

Sound Basic Education for All

An Action Plan for North Carolina



In collaboration with Learning Policy Institute and
The William & Ida Friday Institute for Educational Innovation

Addressing *Leandro*:
Supporting Student Learning by
Mitigating Student Hunger

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Introduction

Many students face barriers that prevent them from reaching their full potential in school and beyond. Although some of these barriers are outside the domain of education, solving hunger is one challenge that is both important for school performance and feasible as a policy option.

This brief will discuss the importance of investing in strategies to reduce hunger among students, highlight innovative approaches available to schools and districts, and review state-level policies to mitigate this challenge for students in North Carolina. The work described here is a summary from a larger project on student hunger in North Carolina. For more details on this work, please see the forthcoming report (Bowden & Davis, forthcoming 2019).

Improving Education by Reducing Hunger

Student hunger is related to a number of outcomes that are likely to raise costs to local, state, and federal governments. For example, students who are food insecure are more likely to require special education services (Kleinman et al., 2013) and to have lower test scores (Gassman-Pines & Bellows, 2018; Cotti, Gordainier, & Ozturk, 2018).

Food insecure children have an increased propensity for medical problems that impede their productivity in school and later in life (Cook et al., 2004). For example, iron deficiency resulting from food insecurity reduces cognitive development (Eicher-Miller, Mason, Weaver, McCabe, & Boushey, 2009). Children who struggle with hunger are more likely to have health problems and to be hospitalized (Alaimo, Olson, Frongillo, & Briefel, 2001; Cook et al., 2006; Augustine-Thottungal, Kern, Key, & Sherman, 2013), to have higher rates of discipline problems (Gennetian, Seshadri, Hess, Winn, & Goerge, 2016), and to have difficulties with interpersonal skills (Howard, 2011). Adolescents who are food insecure are more likely to have thoughts of suicide (Alaimo, Olson, & Frongillo, 2001). Food insecure students are more likely to be dissatisfied with their body, regardless of BMI (Altman, Ritchie, Frongillo, & Madsen, 2018) and are more likely to both be victimized by bullies and to bully others (Edwards & Taub, 2017). Each of these adverse conditions affects children's access to education and leads to increased local- and state-level costs in a number of domains, including education, health care, and corrections.

Programs that seek to mitigate student food insecurity have shown measurable positive impacts on student academic achievement (Schwartz & Rothbart, 2017; Dotter, 2013; Hinrichs, 2010) and behavior (Hobbs & King, 2018; Gennetian, Seshadri, Hess, Winn, & Goerge, 2018). In addition, programs do not appear to increase obesity (Corcoran, Elbel, & Schwartz, 2016) with some evidence indicating that programs can increase the number of students at a healthy weight (Davis & Musaddiq, 2018).

Although addressing student hunger is an educational investment, the full extent of the economic benefits of expanding and improving school meals has yet to be determined. It is likely that as engagement increases, through improved attendance and reduced disciplinary issues, student learning increases. As these behaviors and learning improve, it is also likely that teacher satisfaction will increase, leading to improvements in teacher performance and retention. The recommendations include the importance of evaluating approaches to mitigating hunger so that policymakers and community members are better able to understand the short- and long-term effects and economic benefits of these investments.

Student Hunger as a Barrier in North Carolina

More than 20% of North Carolina's children were food insecure in 2016, with higher rates in low-income counties (Feeding America, 2016). Recent studies have indicated that access to federally funded assistance such as Supplemental Nutrition Assistance Program (SNAP) and school meals may not fully alleviate food insecurity in students (Gassman-Pines & Bellows, 2018; Cotti, Goranier, & Ozturk, 2018; Edin et al., 2013).

In conversations in schools across the state, it became clear that educators attempt to address the basic needs of students by piecing together resources or referrals for local services. Educators told of actions they took to address the challenges facing their students, such as hunger, health, housing, transportation, hygiene, and mental health. Although they were doing the most they could, often spending additional time beyond their expected work, they reported feeling frustrated about the insufficiency of their actions to fully meet the needs of their students.

The North Carolina Supreme Court's decision in *Leandro v. North Carolina* (1997) states that the North Carolina Constitution guarantees "every child of this state an opportunity to receive a sound basic education in our public schools." Students' basic foundational needs, such as the need for adequate nutrition, are fundamental to their ability to access their constitutionally guaranteed "sound basic education." Food insecurity is correlated with adverse conditions of poverty and is likely to disproportionately affect students from households struggling with poverty more severely.

Given that the severity of student needs and the barriers presented to student learning and school success are more prevalent in areas with high rates of poverty, this work is intended to inform the *Leandro* case by highlighting a few successful strategies taken in North Carolina schools and districts to address student hunger. This work also contributes analyses of state-level policy options to address inequities across the state so that all of North Carolina's students can attend school without the barrier of hunger.

Innovative Approaches Within North Carolina Schools and Districts

Across the state, innovative approaches to reach more students with school meals are evident. In this section, three examples of school-based meal programs are highlighted. The main question guiding this work is — *What resources are needed to replicate these programs in other schools or districts?*

To address this question, the total social costs of each program were examined using a method of economic evaluation called the Ingredients Method (Levin, McEwan, Belfield, Bowden, & Shand, 2018). This method is critical for policymaking and decision-making as it relies on the economic principle of opportunity cost. This means that all resources (or “ingredients”) are accounted for in a transparent way, regardless of how they were financed. The mission is to provide a detailed list of ingredients so that a program can be replicated successfully at another site, especially if donations or volunteers or resources must be reallocated for the initiative to work. For a full discussion of the methods used, see Bowden & Davis (forthcoming 2019).

The following approaches were selected as examples of strategies available to schools and districts to address student hunger:

1. Breakfast kiosks
2. School-based food pantry
3. Mobile cafeteria for summer meals: The Yum Yum Bus

For each program and site location, the research team conducted site visits, interviewed key staff, reviewed documentation, and collected publicly available data. The ingredients lists include school, state, and federal inputs as well as volunteer time and donated resources. Ingredients were matched with standardized prices that reflect the total value of each program and cost per student. These costs reflect the costs above and beyond the “business as usual” programs that would be in place in a typical North Carolina school. Donated or contributed goods and services are included in the price list, regardless of source. These costs are included even if they were free to the program because it is important to capture the complete list of ingredients so that the estimates can be utilized in future programming. Facility use and durable goods such as shelving and appliances were amortized over an

appropriate number of years. A summarized ingredients list is included in each program section; for an itemized price list, see Bowden & Davis (forthcoming 2019).

These estimates are provided to inform decisions to replicate these types of programs in additional schools and districts within North Carolina. While costs are consistently estimated across these programs, the intention is not to compare their efficiency. Rather, the intention is to simplify the decision-making process and to improve the likelihood of successful implementation in additional sites.

Breakfast Kiosks

In schools, breakfast participation is typically significantly lower than lunch participation. There are several theories for this, including: students not yet being hungry at early school start times, students experiencing judgment and stigmatization from peers, and bus arrival times not early enough for the pre-school breakfast. Breakfast kiosks address all of these barriers. The simplest of the three interventions highlighted here, this program offers breakfast in highly trafficked student areas at a later time slot during the day. Many traditional breakfast programs operate before the start of the school day and require students to find transportation on their own. In this program, breakfast is offered between classes and allows students to take the bus and still access breakfast. Students pick up a breakfast on their way to class and eat between classes or in the classroom. Stigmatization is addressed because students remain with their peer groups rather than being isolated in the cafeteria. Stigma is also partially eliminated through a significant increase in participation rates by making breakfast accessible to all students, regardless of their qualification status. Variations of the breakfast kiosk program are becoming more prevalent across the state.

The research team observed two different kiosk programs from different school districts. Site 1 serves a small rural high school with nearly 100% economically disadvantaged students; site 2 is a larger rural high school with 50% economically disadvantaged population. Given the increasing prevalence of kiosk programs in North Carolina, the inclusion of two sites helped to create a more thorough understanding of program variation. At the time of observation, site 1 had been in place for less than one month; site 2 was slightly more established. Site 2 serves both breakfast and lunch from the kiosk, although only the breakfast portion of the program was considered in this study. Both sites still offer typical breakfast in the cafeteria before the start of the school day.

Exhibit 1A. Breakfast kiosk ingredients list, site 1

Ingredient	Description	Quantity
Personnel		
Food Service Workers	Prepares, packages, and serves food	370 hours
Janitor	Places extra trash cans during service	90 hours
Principal	Limited administrative support	10 hours
Materials		
Cart	Specially made cart for food serving	1 unit
Milk Cooler	Rolling cart for milk	1 unit
Trash Can	Trash can on wheels placed throughout the hallways	5 units
Point of Sale System	Students enter ID number to track meals served	1 unit
Laptop Computer	Attached to the point of sale system	1 unit
To-Go Packaging	Small paper bags	18,000 units
Food	Portable breakfast foods	18,000 units
		Total annual cost: \$29,000
		Total per student per day: \$1.60

Exhibit 1B. Breakfast kiosk ingredients list, site 2

Ingredient	Description	Quantity
Personnel		
Food Service Workers	Prepares food, wheels the cart to serving location, serves food	370 hours
Janitor	Stands by during meal service	93 hours
Principal	Limited administrative support	10 hours
Materials		
Cart	Specially made cart for food service, also used at lunch time	1 unit
Heat Packs	Keeps warm food warm	4 units
Ice Packs	Keeps food, milk, and juices cool	6 units
Plastic Tubs	For storage on the cart	8 units
Walkie Talkie Set	To radio to the café for more food	1 set
Café Table and Chairs	Stationed throughout the halls for students to eat	10 sets
Point of Sale System	Students enter ID number to track meals served	1 unit
Laptop Computer	Attached to the point of sale system	1 unit

Ingredient	Description	Quantity
To-Go Packaging	Small paper bags	27,000 units
Food	Portable breakfast foods	27,000 units
		Total annual cost: \$41,000
		Total per student per day: \$1.50

Notes: Represents a single breakfast kiosk serving 100 students at site 1 and 150 students at site 2. All dollar values are in 2019 U.S. dollars. Salaries include fringe benefits when appropriate. Values rounded to the nearest dollar unless it would obscure small values. Durable goods amortized at a 3% discount rate over a period of time appropriate for the good. For a full list of methods, see Bowden & Davis, forthcoming 2019.

School-Based Food Pantry

Students who rely on school meals are often left without consistent food outside of school hours, leaving them hungry during nights, weekends, school vacations, and weather closures. Although technically it occurs partially outside of school, persistent food insecurity has a significant impact on student learning. The school is a natural fit for a social services hub because students are already frequently there. Even in rural communities, public transportation is available for students in the form of school buses, mitigating the transportation barrier that frequently correlates with limited access to healthy food. An important component of the pantry program is that it allows students to take food for their family, acknowledging that some students are partially or fully responsible for the food security needs of younger siblings or additional family members. The pantry program is similar in theory to programs that send home backpacks of food with younger students with a different delivery mechanism.

The research team visited a pantry program in a rural high school with a nearly universal economically disadvantaged student population. A storage closet has been converted to a pantry that students and community members can access. The program is managed by a partnership between the school and a nonprofit organization. Food is sourced from the regional nonprofit's food bank. At the school level, the program is primarily overseen by the school social worker. The social worker officially works in three high schools and is able to connect students and families in need from any of the schools to the pantry. Participants are not required to establish a financial need; however, the pantry is based in a school with a free and reduced-price lunch (FRPL) population of more than 90%. In interviews, school leadership staff described actively offering the pantry services whenever they became aware of a crisis in a students' family, such as a lost job or a house fire. Although any student or broader community member can access the food pantry in person, it is important to note that the social worker also frequently delivers food directly to families at their homes, further addressing the transportation barriers discussed above.

Exhibit 2. School-based food pantry ingredients list

Ingredient	Description	Quantity
Personnel		
School Social Worker	Responsible for most of the school-based management, delivers food to families	400 hours
Social Worker Mileage	For delivery directly to families	1,200 miles
Principal	Limited administrative involvement	10 hours
Administrative Assistant	Opens pantry upon request during summer months	10 hours
Nonprofit Manager	Directly oversees the school-based pantry program	18 hours
Nonprofit Coordinator	Responsible for liaising between the school and the nonprofit	50 hours
Nonprofit Director	Limited administrative involvement	4 hours
Nonprofit Delivery Driver	Compiles and delivers food to the school one time per month	30 hours
Nonprofit Delivery Mileage	For delivery to the school	1,500 miles
Facilities		
Pantry Space	Converted storage closet	150 sq. ft
Refrigerator	Standard household refrigerator	1 unit
Shelving	Adjustable metal shelves	3 units
Materials		
Food	Bundle of foods, including frozen meats, produce, and nonperishable food	570 units
		Total annual cost: \$27,000
		Total per year per student in served schools: \$16.00
		Total per participant per meal: \$2.00

Notes: Represents a single school-based pantry, serving about 55 individuals a month. All dollar values are in 2019 U.S. dollars. Salaries include fringe benefits when appropriate. Values rounded to the nearest dollar unless it would obscure small values. Durable goods amortized at a 3% discount rate over a period of time appropriate for the good. For a full list of methods, see Bowden & Davis, forthcoming 2019.

Mobile Cafeteria for Summer Meals: The Yum Yum Bus

Similar to the food pantry, summer meal programs attempt to address gaps in student access to school meals. Federal funding from the USDA allows school districts and other agencies to offer summer meals. These meals are frequently offered at schools, places of worship, community centers, or parks. Students and families are responsible for getting students to the meal site, making transportation a barrier to access. This barrier is worsened in rural communities. This program offers a particularly innovative method to deliver food to students in

their neighborhood while remaining within federal regulations for summer meal funding. In addition to offering nutrition, the mobile meals program also offers regular contact with school employees along with access to books, which could feasibly help reduce summer learning loss. To the researchers' knowledge, school-district-coordinated delivery of meals to student neighborhoods is relatively novel, although there are several nonprofit organizations that offer related meal delivery services separate from federally funded options.

The mobile cafeteria is a districtwide summer meals program. The district is situated in a relatively large geographic area with a single small city surrounded by more rural areas. Current enrollment is nearly 20,000 students. The program grew in response to low participation rates at previous site-based summer feeding programs. District nutrition leadership realized that students were not attending the district's summer meal offerings because they could not physically get themselves there. To alleviate the transportation barrier, leadership decided the best option would be to build a mobile cafeteria and bring the food to the children.

Federal regulations require summer meal sites to have shelter and that students consume their meals while supervised by an adult in the shelter. This regulation prevents a simple drop and go delivery system. A combination of donated goods and funds, volunteer time, and school funds were used to convert a retired school bus into a mobile cafeteria. The bus serves as a shelter and is parked in or near student neighborhoods for lunchtime service. The bus is outfitted with hot and cold food storage, has cafeteria-style tables where the bus seats used to be, and is decorated with an eye-catching mural.

The program operates five days a week during most of the summer months when school is not in session. Hot and cold meal options are prepared in a central kitchen and loaded onto the school bus. These meals are then driven to high-need rural neighborhoods. A bus driver is accompanied by one or two nutrition workers. Once parked, the driver and nutrition workers work together to serve and supervise students. At least one of the three adults speak Spanish so that they can communicate directly with Spanish-speaking students and families. The bus has a selection of books that students can choose to take home with them. The mobile cafeteria program has expanded beyond the single bus and now has multiple mobile cafeterias that deliver throughout the summer.

Exhibit 3. Mobile cafeteria ingredients list

Ingredient	Description	Quantity
Personnel		
Food Service Workers	Prepare and serve food	540 hours
Food Service Worker Training	Food safety training	2 courses
Bus Driver	Drives the bus and helps serve	225 hours
Central Office Admin	Responsible for the majority of the program's functionality, along with the Nutrition Supervisor	50 hours
District Nutrition Supervisor	Responsible for the majority of the program's functionality, along with the Nutrition Supervisor	30 hours
District Nutrition Director	Oversees all nutrition programs, assists with bus program	16 hours
Facilities		
Converted school bus	Converted retired school bus with mural	1 unit
Bus Mileage	Mileage for meal delivery	1,440 miles
Bus Maintenance	Routine maintenance	3 months
Food Coolers	Keeps food and milk cold	4 units
Ice Packs	Freezable ice packs	12 units
Food Warmers	Keeps food warm	2 units
Heat Packs	Keeps hot food warm	4 units
Generator	Runs A/C after parking	1 unit
A/C Units	Keeps the bus cool while students eat	2 units
Tables With Seats	Cafeteria-style tables with attached seats	4 units
Materials		
Food	Federally reimbursable summer meals	5,000 units
Books	Available for students to take home	35 books
Uniforms	Worn by drivers and food service workers	6 units
		Total annual cost: \$33,000
		Total per student per meal: \$7.00

Notes: The above list represents a single bus, serving 110 children for 45 days. All dollar values are in 2019 U.S. dollars. Salaries include fringe benefits when appropriate. Values rounded to the nearest dollar unless it would obscure small values. Durable goods amortized at a 3% discount rate over a period of time appropriate for the good. For a full list of methods, see Bowden & Davis, forthcoming 2019.

State Policies to Mitigate Student Hunger

This section will focus on levers available to the state to mitigate the education issue of student hunger. Complementary policy options and projected state-level costs to offer reduced-price meals for free to qualified students are discussed. The main question addressed in this section is — *What funding would state-level policy require to address student hunger?*

The researchers reviewed existing and proposed policy options, both in North Carolina and in other states, and then discussed potential policy solutions with school nutrition leaders. In these conversations, the research team asked leaders what barriers they faced in feeding students and solicited their policy ideas. The information generated from these exercises was used to inform the selection of hypothetical state-level policy solutions. Publicly available data from the North Carolina Department of Public Instruction and the U.S. Census Bureau was used to calculate broad funding estimates. The resulting estimates are presented as ranges because the number of students who will take a meal each day, subsequently referred to as the “participation rate,” is impossible to precisely predict. It was assumed that by expanding meal options that student participation would increase. When possible, participation rates were predicted based on existing policy. It is likely that these costs would be at least partially offset by administrative savings and from reduced or eliminated unpaid student charges. Given the variation in administrative practices at the local level, these cost savings are not accounted for in the current estimates.

North Carolina has the opportunity to facilitate the expansion of school meal participation by expanding the number of students who are able to access school meals at no cost to the student. The research team offers a strategy that efficiently utilizes two complementary policies; the Community Eligibility Provision (CEP) and the elimination of the reduced-price student copay (see Exhibit 4). For schools with the highest level of economic need, offering universal fee-free meals through the CEP program was found to be the most efficient use of funds. For schools with lower levels of economic need, the CEP becomes less efficient; the researchers recommend an expansion of the current free and reduced-price system in this case. A policy option is presented that targets this expansion to students from low-income families by using state funds to remove the reduced-price copay.

Exhibit 4. State policy projections to address student hunger: CEP vs. FRPL

	Highest-Need Schools (ISP ≥ 62.5%)	All Other Schools
Intervention	CEP	Elimination of student reduced-price copay.
Description	Federal funding covers universal free meals for all students.	State covers the \$0.40 fee for reduced-price lunches.
Potential Costs & Savings	Increased participation rates lead to increased federal funding. Savings through reduction in administrative burden and student meal debt.	State-incurred cost of reduced-price student fees likely partially offset through a reduction in student meal debt and associated debt management.

Note: ISP (identified student population) is the percentage of students who are categorically eligible for free meals, such as students whose families receive SNAP or Temporary Assistance for Needy Families (TANF) or students who are in foster care or homeless. This is an underestimate of the number of students who actually qualify for free lunch.

These policy options are important for the state in this critical time because students in North Carolina are not made fully food secure by the current school meal system. Some students in need do not qualify for free meals; others qualify, but do not take meals due to stigma (Mirtcheva & Powell, 2009). Still other students attempt to purchase meals without adequate funds and are either given a meal, passing the cost along to the school, or are refused food and left hungry. Expanding access to fee-free school meal offerings could help address these gaps in student access.

Policy A: State Funding to Provide Free Lunch to Reduced-Price Qualified Students

Schools are currently reimbursed by the federal government for each meal that they serve and receive a different amount for free, reduced-price, and paid meals respectively. Students whose families earn below 130% of the poverty level are already eligible for free meals, and schools are reimbursed fully by the federal government. A smaller subset of students whose families earn less than 185% of the poverty line (\$46,435 a year for a family of four in 2019 (USDA, 2018) qualify for reduced-price meals and pay a \$0.40 fee for their meals. In 2016–17 64,153 students applied for reduced-price meals in North Carolina schools. The \$0.40 fee can still represent a burden to families and may lead to incurred lunch debt. North Carolina currently covers the student fee for reduced-price breakfast, thereby eliminating the reduced-price breakfast category. This program could be expanded to lunch programs as well.

The researchers analyzed North Carolina school lunch participation rates and found that about 7 million reduced-price lunches were served to students during the 2017–18 school year. Current CEP schools and some small schools do not report the number of enrolled students that qualify for reduced-price lunch, so the number of students in those schools that would qualify using state trends was projected. For a full discussion of the methods used, see Bowden & Davis, forthcoming 2019.

See Exhibit 5 for a summary of the estimates of the state funding required to cover the reduced-price student copay. If North Carolina opts to pay the reduced-price student fee of \$0.40 per lunch and participation rates were unchanged from the 2017–18 school year, it is estimated that the state would need approximately \$3.3 million in additional funding. If participation rates were to increase to a rate similar to the level of participation currently seen among students who qualify for free meals, the cost would be around \$3.9 million. To create an extreme case upper bound, the researchers estimated what it would cost if every qualified student ate lunch every school day. In this extreme case, it would cost about \$5.4 million, and this is used as an upper bound for the estimates. Overall, the researchers estimate a yearly price of \$3.9 million, depending on student enrollment and participation changes, for the state to cover reduced-price lunches. It is possible that some of this cost would be offset by a logically reduced level of unpaid meal charges incurred by students.

Exhibit 5. Budget estimate to eliminate reduced-price lunch

	Estimate	Notes
Projected Estimate	\$3.9 million	Participation based on current free meal uptake
Estimate With Unchanged Participation (lower bound)	\$3.3 million	Participation based on current reduced-price meal uptake
Estimate of All Qualified (upper bound)	\$5.4 million	Every qualified student, every day

Notes: Based on 2017–18 application and participation rates (North Carolina Department of Public Instruction, 2019). Reduced-price enrollment was predicted for schools that did not report reduced-price enrollment.

Policy B: CEP for High-Need Schools

The Community Eligibility Provision, a part of the 2010 Healthy and Hunger Free Kids Act (Pub.L. 111–296), allows for schools that demonstrate significant need to offer free meals to all students. Through the CEP, high-poverty schools can eliminate the free and reduced-price application process and instead offer free meals to any student. Instead of being certified through a form completed by families, students who meet certain criteria (such as being a recipient of SNAP or TANF benefits or having homeless or foster status) are certified as categorically eligible. Schools that have a high rate of categorically eligible students can enroll in the program and offer meals to all students regardless of eligibility. Currently, there are more than 900 schools offering universal meals through the CEP program in North Carolina.

The CEP program to offer free lunch universally to all students is available to schools in which more than 40% of the student population is categorically eligible for free meals (this threshold corresponds to approximately 64% FRPL eligibility). Schools are reimbursed at a rate proportionate to their percentage of identified students, with schools with rates of greater than 62.5% receiving reimbursement for all meals served (see Exhibit 6 for a summary of the CEP reimbursement system). In 2017–18, more than 30% of the eligible schools did not participate in the CEP. This is likely because schools that are closer to the 40% threshold are obligated to make up a substantial share of the costs of the meals served. The researchers found an efficiency benefit for schools that are at or above the 62.5% threshold. That is to say that these schools stand to gain increased federal funding through the use of the CEP (see Exhibit 7 for examples).

Exhibit 6. CEP reimbursement system

ISP (Percent)	Reimbursement Rate=ISP*1.6	Percent of Meals Reimbursed at Free Rate	Percent of Meals Reimbursed at Paid Rate
62.5	$0.625 \times 1.6 = 100$	100	0
50	$0.5 \times 1.6 = 80$	80	20
40	$0.4 \times 1.6 = 64$	64	36

Notes: A school's ISP is multiplied by 1.6 to calculate its reimbursement rate. Schools with an ISP of less than 62.5% must find additional funding to cover the portion of meals not covered at the free rate by federal funding. Meal eligibility status is no longer counted, and schools are reimbursed using the above rates regardless of who takes a meal.

In 2017–18, there were 273 schools that met the 62.5% threshold; however, districts are able to “cluster” schools and take the average of their categorically eligible rate, so the number of schools that are able to exceed the 62.5% cutoff is likely higher. Schools that are below the 62.5% threshold receive a prorated reimbursement rate based on their categorically eligible population (see Exhibit 6). Given this system of population-based reimbursements, schools below the 62.5% cutoff stand to receive less federal funding under the CEP than they do in the traditional reimbursement system, assuming unchanged student participation (see Exhibit 7). For these schools, the researchers recommend the state cover the copay for reduced-price lunch as outlined above.

Exhibit 7. Maximum funds per day in schools below and above 62.5% ISP

	Student Need (ISP%)	Federal \$ CEP	Federal \$ FRPL
Anson Co High School	44.52	\$1,865	\$2,491
Buncombe Co Elementary School	48.62	\$1,198	\$1,480
Johnston Co Elementary School	45.64	\$359	\$471
Pitt Co Middle School	47.98	\$1,713	\$2,156
Halifax Co High School	70.26	\$1,353	\$1,343
Gaston Co Elementary School	67.24	\$2,400	\$2,392
Clinton Co Middle School	92.21	\$2,292	\$2,275

In addition to federal funding, there are likely significant savings to schools and districts from reduced administrative burdens and eliminated student-incurred meal debt. By offering universal meals, schools no longer need to collect and track FRPL forms, would no longer need to collect small amounts of money from students, and would no longer need to address incurred meal debt, the latter two of which are costly in the current system.

Both the CEP program and the removal of the reduced-price copay policy interventions would pair well with an effort to create a more accurate process to certify students as categorically eligible. It is feasible that by creating a more accurate student identification process, some schools that are not currently above the 62.5% threshold would become eligible. This would lead to more schools at the higher end of the spectrum moving into eligibility for full federal reimbursement and would potentially qualify more students for free or

reduced-price meals in other schools. An improved, streamlined data system could generate savings through reduced administrative burden.

Policy C: Universal Free Lunch for All Students

This section briefly addresses the policy option of offering free meals to all students, regardless of their qualification status. This policy is typically referred to as universal free meals. The use of universal free meals has recently gained national attention for its potential to meet a greater level of student need while reducing administrative burden and eliminating meal-debt. Variations on universal free meals have previously been introduced as legislation in the North Carolina General Assembly.

Many districts nationwide address the disconnect between needs and services by expanding free meal offerings or offering universal meals to all students. Research suggests that universal free meal programs help increase student participation, reduce stigma, and create a more efficient system with lower administrative burden and that universal offerings may improve student achievement (Corcoran, Elbel, & Schwartz, 2016; Leos-Urbel, Schwartz, Weinstein, & Corcoran, 2013; Logan et al., 2014; Schwartz & Rothbart, 2017; Dotter, 2013). Concerns about reduced student learning due to an increase in the amount of time devoted to mealtime have not been supported and have preliminarily been shown in the above research to be unfounded. Universal free meal programs offer a unique opportunity to envision the context of school meals and to consider mealtimes a more integral part of the school day.

In this policy scenario, schools that are above the 62.5% ISP threshold discussed earlier would continue offering universal free meal programs using the CEP. All other schools would offer universal meals through increased state funding. These schools would continue counting meals served by student qualification level and would submit for federal reimbursement for free and reduced-price meals. The students' portion of the fees would be borne by the state. Costs of universal free meals would be offset by the removal of unpaid student charges, colloquially termed "lunch debt," which is currently a sizable sum in many districts and schools. Additional potential savings would be available as schools would no longer handle student payments, but would instead receive funds directly from the state.

Universal free meal programs offer meals to all students, but do not require that students participate. In the current free and reduced-price system, participation is greater among students who qualify for free and reduced-price meals than it is among students who pay full price. Existing literature indicates that participation rates are lower as students' family income increases (Gleason, 1995), somewhat mitigating the costs to the state.

Although large cities and districts across the country have taken steps to offer universal free meals, to the researchers' knowledge, there is currently no state that offers free school meals to all students, regardless of eligibility. More research is needed to fully understand the impacts of universal free meals offered at a large scale. Given the novelty of this policy, it would be worth considering a pilot program to evaluate the impacts of universal free meals taken to a state scale. As with its work on digital access, North Carolina would be a pioneer in the nation should it opt to expand universal free meals and would potentially gain a unique level of attention.

Conclusions

The presence of childhood food insecurity hinders the effectiveness of North Carolina's education system. Despite the availability of federal, state, and local programs, the needs of some children are still not fully met. Most program officials that the research team spoke with were unable to fully meet student needs. Small-scale programs, although admirable, lack the efficiencies offered by the economy of scale available with statewide programs. A teacher purchasing granola bars at the grocery store is the least efficient way to meet student needs. There is an opportunity to take advantage of economies of scale by offering greater state-level support to make students food secure and thus better able to access their education.

In this report, school system and state-level interventions that could help meet students' nutritional and allow for more streamlined access to a sound basic education are outlined. The school system cost studies offer a picture of innovative, school-tested programs while also contributing a portrait of the local effort currently extended to address student hunger. The state-level policy analysis builds on existing policy to offer potential solutions that seek to maximize impact and efficiency.

More research is needed to estimate the economic benefits of investments in food security interventions along with other comprehensive student supports, however, there are a number of channels through which North Carolina stands to benefit from improved systems of student support. In addition to the long-term benefits of a more effective and efficient education system, investing in food insecurity alleviation could result in more immediate savings in terms of reduced health, discipline, and special education costs. Intentional state programs could help to significantly reduce administrative expenses and student meal debt, partially offsetting their costs. As an agricultural state, greater investments in student nutrition could result in an economic benefit to North Carolina farms.

Leandro Recommendation

Invest in comprehensively supporting student learning by addressing the barrier of student hunger. The state should: prioritize financial and legislative support of the alleviation of student hunger; support schools and districts in developing innovative programs that prioritize student access to meal programs; encourage piloting and replication of effective strategies to improve student access to school meals; and provide state funding to offer free lunch to all students that qualify for reduced-price meals, as is currently the case for breakfast, or offer more expansive universal free meal options.

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