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The National School Lunch Program: Policy Strategies to Address Food Insecurity in School-Aged Children

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Abstract

The National School Lunch Program (NSLP) is available to American families with lower annual incomes in relation to the poverty level in order to provide nutritional meals for their school-aged children. However, conveying this offered program to American families comes with challenges, such as food insecurity and the lack of resources along with education in relation to overall health and well-being. Follow-up recommendations are included to possibly assist and approve this federally funded program.

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Problem Statement

Food Insecurity

The growing risks of food insecurity, exacerbated by high costs of nutritional foods, are directly related to the acceleration of poverty. Every person should have access to sufficient, wholesome, and fresh food, especially children. Yet things often turn out differently than people expect. The primary problem is food insecurity, which is caused by poverty. A lack of resources to purchase a variety of foods will lead to poor health, reduced nutrient intake, and low food security. When people do not have the resources to purchase adequate food, which results in insufficient food intake, then they will suffer from food insecurity. Furthermore, when children do not eat enough nutritious food, they are more vulnerable to harm throughout the time of growth and development, which negatively affects their academic achievement and well-being. Food insecurity is an important issue as it contributes to the worldwide deaths of many children from malnutrition and diseases linked to hunger. Compared to children who have access to healthy, supplemental food, those who are food insecure are more likely to be in poor health and to have both physical and cognitive developmental risks (Kim, 2017, p. 1).

Issues Contributing to Food Access

Many school-aged children, especially in the United States, have suffered from low food security and difficulty gaining nutrient intake. They should be provided with the proper access to nutritionally balanced, free or reduced-price lunch meals while they are attending school. Chilton et al. (2007) report that food insecurity was discovered to be linked to caregiver reports of worse newborn health and a higher risk of hospitalization in children under the age of three. Infants and

toddlers from food insecure households had considerably higher odds of developmental risk than infants and toddlers from food secure households (Chilton et al., 2007, p. 265).

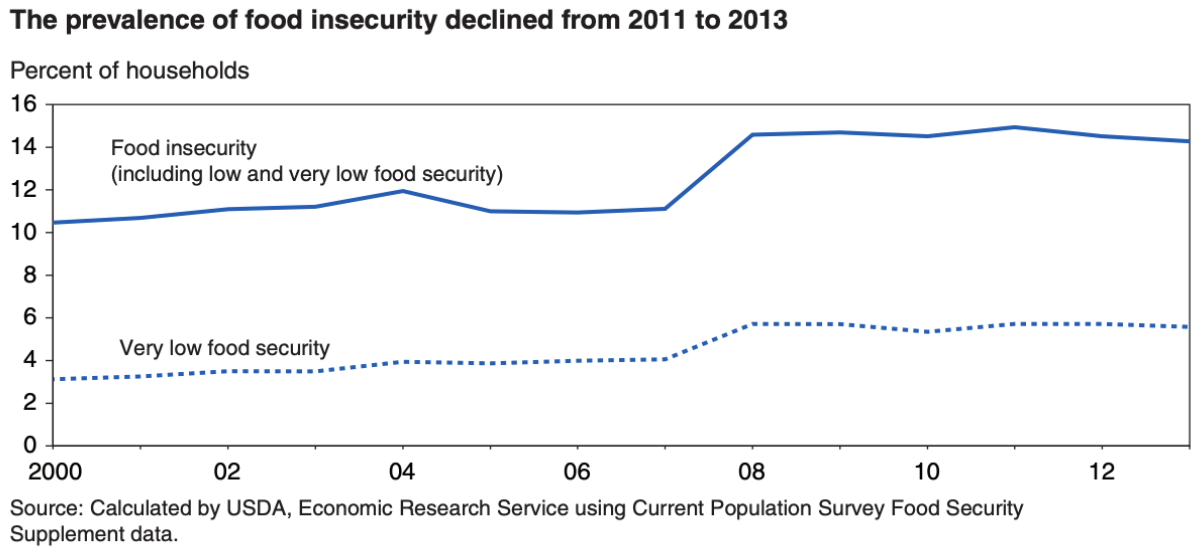
Fresh fruit and vegetable consumption helps prevent childhood obesity and raises school attendance and academic performance. However, some schools find it difficult to offer fresh produce because of the cost, the administrative effort, and the concern over food waste. The Fruit and Vegetable Access for Children Act suggests allowing federally sponsored programs to replace fresh fruits and vegetables with canned, frozen, or blended alternatives in order to address these problems (Schultz & Thorlton, 2019). Children this young do not have the education to understand which types of food are needed in order for them to stay healthy and succeed in their future endeavors. Social policies that are provided to school-aged children are aimed to help them receive proper nutrition boosting academic performance and overall well-being. But this is not a quick, simple process.

A portion of American households are significantly impacted by food insecurity, which continues to be a remarkable policy concern. According to Kim (2017), it is crucial to consider the effects of food insecurity on children because research has shown that the first few years of life are important for their physical and cognitive development. Using panel data for primary school children, previous studies investigated the association between food security with status and health, behavior, and academic characteristics. According to research, children who are hungry do worse in school and achieve less academically because they are not focusing nor are they well-prepared for learning (Houston et al., 2013). By studying the relationship between food insecurity and academic performance, as shown by math and reading test results, this study adds to the body of literature. It does this by tracking a panel of students from kindergarten through

eighth grade. The Core Food Security Module (CFSM) is used today in the United States and Canada. It is used on a national level to evaluate the severity and breadth of household food insecurity over the past 12 months as a result of insufficient funds for food. The CFSM consists of 18 indicator items that measure how much food insecurity and hunger households experience. The first 10 questions examine whether households ever had to reduce the amount of food they purchased or reduce the frequency or size of their meals due to financial restrictions. In other words, this study indicates that food insecurity can be a broader issue than once expected. The subsequent inquiries are geared at families with children and are intended to gauge whether or not the financial situation of the family has an impact on the cost of the children's meals.

Figure 1

The prevalence of food insecurity from 2000 to 2013



From 2007 to 2008, household food insecurity rates increased to roughly 15 percent and very low food security rates to roughly 6 percent due to the Great Recession (U.S. Department of Agriculture, 2019; Coleman-Jensen, Gregory, & Singh, 2014). From 2012 to 2013, the

proportion of American households experiencing food insecurity stayed largely stable; however, from 2011 to 2013, food insecurity rates declined. The proportion of households with extreme food insecurity—also known as very low food security—remained mostly unchanged.

Literature Review

Food as a Basic Need

Food insecurity is a prevalent problem that is caused by poverty. Food that is adequate, healthful, and fresh should be available to everyone, especially young children; therefore, food is a basic need for all people. However, one of the main causes of food insecurity is poverty (Cook & Frank, 2008). Cook and Frank (2008) suggest that food insecurity and poor nutrition have an impact on health and well-being throughout the life cycle, from birth until later in life. Additionally, the effects of poverty on adults in families with children can have a negative impact on those children in a number of ways, such as diminishing the parents' ability to care for and stimulate their growth. Low food security and a lack of variety in people's meals will result from a lack of resources to purchase a variety of foods. This can lead to insufficient food and healthy intake. Additionally, children who do not eat enough food are more susceptible to harm during the period of growth and development, especially to their academic performance and general well-being. This literature review examines the social factors that contribute to food access and the impact of the National School Lunch Program.

The National School Lunch Program

The National School Lunch Program (NSLP) is a federally funded food program that is provided at residential child care facilities, nonprofit private schools, and public schools. Every school day, it offers children free, reduced-price, nutritionally balanced lunches. Children whose

families' earnings are less than 130 percent of the poverty threshold receive free school lunches (U.S. Department of Agriculture, n.d.). The program's lunches must include the following options: meat or a meat substitute, two or more vegetables and fruits, whole-grain or enriched breads, milk, and at least one-third of the Recommended Daily Allowance for each vitamin. Many of the assessments of the NSLP that are currently available show a connection between program participation and higher nutritional consumption. Although the NSLP is successful at achieving the goals of the Recommended Daily Allowance for increasing nutrients, there is some worry that the lunches may contain more fat and saturated fat than what is advised by The Dietary Guidelines for Americans, which serve as the foundation for government nutrition policy, outreach efforts, education initiatives, and food assistance programs (U.S. Department of Agriculture; Dunifon and Kowaleski-Jones, 2003, p. 73).

Children who take part in the National School Lunch Program (NSLP) may notice increases in their capacity to learn and control their behavior, as well as their general health, if involvement results in improved nutritional intake. However, it is likely that enrollment in the NSLP will not lead to better results for children in these areas. This research is in contrast with the other studies that discuss the benefits of the NSLP. First, Alaimo et al. (2001) indicated it is possible that the food consumed as part of the program lacks sufficient nutritional content to improve children's results. This illustrates how, despite their strong correlation, poverty and food insecurity are distinct from each other. “In 2000, the prevalence of food insecurity was 36.8 percent among poor households, compared with 4.6 percent among households with incomes above 1.85 times the poverty line” (Nord et al., 2002; Dunifon & Kowaleski-Jones, 2003, pg. 75). This shows how closely related poverty and food insecurity are. Second, even if children

take part in the program and increase their nutritional consumption as a result, and their parents make up for it by giving them less food at home, then their overall nutrient intake might not improve (Dunifon & Kowaleski-Jones, 2003, p. 74). A sample from the Child Development Supplement of the Panel Study of Income Dynamics (CDS-PSID) was used to determine the association between NSLP participants, food insecurity, and child outcomes– specifically child well-being. Using a Rasch model developed by the USDA, the researchers measured the severity of food insecurity among NSLP participants ages 6 through 12. Three criteria are used to assess child well-being: achievement, behavioral adjustment, and physical limitations. When measuring health restrictions, Dunifon and Kowaleski-Jones (2003) used a variable that asks parents if their children have any health issues that prevent them from participating in typical youth activities, attending school, or doing their homework. A child receives a score of one if they have any limitations in any field. The remainder receives a value of zero. This measure takes into account a child's tendency to be sick to the point where it prevents them from engaging in typical youth activities, which may be a crucial antecedent to success in achievement outcomes.

The Behavior Problems Index (BPI) assesses children's behavioral adjustment by using maternal reports to assess both externalizing behavior (16 items including bullying) and internalizing behavior (13 items including moodiness). Children’s achievement was evaluated (Dunifon & Kowaleski-Jones, 2003, p. 77). Reading proficiency is measured by a mixture of scores on letter-word and passage comprehension tests, while math achievement is measured by a combination of scores on applied problems and calculation exams. Studies indicate that “31 percent of children receive a free or reduced-price lunch through the NSLP… Overall, 10 percent of the CDS-PSID sample of children ages 6–12 lived in households that would be classified as

food insecure by the USDA…" (Dunifon and Kowaleski-Jones, 2003, p. 80). The likelihood of participating in the NSLP is predicted by a broader collection of family and child measures. Participation is significantly and unfavorably correlated with family wealth and paternal education. The number of siblings a child has, in regards to marginalized groups, how often they used food stamps, and how long they lived in a married-parent family are all favorably and significantly correlated with NSLP involvement (Dunifon & Kowaleski-Jones, 2003, p. 83).

Pokorney, Chandran, and Long (2019) searched for publicly accessible meal count information by school from specific state education agencies. They found these statistics from the 2013–2014 school year until the present in Pennsylvania. The Maryland Department of Education responded to a request for the meal count information for the 2016–17 school year. Since there are no significant programmatic variations in the NSLP and Community Eligibility Provision (CEP) implementation between states, they decided to merge the data from Maryland and Pennsylvania to boost statistical power and sample size. The CEP is a non-pricing lunch service alternative for schools and school districts in low-income communities (U.S. Department of Agriculture, n.d.). They enable the most impoverished schools and school districts in the United States to offer free breakfast and lunch to all enrolled students without requiring household applications. Instead, schools that implement CEP receive reimbursement according to a formula that takes into account the proportion of students who are categorically qualified for free meals based on their involvement in other particular means-tested initiatives, such as the Supplemental Nutrition Assistance Program (SNAP). The Food Research & Action Center's CEP database, which contains state, school district, school name, ISP, student enrollment, and current CEP participation status, was used to collect school CEP and free and reduced-price (FR)

eligibility data. After adjusting for FR eligibility, enrollment, and operating days, CEP was linked to a non-significant 6 percent higher total NSLP meal count (Pokorney, Chandran, & Long, 2019, p. 2). When participation rates from the year before the CEP was implemented were taken into account, a significant 8 percent increase in meal counts was linked to the program. Lower FR lunch participation and significant increases in paid meal participation were linked to CEP. The number of students participating in all school meals increases when CEP is implemented at the school level. Schools with fewer children eligible for FR lunches may be prevented from adopting the program more widely due to current funding systems.

Similar Programs

The Summer Food Service Program

A smaller number of children (age 18 or younger) participating in summer school programs, camps, and other structured activities receive lunches and snacks under the Summer Food Service Program (SFSP). According to the USDA, state agencies, sponsors, and sites are the three major participants in the SFSP. The initiative is managed by state agencies, who also interact with USDA. To manage the initiative, sponsors enter into arrangements with government organizations. The SFSP may be sponsored by schools, local government organizations, camps, faith-based organizations, and other non-profit community groups that are able to run a meal service program. The Program pays sponsors back, and they are allowed to oversee multiple locations. Children receive meals at sites in the community where they are secure and under adult supervision. Sites could be found in a range of locations, such as schools, parks, community centers, hospitals, health clinics, apartment buildings, churches, and migrant shelters. Sites collaborate with advertisers

directly.

The school meals program has been shown to have a good impact on children's nutritional intake, but there is very limited evidence that it and the NSLP are improving food security of participating low-income households. Nord and Romig (2006) state that it is challenging to determine empirically how much the National School Lunch Program and the Summer Food Service Program reduce the intensity and scope of food insecurity or hunger. Since 1995, the prevalence and severity of household food insecurity has been assessed yearly in the United States using data from nationwide surveys (Nord & Romig, 2006, p. 141). However, the self-selection of more food-insecure households into the programs makes it difficult to utilize the data to evaluate the effect of all food assistance programs. Even when quantitative correlations are taken into account in studies of cross-sectional survey data, the positive connection between program participation and food insecurity that arises through self-selection outweighs any mitigating effects of the programs. Basically, the researcher discussed the impacts of food insecurity. The Current Population Survey Food Security Supplement (CPS-FSS) was used to investigate the data of characteristics, such as food security, income, and employment from 1995 to 2001 (Nord & Romig, 2006, p. 144). The Census Bureau conducts the CPS, a monthly survey of 50,000–60,000 households on behalf of the Bureau of Labor Statistics. It serves as the federal government's main source of data on the characteristics of the American population's labor force and employment. The sample is representative of the non-institutional citizen population in the United States. The core questionnaire collects data on household composition, income, and demographics for every household member who is 15 years of age or older. It also asks about job status for every household member.

The School Breakfast Program

In 1966, the School Breakfast Program (SBP) was implemented as a pilot project and was transitioned into a long-term entitlement program, which was passed by Congress in 1975. Any student who attends school that is enrolled in the School Breakfast Program is provided breakfast as part of the program. Hence, as long as breakfast is offered at school, any student may eat it; the cost of the meal is determined by the household income of the individual student. Children may be considered to be "categorically eligible" for free breakfast meals in federal assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), or depending on whether they are identified as a homeless, runaway, migrant, or foster child (U.S. Department of Agriculture, 2017). Free lunches are available to children whose families make up to or less than 130 percent of the poverty threshold; children from families who make up to or less than 185 percent of the federal poverty threshold are eligible for reduced-price lunches (U.S. Department of Agriculture; Fletcher & Frisvold, 2017, p. 4). Despite the fact that the SBP is a federally funded program, students cannot receive breakfast unless their school participates. Fletcher and Frisvold (2017) suggested that many U.S. states require schools to offer the SBP if the proportion of free or reduced-price meals for eligible students exceeds a state-specific threshold to increase participation.

At the federal level, the SBP is managed by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture. State organizations oversee the SBP at the state level, and the program is operated primarily to agreements with regional school food authorities (U.S Department of Agriculture, 2017). Depending on whether a child qualifies for free, reduced-price, or paid breakfast, school food authorities are compensated for those meals. According to

the USDA, at least 40 percent of children at low-income schools are eligible for free or reduced-price meals, which qualifies them as "severe need" schools and entitles them to a higher reimbursement rate.

Qualification for Free Lunch

To address the major problem of childhood food insecurity, the government food and nutritional safety net is currently patchwork. Program services may be provided directly as food, money supplements, or vouchers. Services could be made available to the entire household or just certain household members. Children's eligibility for a particular program may also be based on their age and the home income of other children in their daycare or school, in addition to their household income. The end result of this patchwork of food and nutrition programs is that various homes with comparable income levels and child populations may receive vastly different food aid packages.

Arteaga and Heflin (2014) used the Early Childhood Longitudinal Survey, Birth Cohort (ECLS-B) to calculate the impact of enrollment in the National School Lunch Program on food insecurity. They conducted their research on families with children who qualify for free or reduced-price lunch and have incomes at or below federal poverty level. The average impact of the NSLP on eligible households is something the researchers are interested in examining. They were interested in learning how participation in the NSLP program affected household food insecurity as children reached the age requirement for kindergarten enrollment. The counterfactual, or what would have occurred to NSLP participants if they had not taken part in the program upon entering school, must be determined in order to answer the question (Arteaga & Heflin, 2014). It is hard to compare the same example in both states because children either

participated in the program or did not participate in it. Furthermore, because there could be a wide range of reasons why a child did not take part in the program, they cannot simply use those who did not as a hypothetical reason for those who did. In order to identify the local average treatment effect, Arteaga and Heflin (2014) used state variability in the age eligibility cut-off for kindergarten participation as their primary source of information. They then examined how the National School Lunch Program (NLSP) affected household food insecurity. Their modeling strategy offers resounding evidence in favor of the claim that the NLSP reduces food insecurity (Arteaga & Heflin, 2014). The researchers' conclusions hold true for both a 12-month measure of food insecurity and a chronic food insecurity measure. Controlling for the decrease in child care hours among low-income households did not reduce the extent of the effect, according to sensitivity analysis.

Impact of Food Insecurity

Kimbro and Denney (2015) reported that children whose families lack access to food have a variety of difficulties with their well-being. From late 2007 to mid 2009, the Great Recession resulted in food insecurity reaching its greatest levels ever recorded in the United States. Kimbro and Denney (2015) evaluated the effects of transitions in and out of household food insecurity on young children's academic achievement, behavioral issues, and health status using nationally representative data from the period 2010–12 for 6,300 children in the Early Childhood Longitudinal Study, Kindergarten Class of 2010–11, with household incomes below 300 percent of the federal poverty level. Transitions including food insecurity had a minimal effect on first-grade academic achievement, according to their research. However, they discovered recurring detrimental effects of the transitions on parents' views of children's general

health status and on teachers' reports of children's externalizing behaviors, self-control, and interpersonal skills (Kimbro & Denney, 2015). Children who lack access to food exhibit greater rates of externalizing behaviors like violence, internalizing behaviors like depression and anxiety, as well as hyperactivity and attention deficit disorders. The effects of food insecurity on children's health, from infants to school-age children, are well-documented. Research indicates that children with food insecurity had lower levels of physical activity and worse diets than children with stable access to food, according to cross-sectional research. Additionally, they suffered from worse general health, more headaches, and stomach aches (Kimbro & Denney, 2015). Using longitudinal data, children's health as they age is linked with the amount of times they become hungry. This suggests that food insecurity's intensity and duration, as well as its prevalence, are all related to children's ability to develop normally.

Nutrient Intake

Due to the cost of food, the regulatory burden, and the concern over food waste, several schools find it challenging to provide fresh fruits and vegetables. Schultz and Thorlton (2019) suggested strategies for giving students an opportunity to participate in the National School Lunch Program and access to fresh fruits and vegetables. They suggest that school nurses be designated to give Team Nutrition the power to work with nearby farmers, business owners, and land-grant colleges in Farm to School Programs to actively facilitate the process of procuring fresh fruits and vegetables. Team Nutrition is an initiative that encourages people to make healthy food decisions and engage in regular physical exercise by enhancing the USDA's child nutrition programs' nutritional policies (U.S. Department of Agriculture; n.d.). By altering food purchasing and education practices at schools and early childcare facilities, farm to school

programs strengthen the connections that communities have with local food producers and fresh, healthy food (National Farm to School Network, 2021). They work to supply resources to summer meal sites, childcare centers, and schools that take part in these initiatives.This plan gives school nurses more power to encourage healthy eating, lower obesity, and boost academic achievement and school attendance. Federally, the NSLP is administered by the U.S. Department of Agriculture Food and Nutrition Service (FNS), and state agencies run it through contracts with local school authorities. Since its establishment, the NSLP has expanded and now serves millions of children breakfast, lunch, and healthy snacks, which are defined as fruits, vegetables, dairy products, or goods that include more than 50 percent whole grain (U.S. Department of Agriculture, 2017; Schultz & Thorlton, 2019, p. 2). In the 2014–2015 school year, the NSLP provided free lunches and/or breakfasts to almost 30.5 million of the nearly 56 million students enrolled in elementary, middle, and high schools (Food Research & Action Center, 2016). The NSLP's meal offerings must adhere to the Dietary Guidelines for Americans.

Milk has a long history of being included in federally supported school lunch programs. Peckham et al. (2021) indicated that milk is a significant source of calcium, vitamin A, vitamin D, and high-quality protein. Even before the National School Lunch Program was established in 1946, milk was being served in schools as part of federal assistance programs. Serving flavored milk in schools and its effect on children's nutrition are topics of ongoing discussion. Similar to plain dairy milk in terms of nutrition content, flavored milks include added sugars and artificial flavors like chocolate or strawberry to make the milk more delicious (Peckham et al., 2021). Flavored milk advocates claim it offers a nutrient-dense beverage with less added sugar than other sugar-sweetened beverages and should thus be included in school meal programs. As part

of the Healthy, Hunger-Free Kids Act of 2010 (HHFKA), districts and schools were no longer permitted to provide low-fat flavored milks as part of federally funded school meal programs; instead, flavored milks could only be provided if they were fat-free. This restriction was made in an effort to balance flavor with fat and sugar content. This restriction took effect in the fall of 2012. Some school systems, including well-known locations like Washington, DC, and San Francisco, decided to outright forbid flavoring milks. Given that the School Milk Nutrition Act calls for continued research on children's milk consumption patterns, it is clear that the issue of giving flavor-flavored milks in schools continues to be a source of intense national conversation (Peckham et al., 2021, p. 1819). The need for research specifically highlights the need for increased knowledge of how serving flavored milks affects children's intake of calories, lipids, and sugars. This study responds to that appeal by evaluating the connection between the milk preference of NSLP participants and the nutritious value of their NSLP lunches.

Following the implementation of the dietary recommendations outlined in the HHFKA of 2010, Peckham et al. (2021) assessed the nutritional value of school lunches chosen and consumed by NSLP participants at two suburban South Carolina elementary schools. The study schools supplied two low-fat white or fat-free chocolate milk options, two fruit, two vegetable, and three meals (mixed meat/meat substitutes and grain meal components) per day. Students had to choose at least three of the five meal options (meat/meat replacement, grain, fruit, vegetable, and milk) in line with the HHFKA. Students chose and ate lunches with various nutritional contents as a result. The children's lunch options and plate waste were photographed by the researchers using digital cameras. They determined the consumption of each food item from these photos and connected the information to nutritional data. They next explored how

children's selection of milk related to the overall nutritional value of the NSLP meals chosen and consumed by NSLP participants by tying these data to student-level sociodemographic traits provided by the school district.

A big-impact solution is needed since the prevalence of adult and pediatric obesity and type 2 diabetes have been steadily rising for years while dietary quality (DQ) has remained largely inadequate (Patel et al., 2020, p. 1). It is reasonable to focus on nutrition as eating is an important factor in many disease conditions. Given that 30.4 million US schoolchildren, or more than half of the US child population, participate in school nutrition programs each week, furthering improvements in children's nutrition and the magnitude of their diets through school nutrition programs, like the National School Lunch Program, could have a significant impact on children's and eventually adults' health, particularly obesity. Patel et al. (2020) investigated the differences between the four experimental menus developed (the SMI, HHFKA, CNP Flexibilities, and BP nutrition standards) and best practices examined using a cross-sectional content analysis. In order to create a base menu, researchers looked up school lunch menus in a state in the southwest from September to November of 2018. Investigating the disparities in dietary quality of school lunch menus that comply with various contemporary NSLP nutrition requirements was the objective of this cross-sectional content study. The HEI subcomponent scores for refined grains and added sugars were higher when best practices and HHFKA nutrition standards were used than when using the SMI. Comparing the SMI menu to the HHFKA, CNP Flexibilities, and BP menus, the SMI food had the lowest HEI scores for total vegetable and saturated fats. Therefore, changes in policy on refined grain, added sugars, total vegetables, and saturated fat HEI subcomponents have greatly impacted DQ of school lunches over time.

Child Development

It is well-known that food insecurity can affect children's development. Chilton et al. (2007) focused on the negative effects of food insecurity and child development. Interventions were offered to address child hunger, such as direct services for the child combined with center- and family-based components that are the interventions that are most effective, have the biggest impact, and require the least amount of funding. In both developing and developed nations, evaluations of child-focused services that are center-based and prioritize early learning experiences through preschools show increased cognitive development, higher school enrollment, and higher scores in math and language achievement. Less reliance on welfare and decreased crime rates were long-term impacts. Research has also shown that parental participation in parenting groups or home visits combined with early intervention programs for children in daycare has a higher synergistic impact on long-term outcomes (Chilton et al., 2007, p. 266). Arteaga and Heflin (2014) indicated that from a developmental standpoint, food insecurity can possibly have cumulative consequences beginning in the prenatal stage at various stages of development. During the era of neurodevelopment in infancy, hunger has detrimental impacts. Controlled animal studies indicate that starvation causes permanent brain development impairment (Yaqub, 2002; Arteaga & Heflin, 2014). Two mechanisms, according to neurologists and psychologists, potentially indicate how food insecurity affects learning; the way a child thinks. The first effect is on cerebral functioning, which determines a child's cognitive abilities. Second, there is an indirect impact on mental and physical health that raises the risk of distraction, absenteeism, and low learning desire. The research therefore suggests that although the causes of dietary deficiency may differ depending on a child's stage of biological, cognitive,

and social development, its effects endure throughout childhood.

Academic Performance

Food insecurity has been linked to a variety of concerns in American children, especially their academic achievement. Children who are hungry perform less academically and do worse in school because they are less engaged and lack the necessary learning tools. For instance, Houston et al. (2013) examined the connections between the National School Lunch Program (NSLP), food insecurity, and academic achievement of fifth grade students in Georgia. From 2007 to 2010, residents of Georgia who were living on the verge of poverty, where even a slight shift in a family's work position threatened their financial stability. Critical poverty rates were present in major cities throughout the state, from Athens-Clarke (33.8 percent) to Atlanta (22.6 percent). (U.S. Census, 2010; Houston et al., 2013). As Georgia's unemployment rate rose quickly during this time, these areas showed significant rates of childhood food insecurity, particularly among the working poor. For families with children, "getting by" meant turning to low-cost items or reducing the size of meal portions as the unemployment rate, gas prices, food prices, and housing costs increased. In light of this, the significance of school meals is clear (Bradford & Medora 2008). Food insecurity is tied closely to poverty; 17.9 percent of Georgia residents experience it (FRAC 2011).

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Social Interactions at School Lunch

Having the chance to converse, laugh, and socialize with peers during lunch is important. Lunch is essential for socializing because it gives students a break from their daily routine and prepares them for their afternoon classes. If children can unwind, eat, and interact without feeling hurried, then they will enjoy their food more and might even try more healthy choices (Action for Healthy Kids, 2019). According to Presler (2021), eating with other students has a significant impact on one another's academic achievement, with the impacts being more advanced in mathematics than in reading. The network the researcher created is based on daily interactions, enabling him to examine how friendships have changed throughout the course of the academic year. Results indicate that friends present during tests have the biggest influence on test scores (Presler, 2021, p. 3). This indicates that friendships evolve throughout the academic year and that the impact of former friends may be less lasting than that of current friends.

Recess is a crucial component of a child’s day. School-aged children do not have enough time to eat because they rush through their meals to go play during recess. The Montana Team Nutrition Program (2003) had the idea that children would have recess before they eat their meals during lunch; they assisted in implementing a Recess Before Lunch (RBL) schedule (Emerson, 2017, p. 1). Many schools have boosted the advantages and added another approach

to improve learning for children by changing the conventional arrangement to recess before lunch. However, adequate time must be allocated for both lunch and recess in order to reap the advantages (Emerson, 2017, p. 5).

Since the original publication of the Montana Guide for Success (2003), the advantages of RBL have been supported by a number of research studies. These advantages, in addition to the regular advantages of lunch and recess, are divided into four categories. Improved consumption of school lunch has become a large factor. When children have recess first, they waste less food and consume more milk, fruits, and vegetables. Some studies have found a large reduction in food and milk waste, while others have found a less significant reduction. Improved atmosphere in the cafeteria can help students eat their lunch. Since there is less of a rush among the students to get outside for recess, it is easier to eat carefully in the cafeteria or lunchroom. Children can socialize and eat their meals while being generally calmer and quieter. Classroom behavior after lunch can also improve. When children return to their classrooms, teachers say they are more at ease and are better able to concentrate. Better learning preparedness and a small but significant gain in teaching time are both reported by administrators and educators. Overall improved behavior among children is also crucial to point out. Administrators claim that there are not as many problems with discipline in the hallways and cafeteria. Some claim that fewer children get sick from playing intensely straight after eating quickly and that there are less fights during recess (Emerson, 2017, p. 5).

When students group oneself into peer groups that share similar qualities, the selection problem arises since results may be correlated. This problem is likewise a case of an omitted variable. Assignment into the classroom and placement into the friendship network are the two

stages of selection taken into account in this research (Presler, 2021, p. 50). Student residence and administrator choice determine who is assigned to the classroom. Moving forward, he tested "whether student characteristics explain classroom assignment and show that class assignment based on observed student characteristics is consistent with randomness" (Presler, 2021, p. 50). The researcher found evidence of considerable social effects on mathematics and reading test scores using this revealed friendship network to detect social and contextual effects separately. In mathematics, "a one standard deviation improvement in peer performance increases one's own performance between 7.5 percent and 11.1 percent of a standard deviation" (Presler, 2021, p. 57). Compared to reading, these impacts in mathematics are more substantial. This has a significant impact that is comparable to his estimates of the achievement difference between Black and White students. Social spillovers magnify other inputs in the production function of education by having a multiplier impact.

Policies

The National School Lunch Act of 1946

The National School Lunch Act, initiated by former President Truman and passed by Congress in 1946, resulted in the National School Lunch Program (DESE, 2022). Under the National School Lunch Program, children whose families' earnings are less than 130 percent of the poverty threshold receive free school lunches (U.S. Department of Agriculture, n.d.). The program's lunches must include the following options: meat or a meat substitute, two or more vegetables and fruits, whole-grain or enriched breads, milk, and at least one-third of the Recommended Daily Allowance for each vitamin. Many of the assessments of the NSLP that are currently available show a connection between program participation and higher nutritional

consumption.

The U.S. Department of Agriculture, specifically through its Food and Nutrition Service, runs the NSLP at a federal level. By forming partnerships with local school districts, the Massachusetts Department of Elementary and Secondary Education (DESE) manages the program on a state level. For each meal they serve, school districts and independent schools who opt to participate in the lunch program receive financial compensation and donated commodity help from the USDA. In exchange, companies have to provide lunches that adhere to federal nutrition guidelines and to provide free, reduced-price lunches to qualified students.

Dunifon and Kowaleski-Jones (2003) focused on the impacts of food insecurity and enrollment within the National School Lunch Program on school-aged children. They looked at the child- and family-specific characteristics that predict these outcomes. Measures of food insecurity are linked to deficiencies in dietary intake. Kendall, Olson, and Frongillo (1996) discover that food-insecure households have lower rates of consumption of fruits and vegetables and less food on hand than food-secure households using a 24-hour diet recall and a survey of household food supply. This shows that the USDA's indicator of food insecurity and genuine food consumption are related. Dunifon and Kowaleski-Jones (2003) report that the “aim of the program is to provide nutritious foods to school-aged children at no, or reduced, cost… Reduced-price lunches are available to families whose incomes are between 135 and 185 percent of the poverty line.”

Children are likely to be impacted by food insecurity in two significant ways (Dunifon & Kowaleski-Jones, 2003, p. 74). First, a lack of food in the home may become a source of stress for the family, which may have an impact on how parents behave and how their children respond

to their parenting methods. Children's behavior may be impacted by this stress. This expectation is in line with studies that demonstrate how difficulties with finances can negatively impact parent-child interactions, which then causes a rise in behavioral issues in children. Second, the consequences for children's health may be directly impacted by food insecurity. Children who live in households where food security is at risk are more likely to have restricted access to wholesome foods that will enhance their nutritional intake. If taking part in the NSLP results in increased nutrient consumption, then improvements in the ability to learn may also be seen in children who are participating and controlling both their behavior and general well-being, though it is likely that NSLP involvement might not result in better outcomes among children in these domains. First, children may already consume enough nutrients from their diet. Second, NSLP meals consumed may not provide sufficient nutrition to raise the children's performance. Lastly, even if children take part in the NSLP and subsequently enhance their nutrient consumption, their total nutrient intake might not increase if parents make up for this by cutting back on the food they give their children at home.

According to the full-sample results, taking part in the NSLP is linked to negative effects on children's general well-being (Dunifon & Kowaleski-Jones, 2003, p. 85). Again, their research contradicts the benefits of participation in the NSLP. The sibling comparison findings, on the other hand, suggest that these findings are caused by unmeasured family-specific characteristics that skew earlier estimates of relationships between NSLP participation and child outcomes, particularly when projecting children's test scores and physical capabilities. Participation in the NSLP does not appear to be linked to gains in children's well-being, according to either the restricted-sample results or the full-sample findings. However, it is indeed

feasible that certain subgroups of particularly underprivileged children will gain from the NSLP. In order to test this, the researchers looked at whether children from single-parent families and those whose family's income-to-needs ratio fell below the federal poverty level in 1996 experienced different effects from participating in the NSLP. For these subgroups, taking part in the NSLP has the same effect.

Seventeen percent of children in the United States experience food insecurity (Pokorney, Chandran, & Long, 2019). Poor health outcomes, such as anemia, cognitive impairments, asthma, and behavioral health concerns, are linked to childhood food insecurity. The foundation of the government system to address youth food insecurity is the NSLP, which offers free or discounted lunch to roughly 30 million children every day. Children's food insecurity is reduced by enrolling in the NSLP (Pokorney, Chandran, & Long, 2019). The nutritional profile of meals and the food surroundings in schools were successfully improved by the updated NSLP criteria.

The Healthy, Hunger-Free Kids Act

The Healthy, Hunger-Free Kids Act was signed by President Barack Obama. The National School Lunch Program's public school lunches are required by law to meet higher minimum nutritional standards. The legislative debate over the new rule focused on the health benefits of providing more nutrient-dense school lunches, especially in light of worries about the prevalence of overweight children. According to the Centers for Disease Control, one in five American children is obese (Anderson, Gallagher, & Ramirez-Ritchie, 2018). The issue of whether offering a more nutritious school meal could enhance learning received very little attention during the debate over the new law. The relationship between nutrition and both cognitive function and cognitive growth has been extensively studied in the medical

literature. The medical literature is primarily concerned with the biological and chemical mechanisms underlying how particular foods and chemicals are supposed to influence physical development (smell, sight, taste, etc.), cognition (concentration and memory), and behavior (e.g., hyperactivity). The medical literature is deficient in conclusive data on the effects of nutrition on academic performance.

The National School Lunch Program's meals are meant to be healthy because of the Healthy, Hunger-Free Kids Act of 2010, which was adopted nationally in 2012 (Kinderknecht, Harris, & Jones-Smith, 2020). The National Health and Nutrition Examination Survey (NHANES) data from between 2007 and 2016 was used to conduct a serial cross-sectional study on students who participated in the NHANES and attended schools that took part in the NSLP. Those who had a trustworthy recall of their weekday diet and were between the ages of 5 and 18 and in kindergarten through 12th grade at a school that offered school lunch were included in the study (Kinderknecht, Harris, & Jones-Smith, 2020, p. 360). Kinderknecht, Harris, and Jones-Smith (2020) used the Healthy Eating Index-2010, a validated assessment score for how well diets comply with the 2010 Dietary Guidelines for Americans, to evaluate the quality of diets. Dietary nutritional content was transformed into food patterns equivalent component proportions using the USDA Food Patterns Equivalents Database. Based on the HEI-2010 scoring algorithm, the amounts were transformed to 12 HEI-2010 component scores. A combined total score, ranging from 0 to 100, was calculated from the component scores. Higher scores indicated diets that adhered more closely to the 2010 Dietary Guidelines for Americans; however, it has not been determined whether this difference was even minimally clinically significant. The HEI-2010 lunch score, which indicated the nutritional quality of the food and beverage

consumption from 10:00 AM to 2:00 PM in proportion to the number of calories taken during that period, was the main result of interest. The HEI-2010 score for the entire day, the HEI-2010 score for meals eaten after 2:00 PM, and the HEI-2010 component scores for lunch and the entire day were analyzed in secondary analyses.

Every day, schools taking part in the National School Lunch Program must provide a selection of nutritious meal alternatives, according to the Healthy, Hunger-Free Kids Act of 2010 (Peckham et al., 2019). They analyze NSLP participants' choice and consumption of all five NSLP lunch components—milk, vegetables, fruit, meat or meat substitute, and grains—using digital photography data gathered from two suburban primary schools in the spring of 2013. The choice of the various lunch elements by race, gender, grade level, and household income level is examined using logistic regressions. Additionally, the choice and consumption of calories from the selected lunch and through lunch component are examined using ordinary least squares regressions, which are techniques used for estimating coefficients that helps the researcher investigate the relationship between the independent variable and the dependent variable. In order for a participating school to be reimbursed by the government for a meal, a student must choose at least three items from the five available options, one of which must be either a fruit or vegetable. The nutritional quality, nutrient quantity, and calorie content of meals chosen and consumed by NSLP participants can differ significantly even within the same school on the same day due to variations in daily offerings and the fact that students are not compelled to choose all five meal components (Peckham et al., 2019; The Healthy, Hunger-Free Kids Act of 2010).

In a recent study that assesses the impact of providing healthier public school lunches on end-of-year academic test scores for public school students in California, the researchers

made an effort to address this difference. All public schools in the state that report test scores are included in the study, which spans five academic years (from 2008-09 to 2012-13). Anderson, Gallagher, and Ramirez-Ritchie (2018) concentrated on differences in meal quality over time at particular schools rather than changes in national nutrition guidelines. They specifically made use of the option for schools to contract with private corporations that provide varied levels of nutritional quality to prepare the school lunches. During the time of their analysis, a private lunch provider had contracts with around 12 percent of California's public schools; 88 percent of the meals are entirely prepared on-site by school staff (Anderson, Gallagher, & Ramirez-Ritchie, 2018).

Nutritionists from the Nutrition Policy Institute examined the school lunch menus provided by several private companies to compare their quality. The Healthy Eating Index (HEI) was used to evaluate the menus' nutritional value. The HEI is a continuous score from 0 to 100 that evaluates the degree to which food offers (or diets) adhere to the Dietary Guidelines for Americans. It does this by using a well-established food component analysis. In order to "examine relationships between diet and health-related outcomes, and to assess the quality of food assistance packages, menus, and the US food supply," the Department of Agriculture prefers to use the HEI as a dietary quality indicator (Anderson, Gallagher, & Ramirez-Ritchie, 2018).

Anderson, Gallagher, and Ramirez-Ritchie (2018) measure how having lunch provided by a regular or healthy company compares to having it made on-site by school staff. The researchers' methodology uses year-to-year variations between internally prepared school meals and outside vendors with different menu quality, within a certain school, to estimate the impact of lunch quality on student achievement. They take into account factors such as

student race, English-language proficiency, poor family income, school budget, and student-to-teacher ratios, as well as factors affecting grade, school, and year. They discover that when a school enters into a contract with a healthy lunch supplier, students at the school perform better on year-end academic assessments.

Solutions

According to the Food Research and Action Center (FRAC) (2019), students may overcome difficulties in order to eat school lunch, such as time length and availability. The availability of school lunch as well as the cost of the meals have a direct impact on participation and consumption. Schools across the nation are discovering that creative approaches to serving lunch outside of the typical cafeteria lunch line, which they frequently combine with offering meals at no charge, can be incredibly successful in boosting participation and promoting consumption of school meals (FRAC, 2019, p. 4).

There are a few potential solutions to overcome short time lengths of lunch during the school day. One way is for schools to be required to serve lunch between the hours of 10:00 a.m. and 2:00 p.m.; however, there are no federal regulations dictating the length of lunch periods, leaving it up to the discretion of the individual school districts. According to studies, children who have enough time to eat their lunch consume more of it, and those who consume fewer fruits, vegetables, and dairy products (Cohen et al., 2015). According to recent data, although students typically have a lunch period of about 30 minutes, this time is actually much shorter. Cohen et al. (2015) conducted research which suggests that school regulations mandating 30-minute lunch periods give children enough time to eat. Another way for children to enhance hunger before meal time is to put recess before lunch, which may encourage them to eat more.

Since 2005, the Montana Office of Public Instruction has been gathering yearly statistics on the effects of recess before lunch. This research demonstrates that primary students who attend schools that offer recreation before lunch eat more of their meals (2017). In a survey, principals in Montana schools who have instituted recess before lunch reported improved consumption, lower food waste, a calmer ambiance in the cafeteria during lunch, and improved classroom behavior after lunch (Emerson, 2017, p. 7).

Another way to overcome lunch time lengths is to expand accessibility to school meals. This also applies to breakfast at school which is served in the cafeteria before classes begin; it limits the access to and consumption of a full breakfast (FRAC, 2017, p. 6). The few students who do participate frequently speed through their meals to make it to class on time, and the majority of students are unable to participate at all because of shortened time length. These scheduling issues are addressed by moving breakfast from the cafeteria before class to the classroom as part of the regular school day. This allows more students access to school breakfast. By implementing "grab and go," "second chance breakfast," and breakfast in the classroom, schools can improve breakfast participation and consumption.

School gardens provide students with practical education opportunities to learn the value of consuming supplemental, nutritious meals (FRAC, 2019, p. 12). Farm-to-school programs also offer an easy way to incorporate nutrition education about the origins and health advantages of fruits, vegetables, and milk served at school lunches. Schools can increase milk consumption while teaching students about the health benefits of drinking milk by encouraging local dairy farmers to speak at their facilities or arranging for students to visit local farms. The National Dairy Council offers information, including a virtual farm tour, that schools can use as a way to

educate children about nutrition from the comfort of the classroom for schools that are unable to make a physical trip to a dairy farm.

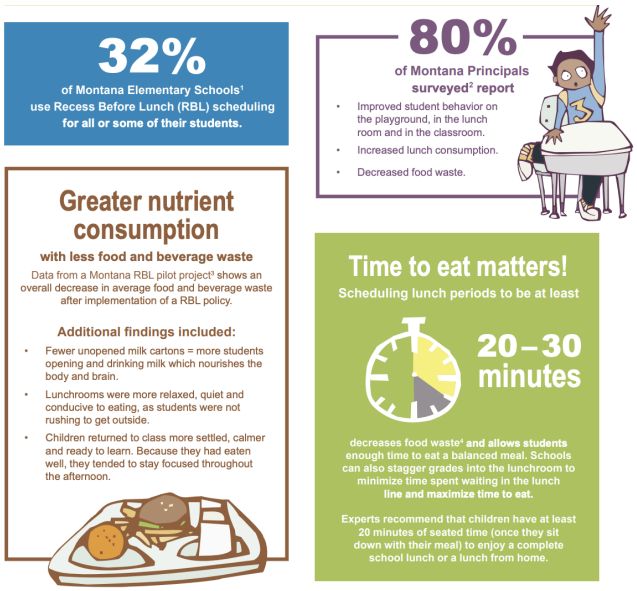
To prevent food waste that ends up in landfills and feed the hungry, environmental and health organizations are increasingly encouraging food contributions (Zagorski et al., 2021). Students can "share" their uneaten food with other students at shared tables, which also serve as places to donate food for the 4.9 billion lunches that are delivered each year through the U.S. National School Lunch Program. In order to understand how health inspectors perceive the Food Code in relation to share table operations and the risk mitigation strategies they favor using recovered food to prevent foodborne disease, Zagorski et al. (2021) conducted a qualitative study. Thirteen Illinois health inspectors who were investigating sharing tables in cafeterias were found using a snowball sampling approach. Participants who had permissive interpretations of the Food Code took into account contamination risk in the context of the general school environment. The issue of whether to provide whole fruit recovery via a share table received the least amount of agreement from the participants. Participants could not really agree on whether leftover products from sharing tables should be used in future lunch programs.

Smith and Cunningham-Sabo (2013) focused on comparing students' average nutrient intake from lunch with NSLP guidelines and evaluating the eating habits and food preferences of elementary and middle school students who participate in the National School Lunch Program. Using a previously approved digital photography technique, plate waste measurements were carried out over the course of five days in each elementary school and four days in each middle school (Smith & Cunningham-Sabo, 2013, p. 1256). A digital camera was placed on a tripod and correctly angled. Each day, they facilitated five servings of each pre-portioned meal item

(entrees, fruits, veggies, and breads), set them up on trays, and took pictures. These images served as a point of reference for the post-consumption images of each student's tray. The reference meals were photographed, then packaged in a cooler, transported back to the lab, and weighed using a calibrated digital scale. When determining the weight of food consumed, the average weight of the five pieces of each food item served as the reference point. These include meat or meat alternatives, milk, a serving of grain, and two servings of fruits or vegetables. Only eight of the 130 foods for which five portions were taken had a standard deviation larger than 10 percent of the mean, showing that there was little difference between reference samples.

Figure 2

Recess Before Lunch - A Wellness Policy Strategy (Emerson, 2017)



When children have constant access to enough wholesome food for an active and healthy lifestyle and are not at excessive risk of lacking that access, then there is food security. When the aspects of food security—availability, access, utilization, lunch period time limit, and stability—are jeopardized, then children can experience food insecurity. Depending on the aspects of food

security that are impacted and the behavior of the aftermath of eating lunch, food assistance may or may not be a component of an effective intervention. Schools that manage the National School Lunch Program should be held accountable for providing children from low-income families with reduced-price or free lunches, which can contribute to better academic performance and overall healthy lifestyle.

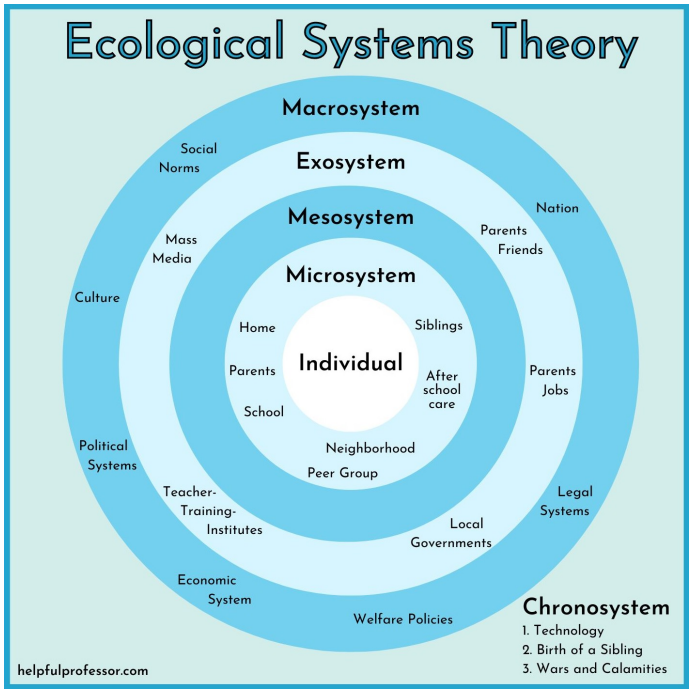
Theories

Family Ecological Systems Theory

The fundamental theory for the investigation of the family systems approach to food insecurity is the Family Ecological Theory (Bubolz & Sontag, 1993; Mammen, Bauer, & Richards, 2009), which is typically utilized in child and development research. The ecological and systems approaches to the study of families are combined in the concept of nested systems, sometimes known as an ecosystem. The microsystem, mesosystem, exosystem, and macrosystem make up the ecosystem, which make up the model conceptualized by Urie Bronfenbrenner (1979). It places a focus on the connections between several systems and subsystems as families go about their everyday lives, as well as the family's natural and social settings. The connections within one system affect and are influenced by all the other systems due to the interdependence of the systems (Mammen, Bauer, & Richards, 2009).

Figure 3

Bronfenbrenner's Ecological System Theory Model (Drew, 2022)



Mammen, Bauer, and Richards (2009) indicated that families and their resources, such as human capital, which includes their capacity for food production and consumption decision-making, are integrated into the microsystem, which is the main system for families. The term "mesosystem" refers to the extended family as well as socially related resources like friends and community services such as food pantries. It is indeed common to think of the mesosystem as a support structure or connection between the microsystem and the exosystem. The institutional structures that make up the exosystem, which are external to the family, have either directly or indirectly impacted the family members and their resources (Mammen, Bauer, & Richards, 2009). This would encompass the price and accessibility of housing close by, as well as the availability of food and other resources in the area that have an impact on people's capacity to

manage food insecurity. The macrosystem is made up of a variety of public policies and programs that assist businesses, families, and individuals, including federal food regulations and programs, as well as the larger social and economic dynamics that determine whether a state is considered to be food secure or food insecure. Families utilize coping techniques from all throughout the ecosystem to deal with food insecurity. Families utilize methods that work for their specific family contexts and are likely altered as their individual circumstances and needs change; they are neither static nor consistently used by all families. Because of these factors, the Family Ecological Model is a great core basis for explaining how rural and low-income families cope with food insecurity.

Social Capital

Coleman-Jensen et al. (2015) indicated that households with children have greater rates of food insecurity than the general population. However, because the data is aggregated, it is not obvious whether the children living in these households are experiencing food hardship (Coleman-Jensen et al., 2015; Willis & Fitzpatrick, 2019, p. 1128). According to some research, only approximately half of children in food insecure households experience food insecurity themselves (Nord, Andrews, & Carlson, 2009; Coleman-Jensen et al., 2015; Willis & Fitzpatrick, 2019, p. 1128)); nonetheless, these estimates continue to rely on parent or guardian reports. Middle-school students are old enough to respond to surveys about food insecurity but young enough to shed light on many of the unsolved problems about child food insecurity.

Social capital is made up of subjective social resources that may or may not connect people to items like food, either directly (such as when meals are shared) or indirectly (such as

when people carpool to the store) (Willis & Fitzpatrick, 2019, p. 1130). While anyone's access to food may be subject to a number of changes over the course of a month or a year, belonging to a group may lessen some of the uncertainty or irregularity of that access by enabling it to a variety of jointly owned resources, including but not limited to food. Vital resources are not distributed randomly; rather, they are focused through social networks and organizations.

Data Memo

Figure 4

Child Food Insecurity Rates by U.S. State, 2018

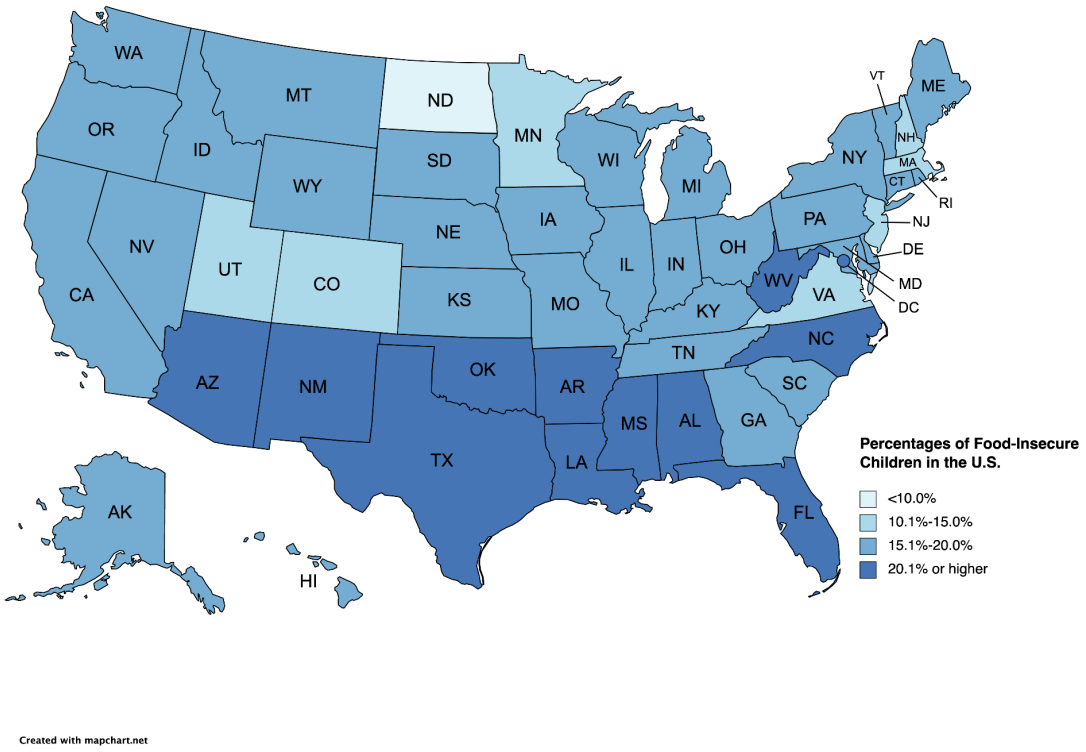


Figure 4 indicates the child food insecurity rates by each U.S. state (Feeding America, n.d.). Specifically, this shows the percentage of food-insecure children from each state. According to the map, rates of child food insecurity range from roughly 10 percent in North Dakota to over 24 percent in New Mexico. Although households with children tend to have slightly higher median incomes, because of their bigger family sizes and the fact that certain members of the household are dependent on caregivers, they may also face more severe financial difficulties (Feeding America, n.d.).

Table 1

Number of Participants and Non-participants in the National School Lunch Program Varied by Academic Year and Income

Low

ACADEMIC YEAR	NSLP PARTICIPANTS	NSLP NON-PARTICIPANTS
2007-2008	272	396
2009-2010	305	417
2013-2014	382	417
2015-2016	252	369

*N = 2,810

Low-middle

ACADEMIC YEAR	NSLP PARTICIPANTS	NSLP NON-PARTICIPANTS
2007-2008	83	113
2009-2010	84	146
2013-2014	93	118
2015-2016	105	145

*N = 887

Middle-high

ACADEMIC YEAR	NSLP PARTICIPANTS	NSLP NON-PARTICIPANTS
2007-2008	279	406
2009-2010	199	474
2013-2014	192	473
2015-2016	226	443

*N = 2,692

*N = Sample

Table 1 indicates the difference between the number of students that are enrolled and not enrolled in the National School Lunch Program based on school year and their income. Kinderknecht, Harris, and Jones-Smith (2020) indicated that students who reported eating lunch between 10:00 AM and 2:00 PM and consumed any combination of three or more school meal components from the school cafeteria, any combination of two school meal components from the school cafeteria and reported receiving school lunch five days a week, or any combination of two

school meal components from the school cafeteria and reported that all other lunch food items were from the school cafeteria, were classified as NSLP participants. If a student did not fit any of the aforementioned requirements, they were classified as NSLP nonparticipants (Kinderknecht, Harris, & Jones-Smith, 2020). These students took the National Health and Nutrition Survey (NHANES) and included whether or not they participate in the NSLP; this data is classified by their family income. There is no research explaining why the number of participants from middle-high income households is greater than the number of participants from low-middle income households.

The relationship between the Healthy, Hunger-Free Kids Act (HHFKA) and the dietary quality of NSLP participants was evaluated. The use of NHANES data from the 2007–2008, 2009–2010, 2013–2014, and 2015–2016 school year was made, while data from the 2011–2012 school year were disregarded due to policy changes (Kinderknecht, Harris, & Jones-Smith, 2020).

Figure 5

Number of Participants and Non-participants in the National School Lunch Program Varied by School Level and Income

Figure 5 indicates the difference between the number of students (grades K-12) that are enrolled and not enrolled in the National School Lunch Program. Each color represents the composition and comparison of students' income (from low to middle-high) through each school level. For example, by looking at the stacked bar for the elementary school level on the left, there is a high rate of elementary school students with low income (representing yellow) that are enrolled in the NSLP compared to those who are not. On the right chart, the stacked bar for low income is similar to the stacked bar on the left chart. However, this did not determine why they were higher than both the middle and high school level. Also, by looking at both charts, the rates for NSLP participants and nonparticipants with low-middle income and students with middle-high income enrolled in middle and high school are almost identical. Yet, this does not explain

why income portrays a huge role in students who are enrolled and not enrolled in the NSLP. More research is needed to fully comprehend the significance of these numbers in the context of food insecurity in school-aged children.

Figure 6

Number of Participants and Non-participants in the National School Lunch Program Varied by Age Range and Income

*N = 2472 *N = 3917

Figure 6 indicates the difference between the number of students who are enrolled and not enrolled in the National School Lunch Program based on their age and family income. Perhaps academic performance and proper nutrition are critical outcomes of being enrolled in the program. However, there is not enough research that entails why age plays an important factor in participation in the NSLP.

Recommendations and Implications

Access to Free School Lunch and Nutritional Intake

All students, whether or not they participate in the National School Lunch Program, should most certainly have access to school lunch at no cost so that they can go on with their day. The government must responsibly find appropriate ways to provide children attending school with free lunch meals. Students' food choices and consumption can benefit from new school meal nutrition requirements, particularly in options of fruits and vegetables.

The USDA has pledged to raise the nutritional benefit of all school meals. Through the Team Nutrition initiative and the Nutrition Education and Training Program, the Department collaborates with regional, state, and local school food authorities to teach and encourage students to make healthy food choices while also providing technical assistance and training to school food service staff (DESE, 2022). This applies to the Summer Food Service Program, but a bit differently. Even in the summer, students should still have access to free food. Schools that implement these types of programs over the summer make lunches available for students when school is not in session. Parents would have to sign up their children to be qualified for the SFSP because of their low-income household. This does not necessarily and completely eliminate the prevalence of food insecurity, but it is considered one step further into doing so.

At this point in life, eating is a communal activity. Children may spend more time at school than at home, eat meals there, and start picking up eating habits from their peers. When observing their behavior, it can be challenging to make sure they are getting enough nutrition. Schools must list all of the food components that make up a reimbursable meal at lunch, especially close to or at the start of the cafeteria serving line. This should be done to assist

students in selecting the correct food items in the appropriate amounts to make a reimbursable meal. The layout, menus, amenities, and other factors that state agencies and institutions take into account might be incorporated into the signage design, which is guaranteed to be a smart approach to make sure students are eating healthy. Signage needs to be legible and age-appropriate so that students can follow. A great teaching strategy is to give specific information about the components, like naming the different vegetable subgroups. This recommendation can help students get themselves into healthy eating habits. It is essential to recognize that putting these strategies into practice in schools is not always straightforward. By offering technical assistance and spreading effective practices from around the state, the government can take responsibility in aiding schools in overcoming food insecurity, especially obesity and poor health.

Higher Enrollment in School Lunch Programs

In particular for low-income students, school lunch is essential to student health and well-being as it ensures that they receive the nutrient intake to learn throughout the school day. Among low-income populations, high unemployment rates make it more challenging to satisfy basic food needs for households. Additionally, in comparison with children with employed parents, children with unemployed parents have greater rates of food insecurity (Healthy People 2030). It is important for low-income communities because it can increase revenue for their child's school, which is invested in improving the school lunch program for their child. Additionally, more students consuming school meals contributes to the de-stigmatization of other students consuming them. Getting free or reduced-price school lunches while enrolling in the NSLP lowers obesity rates, food insecurity, and poor health. Students' food choices and

consumption should be benefiting from new school meal nutrition requirements, especially when it comes to fruits and vegetables. According to the National School Lunch Program, every child in school must have access to lunch. This can positively impact their overall health. However, more research is needed to determine how a student's participation contributes to their food intake or dietary quality.

Students usually enjoy their time socializing with friends during lunch and recess. However, their time is limited to eating with their friends because they have to head to class right after. Schools should offer a group-oriented intervention called a "lunch bunch" for students: a regular lunchtime meeting with peers and a supportive adult where they can both connect with peers and work toward social-emotional goals. Schools should be deliberate about students' goals for their "lunch bunch" because lunch times typically last 20 to 30 minutes. They should think about organizing a quick 10-minute exercise that promotes social interaction. This can happen by giving students more than enough opportunity for socializing while also assisting them in developing social skills.

Frequent student involvement can raise lunch attendance rates, improve menus, and generate enthusiasm around school breakfast. It is best to think about conducting polls, conducting taste testing, publishing on social media, and introducing students to nearby farmers. Remember that students are the ones who purchase school meals, and increasing student participation will only benefit the school lunch program.

SNAP Benefits

The Supplemental Nutrition Assistance Program (SNAP) is the main federal nutrition aid program that offers benefits to eligible low-income children and families. In approved retail food

outlets, this card can be used to make qualified food purchases much like a debit card. It is a simple process for families to apply for benefits if they have children in the household. This applies to families who use a Pandemic-Electronic Benefit Transfer card (P-EBT) for their children. P-EBT is very similar to a regular EBT card that provides temporary emergency nutrition benefits to qualified school children so their families can buy food for them (U.S. Department of Agriculture). Students who would have received free or reduced-price school lunches if their schools were open throughout regular hours or operating with reduced hours or attendance for at least five consecutive days are eligible to receive P-EBT payments. Younger children in SNAP-eligible families who attend covered childcare services that are closed or operating with shorter hours or attendance, or who reside close to schools that are closed or operating with shorter hours or attendance, can also get benefits through P-EBT. Many families are still impacted by the ongoing COVID-19 pandemic. While the impact of the pandemic remains, this type of card should still be available to families. Due to unprecedented changes from the pandemic, states should first and foremost make school meals available free of charge for all students. Instead of paying for lunch meals at a low price, students can get them for free if their families are eligible for SNAP benefits. Receiving benefits from a P-EBT card can allow children to receive access to school lunch when they also attend summer school. This is a resourceful opportunity for families to make sure students are receiving access to free school lunches.

Using Federal Fundings

States can encourage the NSLP through federal funds to expand school food preparation and storage capabilities, training food service staff in food preparation and menu design, and

fostering relationships between local agricultural organizations and school cafeterias for the children. Even with increased participation and full enrollment of all eligible students in the NSLP, the financial funds available to schools are constrained. State policies are definitely needed to support schools in increasing their purchasing power and operational effectiveness. Schools must come up with practical solutions to maximize their NSLP funding and get the most nutritional value for their investment. Nationally reimbursable school lunch programs must be run by schools on a nonprofit basis. Economic instability, rising power prices, and growing demand for wholesome food all have an impact on program expenses, making it more difficult for schools to make up for lost funding. While NSLP fundings are constrained, there are a few approaches that states can use to aid local initiatives in maximizing funding without jeopardizing nutritional efforts.

Some schools find it more cost-effective to outsource the management of the lunch program to a food service management business than to operate it themselves. Approaches include food co-op and flexibility to purchase local produce from farm markets. Food co-op is basically a grocery store that is run by people in their communities. Because they are familiar with the names of the local farmers and family-run businesses, they are the best place to discover the best local food. Additionally, food co-ops are devoted to supporting their communities; however, they are independent and owned by community members. Instead of making food co-op private, all of them should be public for everybody, regardless of their membership and hometown. When customers from all around the United States are looking for food that is sourced from local farms, purchasing locally produced farm products can be a sensible business move. Given the high demand for local produce among consumers, legitimate labeling and

promotion of regional food products can be a productive marketing technique that also fosters customer devotion and trust for food businesses. Purchasing locally grown food can improve a company's reputation and further its objectives. Additionally, educating consumers about the possible social and environmental benefits of purchasing local produce can boost consumer expenditure.

Private organizations known as school food service management businesses partner with regional school food agencies to oversee some or all facets of the school lunch program. These businesses profit from economies of scale and greater purchasing power since they frequently provide services to many school districts at once. By leveraging scale and expanded purchasing power, a food procurement approach, whereby several school districts negotiate contracts with regional vendors cooperatively, saves schools money. This approach builds demand for specific products utilized in the National School Lunch Program, which influences what is on the market and enables schools to bargain for lower pricing throughout the procurement process.

In order for schools to make the most of their NSLP fundings going ahead, the federal government needs to focus on these types of initiatives and incorporate resources available to states. The school lunch program should first and foremost provide several possibilities to enhance the nutritional value of foods supplied to students—and hence, to enhance their health—while being mindful of the difficulties associated with managing a school meals program like NSLP. Governors and their staff must continue to have a kit of state-level strategies at their disposal to aid local initiatives, despite the fact that decisions about schools typically take place at the local level.

Conclusion

The National School Lunch Program is meant to provide students access to lunch meals and nutritional intake. Due to financial instability, poor physical performance, low academic performance, and less adaptable psychosocial functioning, children still experience food insecurity, which has an adverse effect on their health and general well-being. Policies from the NSLP and the HHFKA, for example, have been put in place during the past ten years, but much more needs to be done. Because there are no government laws in place, nonprofit organizations like Feeding America cannot simply tackle the problem of childhood food insecurity in one setting; instead, this is a structural issue that requires a more refined approach.

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