7.	8.
Low sodium turkey, ham or other deli meat	9.	10.	11.
Tuna, chicken, or egg salad	12.	13.	14.
With cheese added	15.	16.	17.
With lettuce added	18.	19.	20.
With tomato added	21.	22.	23.
Other:	24.	25.	26.

Q5 How frequently are green (lettuce-based) salads served on field trips:

	Frequently	Occasionally	Not At All
With deli meat?	27.	28.	29.
With other meat? (Indicate what it is):	30.	31.	32.
With cheese?	33.	34.	35.
With cut tomatoes (i.e., sliced, diced, chopped)?	36.	37.	38.
Other:	39.	40.	41.

Q6 How frequently are the following items served on field trips?

	Frequently	Occasionally	Not At All
Yogurt	42.	43.	44.
String cheese	45.	46.	47.
Hot pizza	48.	49.	50.
Cold Pizza	51.	52.	53.
Other:	54.	55.	56.

Q7 Are condiments (such as mustard or mayonnaise) typically provided?

- 57. Yes
- 58. No

Answer If Are condiments (such as mustard or mayonnaise) typically provided? Yes Is Selected

Q8 Condiments are:

- 59. Applied to food items by school nutrition program staff
- 60. Provided as single-serving packets

Answer If Are condiments (such as mustard or mayonnaise) typically provided? Yes Is Selected

Q9 Which of the following condiments are offered? Please select all that apply.

- 4. Mayonnaise or salad dressing spread
- 5. Mustard
- 6. Ketchup
- 7. Salad dressing (e.g., ranch dressing)
- 8. Other: _____

Q10 How frequently are the following fruits served on field trips?

	Frequently	Occasionally	Not At All
Whole fruit	61.	62.	63.
Sliced or chopped fresh fruits (school prepared)	64.	65.	66.
Sliced or chopped fresh fruits (commercially prepackaged)	67.	68.	69.
Dried fruit	70.	71.	72.
Individual, prepackaged fruit (e.g., applesauce or peaches)	73.	74.	75.
Other:	76.	77.	78.

Answer If How frequently are the following fruits served on field trips? Sliced or chopped fresh fruits (school prepared) - Frequently Is Selected Or How frequently are the following fruits served on field trips? Sliced or chopped fresh fruits (school prepared) - Occasionally Is Selected

Q11 Please select all of the fruits that your school nutrition program employees wash and cut/slice for field trips:

- 9. Apples
- 10. Oranges
- 11. Pears
- 12. Bananas
- 13. Strawberries
- 14. Cantaloupe
- 15. Watermelon
- 16. Honeydew melon
- 17. Other: _____

Q12 How frequently are the following vegetables served on field trips?

	Frequently	Occasionally	Not At All
Commercially prepared, individually packaged (e.g., baby carrots)	79.	80.	81.
School prepared cut tomatoes (with or without salad)	82.	83.	84.
School prepared cut lettuce	85.	86.	87.
School prepared other cut vegetables (e.g., carrots, celery, cucumbers)	88.	89.	90.
School prepared whole, uncut vegetables (e.g. baby carrots, cherry tomatoes)	91.	92.	93.
Other:	94.	95.	96.

Q13 How frequently are the following beverages served on field trips?

	Frequently	Occasionally	Not At All
Pasteurized fluid milk needing refrigeration (e.g., skim, 1%)	97.	98.	99.
Ultra-high-temperature (UHT) milk (shelf-stable)	100.	101.	102.
Juice	103.	104.	105.

Q14 How frequently do you prepare field trip meals during these time frames?

	Frequently	Occasionally	Not At All
The day of the field trip	106.	107.	108.
One day before the field trip	109.	110.	111.
Two days before the field trip	112.	113.	114.
Other:	115.	116.	117.

Q15 Typically, how long are field trip meals at room temperature between preparation and pick-up in the kitchen/cafeteria?

- 118. Less than 1 hour
- 119. 1-2 hours
- 120. 2-3 hours
- 121. 3-4 hours
- 122. More than 4 hours

Q16 How frequently are field trip meals packaged in the following ways?

	Frequently	Occasionally	Not At All
All meal items packed together in an individual sack/box	123.	124.	125.
Nonperishable items in an individual sack/box with perishables in bulk coolers	126.	127.	128.
All items sent in bulk (e.g, box of apples, cooler of milk, box of peanut butter and jelly sandwiches)	129.	130.	131.

Q17 How frequently is milk transported for field trips using the following methods?

	Frequently	Occasionally	Not At All
Individually with other lunch items (i.e. in a sack lunch)	132.	133.	134.
In a cooler with ice	135.	136.	137.
In a cooler with ice packs	138.	139.	140.
In a cooler without ice or ice packs	141.	142.	143.
Frozen (i.e., individual milk cartons are frozen prior to field trip)	144.	145.	146.
Other:	147.	148.	149.

Q18 How does your facility pack cold foods (like deli sandwiches) for transport on field trips?
Select all that apply.

- 18. Place in boxes
- 19. Place in coolers without ice packs
- 20. Place in coolers with ice packs
- 21. Pack with frozen meal components (juice boxes, sandwiches, fruit cups, etc.)
- 22. Other: _____
- 23. Place in coolers with ice

Answer If What percent of meals served on field trips represent the following? Cold Meals - Percent Is Greater Than 0 Or What percent of meals served on field trips represent the following? Combination of hot and cold meals - Percent Is Greater Than 0

Q19 If cold field trip meals are served, are insulated containers used for transporting meals?

- 150. No
- 151. Yes

Answer If If cold field trip meals are served, do you provide insulated containers for transporting meals?
Yes Is Selected

Q20 What is the material for your cold-holding containers?

- 152. Plastic
- 153. Metal
- 154. Styrofoam
- 155. Other: _____

Answer If If cold field trip meals are served, do you provide insulated containers for transporting meals?
Yes Is Selected

Q21 Are the cold-holding containers hard- or soft-sided?

- 156. Hard-sided
- 157. Soft-sided
- 158. Other: _____

Answer If If cold field trip meals are served, do you provide insulated containers for transporting meals?
Yes Is Selected

Q22 What brand is the cold-holding container?

- 159. Cambro™
- 160. Coleman™
- 161. Igloo™
- 162. Rubbermaid™
- 163. Other (please specify): _____

Answer If If cold field trip meals are served, do you provide insulated containers for transporting meals?
No Is Selected

Q23 How are cold meals kept cold during the field trip?

Answer If What percent of meals served on field trips represent the following? Hot meals - Percent Is Greater Than 0 Or What percent of meals served on field trips represent the following? Combination of hot and cold meals - Percent Is Greater Than 0

Q24 If hot meals are served, do you provide insulated containers for transporting meals?

- 164. No
- 165. Yes

Answer If If hot meals are served, do you provide insulated containers for transporting meals? Yes Is Selected

Q25 What is the material of your hot-holding containers?

- 166. Plastic
- 167. Metal
- 168. Styrofoam
- 169. Other: _____

Answer If If hot meals are served, do you provide insulated containers for transporting meals? Yes Is Selected

Q26 Are the hot-holding containers hard- or soft-sided?

- 170. Hard-sided
- 171. Soft-sided
- 172. Other: _____

Answer If If hot meals are served, do you provide insulated containers for transporting meals? Yes Is Selected

Q27 What brand are the hot-holding containers?

- 173. Cambro™
- 174. Coleman™
- 175. Igloo™
- 176. Rubbermaid™
- 177. Other: _____

Answer If If hot meals are served, do you provide insulated containers for transporting meals? No Is Selected

Q28 How are hot meals kept hot during the field trip?

Q29 Which leftover items from school-prepared field trip meals are served again? (Check all that apply).

- 24. Milk
- 25. Sandwiches
- 26. Fruits/Vegetables
- 27. Desserts
- 28. None, leftovers are discarded
- 29. Other: _____

Q30 Do you have any specific concerns regarding the safety of meals served on field trips?

178. Yes

179. No

Answer If Do you have any specific concerns regarding the safety of meals served on field trips? Yes Is Selected

Q31 What are your concerns regarding the safety of meals served on field trips?

Q32 Does your facility or district have a field trip policy that has Standard Operating Procedures (SOPs) for safe food handling which includes:

	No	Yes
Guidelines for safe food handling (i.e., handwashing and temperature control)	180.	181.
Directions for preparing field trip meals	182.	183.
Directions for transporting field trip meals	184.	185.
Requirements for food temperature measurements prior to meal service by a teacher or volunteer	186.	187.
Requirements for food temperature record keeping prior to meal service by a teacher or volunteer	188.	189.
Other:	190.	191.

Q33 Please upload your school's nutrition program's field trip policy/SOP here:

Q34 Does the school nutrition program provide food safety training to teachers and/or field trip volunteers?

- 192. Yes, training is required
- 193. Yes, training is optional
- 194. No

Q35 Training is completed through (check all that apply):

- 30. Informal face-to-face training (i.e., as someone picks up the meals)
- 31. Formal/pre-arranged training prior to field trip face-to-face training
- 32. Online training (webinars, training modules)
- 33. Educational Materials (e.g., online resources, handouts distributed with meals or prior to field trip)
- 34. Other _____

Q36 What barriers are there to implementing training? (Check all that apply)

- 35. Manager's time
- 36. Foodservice employees' time
- 37. Scheduling conflicts
- 38. Cost
- 39. Resources
- 40. Other _____
- 41. Teachers' time
- 42. Volunteers' time
- 43. None

Answer If What barriers are there to implementing training? (Check all that apply) None Is Selected

Q37 What tools or resources would help you overcome these barriers?

- 44. Training materials/ lesson plans
- 45. Webinars/ online modules
- 46. Other: _____

Q38 For the past 12 months, please indicate the approximate number of total field trip meals provided:

- 47. August _____
- 48. September _____
- 49. October _____
- 50. November _____
- 51. December _____
- 52. January _____
- 53. February _____
- 54. March _____
- 55. April _____
- 56. May _____
- 57. June _____
- 58. July _____

Q39 For a typical field trip, how many meals are prepared?

- 195. Less than 20 meals
- 196. 21-40 meals
- 197. 41-60 meals
- 198. 61-80 meals
- 199. 81-100 meals
- 200. More than 101 meals

Q40 How would you describe your food production system?

- 201. Conventional: foods are prepared and served at a school
- 202. Ready prepared: Menu items are produced on-site and held chilled or frozen until heated for service
- 203. Assembly serve: Menu items are purchased already prepared and require minimal cooking before service (foods may be purchased from an outside vendor)
- 204. Commissary: Centralized procurement and production facilities with distribution of prepared menu items to several remote schools for final preparation and service.

Q41 What is your school's state?

Q42 What is your school's zip code?

Q43 Which age group best describes your school?

- 205. Elementary School
- 206. Middle/Junior High School
- 207. High School

Q44 May we contact you if we need additional information?

- 208. Yes
- 209. No

Answer If May we contact you if we need additional information? Yes Is Selected

Q45 Please provide us with your contact information:

Name:

Email Address:

Appendix B:
Teacher Questionnaire

Teacher - Field Trip

Q1 Do you take your students on field trips?

210. Yes

211. No

Q29 Do your students take meals (from the lunchroom or student sack lunches) on field trips?

212. Yes

213. No

Q2 Which age group best describes your school?

214. Elementary School

215. Middle/Junior High School

216. High School

Q3 Typically, how many students attend a single field trip?

217. Less than 20

218. 21-40

219. 41-60

220. 61-80

221. 81-100

222. More than 101

Q4 Typically, how many adult volunteers or school aides chaperone a field trip with you?

- 223. None
- 224. 1
- 225. 2
- 226. 3
- 227. 4
- 228. 5
- 229. 6 or more

Q5 Typically, where do students' field trip meals come from? (Please check all that apply.)

- 59. The school cafeteria
- 60. The student's home
- 61. Purchased from a vendor (e.g., deli box lunch)
- 62. Other: _____

Q6 During field trip transportation, how frequently are students' lunches stored in the following ways?

	Frequently	Occasionally	Not At All
Cardboard box, bag, or plastic tub	230.	231.	232.
In a cooler without ice or ice packs	233.	234.	235.
In a cooler with ice or ice packs	236.	237.	238.
Students' backpacks	239.	240.	241.
Other:	242.	243.	244.

Q7 How frequently are the following food items in field trip meals provided by the SCHOOL?

	Frequently	Occasionally	Not At All
Nut butter and jelly sandwiches (i.e., peanut butter, sun butter)	245.	246.	247.
Turkey, ham, and other deli meat sandwiches	248.	249.	250.
Tuna salad, chicken salad, or egg salad sandwiches	251.	252.	253.
Green (i.e., lettuce) salads	254.	255.	256.
Yogurt	257.	258.	259.
Milk	260.	261.	262.
String cheese	263.	264.	265.
Pizza (hot or cold)	266.	267.	268.
Other:	269.	270.	271.

Q8 How frequently are the following food items in field trip meals provided from HOME?

	Frequently	Occasionally	Not At All
Nut butter and jelly sandwiches (e.g., peanut butter, sun butter)	272.	273.	274.
Turkey, ham, and other deli meat sandwiches	275.	276.	277.
Tuna salad, chicken salad, or egg salad sandwiches	278.	279.	280.
Green (i.e., lettuce) salads	281.	282.	283.
Yogurt	284.	285.	286.
Milk	287.	288.	289.
String cheese	290.	291.	292.
Pizza (hot or cold)	293.	294.	295.
Convenience/pre-packaged lunches (e.g., Lunchables™)	296.	297.	298.
Other:	299.	300.	301.

Q9 How frequently do the following people pick up field trip meals from the school cafeteria?

	Frequently	Occasionally	Not At All
The student who will consume the meal	302.	303.	304.
One student for the entire group	305.	306.	307.
One teacher for the entire group	308.	309.	310.
Adult volunteer for the entire group	311.	312.	313.
Other:	314.	315.	316.

Q10 Typically, how many hours are the students on their field trip (including transportation time) before they eat lunch?

- 317. Less than 2 hours
- 318. 2 hours
- 319. 3 hours
- 320. 4 hours
- 321. 5 hours
- 322. More than 5 hours

Q11 How frequently are the following modes of transportation used for field trips?

	Frequently	Occasionally	Not At All
Bus	323.	324.	325.
Car	326.	327.	328.
Other:	329.	330.	331.

Q12 At the field trip site, how frequently are students' lunches stored in the following locations?

	Frequently	Occasionally	Not At All
On the bus	332.	333.	334.
In a car	335.	336.	337.
In a building (no refrigeration)	338.	339.	340.
In refrigerators at field trip site	341.	342.	343.
Other:	344.	345.	346.

Q13 At the field trip site, how frequently are students' lunches stored in the following manner?

	Frequently	Occasionally	Not At All
In cardboard box, bag, or plastic tub	347.	348.	349.
In a cooler without ice or ice packs	350.	351.	352.
In a cooler with ice	353.	354.	355.
In students' backpacks	356.	357.	358.
Other:	359.	360.	361.
In a cooler with ice packs	362.	363.	364.

Q14 On field trips, how frequently do students wash their hands prior to eating?

- 365. Frequently
- 366. Occasionally
- 367. Not At All

Q15 On field trips, how frequently do students use hand sanitizer prior to eating?

- 368. Frequently
- 369. Occasionally
- 370. Not At All

Q16 Does the school or foodservice provide you with information or training about handling food safely on field trips?

- 371. Yes
- 372. No

Q17 On field trips, how frequently do you take and record temperatures of hot or cold foods before serving students?

- 373. Frequently
- 374. Occasionally
- 375. Not At All

Q18 Are you given food handling guidelines or standard operating procedures for meals consumed at schools and/or on field trips?

- 376. Yes
- 377. No

Q19 Do you have any specific concerns regarding the safety of meals served on field trips?

- 378. Yes
- 379. No

Answer If Do you have any specific concerns regarding the safety of meals served on field trips? Yes Is Selected

Q20 What are your concerns regarding the safety of meals served on field trips?

Q21 What is typically done with school-prepared leftovers after the field trip?

- 380. Discarded
- 381. Returned to school cafeteria
- 382. Taken home by students
- 383. Volunteers consume
- 384. Other: _____

Answer If What is typically done with school-prepared leftovers after the field trip? Returned to school cafeteria Is Selected

Q22 Which leftover items from school-prepared field trip meals are returned to the kitchen to be re-served? (Check all that apply).

- 63. Milk
- 64. Sandwiches
- 65. Fruits/Vegetables
- 66. Desserts
- 67. Other: _____

Q23 What is your school's state?

Q24 What is your school's zip code?

Q25 What is your average class size?

- 385. Less than 15 students
- 386. 15-19 students
- 387. 20-24 students
- 388. 25-29 students
- 389. 30-34 students
- 390. Greater than 35 students

Q26 May we contact you if we need additional information?

- 391. Yes
- 392. No

Q27 Please provide us with your contact information:

Name:

Email Address:

Appendix C:

Cover Letter for School Nutrition Managers

Dear School nutrition Manager:

The Healthy Hunger Free Kids Act of 2010 addresses the safety of food served across the school environment. There has been little research to address the safety of school meals served on field trips, even though temperature control may be a challenge. We are working with USDA to identify the current policies, procedures, and practices being used by schools for meals served on field trips. We anticipate the survey will take 10 to 15 minutes to complete.

Your participation is voluntary, refusal to participate will involve no penalty and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous unless you choose to share your contact information. Please be assured that your responses will be confidential and all results will be reported as group data.

Your participation is essential to the study's success. We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Dr. Jeannie Sneed at (785) 532-5507. If you have any questions about the rights of individuals in this study or about the way the study is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your time and assistance. We value your input.

Here is the survey link: https://kstate.qualtrics.com/SE/?SID=SV_af2SkNP6i7BEaCp

Sincerely,

Jeannie Sneed, PhD, RD
Professor and Head
Department of Hospitality Management & Dietetics
jsneed@ksu.edu

Emily Vaterlaus Patten, MS, RD
Graduate Research Assistant and PhD Student
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Appendix D:
Cover Letter for Teachers

Dear Teacher:

The safety of food served across the school environment is very important. There has been little research to address the safety of school meals served on field trips, even though temperature control may be difficult. We are working with USDA to identify the current policies, procedures, and practices being used by schools for field trip meals. As a teacher, you have a unique perspective about how the meals are actually transported and served to children. We need your perspective as we explore this issue. It will take you about five to seven minutes to complete the survey.

Your participation is voluntary, refusal to participate will involve no penalty and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous unless you choose to share your contact information. Please be assured that your responses will be confidential and all results will be reported as group data.

Your participation is essential to the study's success. We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Dr. Jeannie Sneed at (785) 532-5507. If you have any questions about the rights of individuals in this study or about the way the study is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your time and assistance. We value your input.

Here is the survey link: https://kstate.qualtrics.com/SE/?SID=SV_1MJJWrIhsnVxpeR

Sincerely,

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