

Food Safety Research: School Nutrition Production Systems

Overview

Child Nutrition programs, administered by the United States Department of Agriculture (USDA), Food and Nutrition Service (FNS), include the [National School Lunch Program](#) (NSLP), [School Breakfast Program](#) (SBP), and more. In fiscal year 2022, over 4.7 billion lunches were served to children nationwide through the NSLP ([USDA FNS](#)).

School food service operations have evolved since the NSLP was established, due in part to updated nutritional requirements, shifts in food culture, and new types of procurement, including local procurement. According to the [2019 Farm to School Census](#), more schools may be using fresh and local ingredients in the meals they serve to students.

Profiling Food Safety Risk in School Nutrition Programs via Production Systems

Little is known about the food safety risks associated with the various production methods by which schools prepare and serve food to students. Given this, the [Center for Food Safety in Child Nutrition Programs](#) at Kansas State University conducted a study that:

1. Identified and described food production systems utilized in school nutrition programs
2. Determined trends in food production practices
3. Assessed the types, magnitudes, and relevance of food safety risks
4. Established food safety research priorities

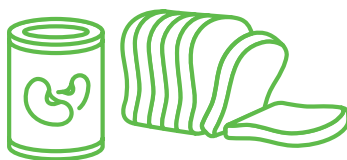
The Use of Certain Food Categories and Types in School Nutrition Operations Was Evaluated

Scratch-cooked



Fresh **fruits and vegetables**.

Minimally processed



Slightly processed **beans, legumes, and grains** that don't often contain other ingredients.

Processed



Commercially processed, packaged, and ready to serve **sauc**es, **dressings**, and **proteins**.

Study Methods

During the fall of 2020, an online survey was distributed to school districts participating in NSLP in 14 States, representing all USDA FNS regions. There were 713 usable survey responses, resulting in a 17.9-percent response rate.

Most of the respondents (75 percent) were from small school districts with fewer than 2,500 students. Nearly a quarter (22 percent) of respondents were from by medium districts. Very few respondents from large and mega districts (3 percent), which include districts with more than 20,000 students.

Data collected assessed the types of production systems most frequently used in school operations and which aspects of production systems posed the greatest perceived food safety risks.

Findings

Production Systems in School Nutrition Programs

Respondents assessed their use of food types that were scratch-cooked, minimally processed, and processed.

- Fruits and vegetables were the most frequently used scratch-cooked food types.
- The use of minimally processed food types was relatively consistent across food types.
- Sauces and dressing, grains, and protein were the most frequently used processed food types, with use in more than 50 percent of menu items.

An Example of a School Lunch Based on Study Findings



Changes in Production System

When asked about changes to the production systems in their kitchens over the last 5 years, most respondents (58 percent) reported no change in their production systems. Of respondents who reported changes, there was not a strong consensus of what changes had been made.

Most respondents, 65 percent, did not anticipate changes to their production systems in the coming 5 years. Of those who anticipate changes, most predict an increase in scratch cooking.

The main changes respondents predict making include:



Food Safety and Production Systems

The most frequently identified factors influencing the implementation of a new district-wide production system were employees' actual food safety practices (84 percent) and food safety standards outlined by the program (82 percent).

Given the anticipated transition to more scratch cooking in their operations, participants ranked their level of concern for food safety risk on operational practices.



Next Steps

School nutrition programs use a variety of ingredients, each varying from raw to processed, given their program and menu needs. While procurement differs greatly from operation to operation, understanding the general landscape of production systems can allow specific challenges and concerns to be addressed.

Future research can continue to evaluate changes in school food production practices and related food safety procedures and outcomes. Given the high representation of small schools in the sample, assessing production systems across medium, large, and mega schools may be warranted.

Opportunities To Strengthen Food Safety in Production Systems

Results from this study can be used to assess the importance of addressing specific concerns across different production systems.

- Strengthen the connection between food safety risks in production systems and HACCP, including an emphasis on the need for comprehensive and up-to-date food safety plans.
- Connect program operators with resources that link to relevant training and educational resources based on a typical school meal served (i.e., food safety resources for serving a meal with scratch-cooked fruits and vegetables, minimally processed beans/legumes, and processed proteins and sauces).
- Support research that explores the differences in employee food safety behaviors between programs that rely heavily on scratch-cooked, minimally processed, or processed ingredients.

Act Now!

- The FNS food safety team helps protect people served by FNS programs from foodborne illness by developing [food safety education, training, and technical assistance resources](#).
- Explore these [food safety resources](#) developed by the Institute of Child Nutrition to support food safety in your operations.
- Fruits and vegetables are often prepared from scratch; check out these [Produce Safety Resources](#) to help keep your students safe.
- Learn from your peers through the [Child Nutrition Sharing Site](#)—your one-stop shop for all operation-related Child Nutrition Program resources.