

EXPANDING FOOD SECURITY THROUGH THE BREAKFAST IN THE CLASSROOM PROGRAM  
IN A RURAL NORTH CAROLINA COUNTY PUBLIC SCHOOL SYSTEM

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## **ABSTRACT**

Throughout the United States, households with children experience disparate rates of food insecurity. In Cleveland County, North Carolina (NC), 23.3% of households with children are food insecure, compared to 16.4% of all county residents. Many food insecure children rely on school meals for food that they may not have access to at home. The Federally Funded School Breakfast Program (SBP) reduces marginal food insecurity, but it is underutilized due to barriers such as stigma and the inability to arrive early to school to participate. Innovative models, such as Breakfast in the Classroom (BIC), alleviate barriers to utilization and have been shown to increase participation up to 88%. Through a partnership between the Cleveland County Commissioners, the faculty, staff and administration of the Cleveland County Public School System, No Kid Hungry NC and families of Cleveland County, the BIC will be implemented to reduce food insecurity among children.

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## **GROUP DELIVERABLES**

### **Common Group Proposal**

#### **Problem Statement**

Social Determinants of Health (SDoH) are non-medical factors that can impact one's health (World Health Organization, n.d.). The SDoH addressed in this proposal is Social and Community Context with the objective of decreasing very low food security<sup>1</sup> among children (U.S. Department of Health and Human Services, n.d.). Low or very low food security, or food insecurity, can increase the risk of negative health outcomes such as malnutrition, type 2 diabetes, heart disease, and obesity (Feeding America, n.d.; Holben & Marshall, 2017). Further, childhood exposure to food insecurity can increase the risk of stunted development, dental caries, anemia, asthma, increased aggression, hyperactivity, anxiety and decreased academic success among children (Feeding America, 2018; Holben & Marshall, 2017).

Cleveland County is a tier 1 economically disadvantaged rural county located in the southwestern region of North Carolina (Cleveland County Government, 2018; Cleveland County Public Health Center, 2020). Residents of Cleveland County experience higher rates of poverty at 19.9% compared to those living in other parts of North Carolina at 14.1%. (Cleveland County Public Health Center, 2020). Additionally, those who live in Cleveland County are more likely to experience food insecurity and this disparity is only exacerbated in households with children. In 2019, 23.3% of children under 18 in Cleveland County were food insecure, while the rate for all county residents was 16.4% (Feeding America, 2019). In North Carolina, the respective food insecurity rates were 18.3% and 13.5% (Feeding America, 2019).

Increasing food security among children in Cleveland County is an important public health objective because it has the potential to positively impact health and learning outcomes (Feeding America 2018; Holben and Marshall 2017). To accomplish this goal, public health leaders, nutrition professionals

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<sup>1</sup> Food security: the access to enough food at all times to sustain an active and healthy life (USDA 2021).

and policymakers must work together to eliminate the disparate rates of food insecurity in Cleveland County.

### **Policy and Programmatic Changes**

Studies show that school meals play an important role in caloric and nutrient intakes for children from food insecure households (Smith, 2017; Potamites & Gordon, 2010). Specifically, School Breakfast Programs (SBP) have been found to reduce the risk of marginal food insecurity, increase healthy food consumption, and improve school achievement (Bartfeld & Ahn, 2011). Of the various SBP models, the recommended policy/programmatic option is Breakfast in the Classroom (BIC). BIC is the most effective way to increase school breakfast participation and to alleviate barriers to participation among eligible students, including the social stigma of having breakfast in the cafeteria, late bus arrivals, or late student drop-offs (Dillard, 2018; Ferris et al., 2022). Further, Cleveland County Schools are eligible for the Community Eligibility Provision (CEP), meaning that all students, regardless of income, would be eligible to receive school breakfast at no cost each day if Cleveland County's 28 schools opted to participate in the program (Cleveland County Nutrition Services, n.d.; No Kid Hungry NC, 2020). As a result, BIC has the potential to address barriers to participation and to positively impact children experiencing food insecurity, whether they fall above or below the poverty level (Feeding America, 2019).

### **Stakeholder Analysis Process and Utility**

To implement this program, recommendations from No Kid Hungry's Pre- Implementation Checklist were used to identify essential stakeholders for the program. Stakeholders were then analyzed with a CATWOE analysis to better understand their viewpoints and interests. In Appendix A, stakeholders are listed as actors in the system and the people who they serve are listed as customers. In addition, the table highlights the transformation that these stakeholders wish to make, their worldview, and the environment they need to be successful. In addition, the owners represent those who have the power and authority to make changes in the system.

In addition to the CATWOE analysis, in Appendix B, Figure 1, an interest and influence map was



completed to highlight stakeholders' power and concerns. Highly interested stakeholders are individuals who have been working to address this issue and it is part of their mission or sole purpose. This was done to prioritize key stakeholders and their roles in implementing this program. High influence stakeholders refer to stakeholders with the capacity to create change for the system. All stakeholders that did not closely align with these definitions were placed in the low interest and low influence categories regardless of whether the stakeholders may have shown signs of support towards the issues.

### **Budget and Budget Narrative**

Key personnel costs include one nutrition staff member and one marketing assistant to promote BIC. Schools already employ personnel such as custodians and food service staff, so these personnel are not included in the budget. Key non-personnel costs include equipment, classroom supplies, marketing, and food production costs. The total personnel and non-personnel costs for each year are as follows: Year 1: \$10,745,261.52, Year 2: \$10,587,380.21, and Year 3: \$10,799,127.81. Personnel and non-personnel costs increase two percent each year to account for inflation.

Key sources of revenue include No Kid Hungry grants that cover start-up costs as well as USDA school breakfast reimbursements, which increase two percent each year to account for inflation (School Nutrition Association, 2022; No Kid Hungry, n.d.). Given that all Cleveland County students, regardless of income, are eligible to receive school breakfast at no cost each day (Cleveland County Nutrition Services, n.d.), revenues were calculated under the assumption that all 28 schools who have not implemented BIC and all students will participate in this program (No Kid Hungry NC, 2020). Revenue for each year is as follows: Year 1: \$6,240,500, Year 2: \$6,208,230, and Year 3: \$6,332,394.60. Factoring in revenue and costs, the monetary request for BIC is: Year 1: \$4,504,761.52, Year 2: \$4,379,150.21, and Year 3: \$4,466,733.21. A detailed budget can be found in Figures 1 and 2 in Appendix C.

### **Engagement and Accountability Plan**

Moreover, it is recommended to build group consensus prior to program implementation for many public health interventions (Spalluto, Audet, Murry, & Joosten, 2018). To accomplish this, stakeholders will engage in two group engagement exercises during a formal group meeting, followed by

one individual-level follow-up session. The group engagement methods for this public health intervention are the Nominal Group Technique (NGT) and the Give-Get exercise (GG). The individual level engagement method is a design thinking technique offered by IDEO's *Framing your Design Challenge Guide* called "Ways to Grow."

To ensure success with the proposed engagement plan, this accountability plan explains the committed efforts of partnership and collaboration between Cleveland County Public Schools (CCPS) and the Cleveland County Health Department (CCHD). The CCHD is a government body within the county to provide oversight to support CCPS in its efforts to increase food security options offered to low-income students within the district. This accountability plan establishes a set of guidelines and expectations between these stakeholder groups to ensure the BIC program's success. The vision of these efforts is to establish a blueprint for initiating strategic public health solutions within CCPS. The hope is that from this partnership, CCPS can create an open and safe environment where students can feel safe accessing school nutrition resources and services.

CCHD will be the backbone agency for this program implementation process. CCHD will provide support and guidance throughout the process. They will also help with training school staff and faculty on the importance of the program and the necessary steps that teachers, cafeteria staff, and student wellness staff could follow to best support the program. However, the Stakeholder ultimately responsible for implementing this program will be the CCPS. CCPS leadership has been identified as a public health stakeholder that is responsible for this program implementation because it will be initiated within CCPS.

### **Program Evaluation**

All students and families who are part of Cleveland County Public Schools will be included in the sample population for evaluation. Baseline measurements of perceived food security levels, current utilization of the SBP, and demographic data will be measured through a survey distributed by program staff. Questions adapted from the USDA Six-Item Short Form Food Security Module (see Appendix D for example) will include age, sex, gender identity, race/ethnicity (of child), perceived level of household food security, current utilization of SBP, and consumption of breakfast. Two years after program

implementation, the same survey will be distributed to participating households for endline measurements. Additionally, the average number of breakfast meals distributed daily to children before and after BIC program implementation will be calculated for further quantitative evaluation.

Measured outputs will include the number of breakfasts served in the classroom, the number of surveys completed at baseline and at endline and counts of children served. Data will require use of statistical analysis software to conduct paired t-tests and measure the difference in average breakfasts distributed before and after BIC implementation. The difference in perceived food security before and after the intervention will also be analyzed using an odds difference to compare results.

The program timeline will be three years long. The first six months will be utilized to prepare program logistics as well as for baseline data collection and analysis. Next, BIC will be implemented for two years, after which the final six months will be utilized to collect and analyze endline data.

Finally, the main strength of this program is that it is an evidence-based intervention shown to increase SBP participation rates up to 88% (Governor's Offices, n.d.). Conversely, one major challenge will be the ability to gauge amounts of breakfast consumed. It is possible that children will not consume entire meals, therefore, it will be important to consider strategies to analyze produced food waste.

## REFERENCES

- Adolphus, K., Lawton, C. L., & Dye, L. (2013). The effects of breakfast on behavior and academic performance in children and adolescents. *Frontiers in Human Neuroscience*, 7, 425. <https://doi.org/10.3389/fnhum.2013.00425>
- Bartfeld, J. S., & Ahn, H.-M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, 141(3), 470–475. <https://doi.org/10.3945/jn.110.130823>
- Breakfast Blueprint. (n.d.). Frac.Org. Retrieved February 23, 2022, from <https://frac.org/wp-content/uploads/breakfast-blueprint-report-july2017.pdf>
- Cleveland County Government. (2018). *About Cleveland County*. Cleveland County, North Carolina. [https://www.clevelandcounty.com/main/government/about\\_cleveland\\_county.php](https://www.clevelandcounty.com/main/government/about_cleveland_county.php)
- Cleveland County Nutrition Services. (n.d.). *Community Eligibility Provision*. Cleveland County Nutrition Services. Retrieved March 24, 2022, from <https://www.clevelandcountynutrition.org/index.php?page=ClevelandCommunityEligibilityInfoPage&sid=1528144148888>
- Cleveland County Public Health Center. (2020). *2019 Cleveland County Community Health Assessment*.
- Design Kit. (n.d.). Retrieved April 19, 2022, from Designkit.org website:<https://www.designkit.org/resources/1>
- Dillard, P. A. (2018). *Educational Leaders' Perceptions of the Implementation, Benefits, and Barriers to Breakfast in the Classroom*. Auburn University. January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/nutrition-and-healthy-eating/eliminate-very-low-food-security-children-nws-02>
- Feeding America. (n.d.). *Causes and Consequences of Food Insecurity*. Hunger and Health-Understanding Food Insecurity. Retrieved January 16, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/>
- Feeding America. (2018). *Child Food Insecurity*. Feeding America. <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-child-food-insecurity.pdf>
- Feeding America. (2019). *Food Insecurity in Cleveland County, North Carolina*. Feeding America. <https://map.feedingamerica.org/county/2017/overall/north-carolina/county/cleveland>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, 14(3), 511. <https://doi.org/10.3390/nu14030511>
- Holben, D. H., & Marshall, M. B. (2017). Position of the academy of nutrition and dietetics: food insecurity in the united states. *Journal of the Academy of Nutrition and Dietetics*, 117(12), 1991–2002. <https://doi.org/10.1016/j.jand.2017.09.027>

- Household Food Insecurity Access Scale (HFIAS) for measurement of food access: Indicator guide. (n.d.). Fantaproject.Org. Retrieved March 24, 2022, from <https://www.fantaproject.org/monitoring-and-evaluation/household-food-insecurity-access-scale-hfias>
- Implement breakfast after the bell. (n.d.). Nokidhungry.Org. Retrieved March 24, 2022, from <http://bestpractices.nokidhungry.org/programs/school-breakfast/implement-breakfast-after-the-bell>
- McMillian, S. S., King, M., & Tully, M. P. (2016). How to Use the Nominal Group and Delphi Techniques. *International Journal of Clinical Pharmacy*. PMC - US National Library of Medicine: National Institutes of Health. Retrieved on March 13, 2022 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4909789/>
- No Kid Hungry. Breakfast After the Bell: Pre-Implementation Checklist (pdf). Retrieved on February 13, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist_0.pdf)
- No Kid Hungry. (n.d.). *No Kid Hungry and Kellogg School Breakfast Grants*. No Kid Hungry. Retrieved March 6, 2022, from <https://www.nokidhungry.org/kellogg-breakfast-grants>
- No Kid Hungry NC. (2020). *2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools*.
- Governor's Office Partners with No Kid Hungry School Breakfast Leadership Institute to Expand Access to School Breakfast in 10 School Districts | NC Gov. Cooper. (n.d.). Retrieved March 6, 2022, from <https://governor.nc.gov/news/governor%E2%80%99s-office-partners-no-kid-hungry-school-breakfast-leadership-institute-expand-access>
- Potamites, E., & Gordon, A. (2010). *USDA ERS - Children's Food Security and Intakes from School Meals: Final Report*. USDA Economic Research Service.
- School Nutrition Association. (2022). *School Meal Trends & Stats*. Schoolnutrition.Org. <https://schoolnutrition.org/aboutschoolmeals/schoolmealtrendsstats/>
- Smith, T. A. (2017). Do school food programs improve child dietary quality? *American Journal of Agricultural Economics*, 99(2), 339–356. <https://doi.org/10.1093/ajae/aaw091>
- Spalluto, L, B., Audet, C, M., Murray, V, M., & Joosten, Y, A. (2018). Vanderbilt University Medical Center: Department of Radiology and Radiological Services. Developing a Partnership to Facilitate Community-Engaged Research in Diagnostic Imaging. Retrieved on March 22, 2022, from [https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082\\_Spalluto.pdf](https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082_Spalluto.pdf)
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>
- World Health Organization. (n.d.). *Social determinants of health*. World Health Organization. Retrieved March 24, 2022, from <https://www.who.int/health-topics/social-determinants-of-health>

## Appendices

### Appendix A

**Table 1. Stakeholder Roles: Responsible, Accountable, Supported, Consulted, Informed**

RASCI Levels		
Who is	Policy/Program Transformation	Rationale For Partner Participation
<b>Responsible</b> = owns problem/project	<ul style="list-style-type: none"> <li>● District School Board</li> <li>● School District Superintendent</li> </ul>	<ul style="list-style-type: none"> <li>● Wishes to create a learning environment suitable for all students</li> </ul>
<b>Accountable</b> = ultimately answerable for the correct and thorough completion of the deliverable or task, and the one who delegates the work to those responsible	<ul style="list-style-type: none"> <li>● School Principals</li> </ul>	<ul style="list-style-type: none"> <li>● Wants to ensure their school is providing optimal learning services for students</li> </ul>
<b>Supportive</b> = can provide resources or can play a supporting role in implementation	<ul style="list-style-type: none"> <li>● Teachers</li> <li>● Cafeteria Staff</li> <li>● Student Wellness Staff</li> </ul>	<ul style="list-style-type: none"> <li>● They are passionate about students and their well-being</li> </ul>
<b>Consulted</b> = has information and/or capability necessary to complete the work	<ul style="list-style-type: none"> <li>● No Kid Hungry</li> </ul>	<ul style="list-style-type: none"> <li>● Are instrumental in the work related to Breakfast after the Bell program</li> </ul>
<b>Informed</b> = must be notified of results, processes and methods, but need not be consulted	<ul style="list-style-type: none"> <li>● Parents</li> <li>● Food Insecure children</li> </ul>	<ul style="list-style-type: none"> <li>● Believe that food insecurity is an important issue facing their families</li> </ul>

## Appendix B

**Figure 1. Influence & Interest MAP**

<p>Low Influence, High Interest:</p> <ul style="list-style-type: none"><li>● Food insecure children</li><li>● Parent Teacher Association</li></ul>	<p>High Influence, High Interest:</p> <ul style="list-style-type: none"><li>● No Kid Hungry</li></ul>
<p>Low Influence, Moderate Interest:</p> <ul style="list-style-type: none"><li>● Teachers</li><li>● Cafeteria Staff</li><li>● School health/wellness staff</li></ul>	<p>High Influence, Moderate Interest:</p> <ul style="list-style-type: none"><li>● Cleveland County School Board</li><li>● Cleveland County Superintendent</li><li>● School Principals</li></ul>

## Appendix C

**Figure 1. Budget for Breakfast in the Classroom**

Three Year Breakfast in the Classroom Budget									
Personnel Costs	Number of Staff	FTE	Rate	Salary	Fringe Benefits	Y1	Y2	Y3	Total
Nutrition staff	1	1	\$42,000.00	\$42,000.00	\$12,600.00	\$54,600.00	\$55,692.00	\$56,805.84	\$167,097.84
Marketing assistant	1	1	\$42,000.00	\$42,000.00	\$12,600.00	\$54,600.00	\$55,692.00	\$56,805.84	\$167,097.84
<b>Total Personnel Costs</b>						\$109,200.00	\$111,384.00	\$113,611.68	\$334,195.68
Non-personnel Costs	Quantity	Cost per Item	Y1	Y2	Y3	Total			
<b>Equipment</b>									
Portable breakfast carts	5	\$1,999.00	\$9,995.00	\$0.00	\$0.00	\$9,995.00			
iPad	5	\$329.00	\$1,645.00	\$0.00	\$0.00	\$1,645.00			
Point of sale system	1	\$932.75	\$932.75	\$951.41	\$970.43	\$2,854.59			
<b>Classroom supplies</b>									
Wipes	580	\$11.29	\$6,548.20	\$6,679.16	\$6,812.75	\$20,040.11			
Trash cans	10	\$31.00	\$310.00	\$0.00	\$0.00	\$310.00			
Trash bags	8	\$99.00	\$792.00	\$807.84	\$824.00	\$2,423.84			
Pack of placemats	63	\$17.68	\$1,113.84	\$1,136.12	\$1,158.84	\$3,408.80			
<b>Marketing</b>									
Signage	5	\$20.55	\$102.75	\$0.00	\$0.00	\$102.75			
Logo design	1	\$1,000.00	\$1,000.00	\$0.00	\$0.00	\$1,000.00			
Uniform with logo	20	\$20.00	\$400.00	\$408.00	\$416.16	\$1,224.16			
T-shirt with logo	10	\$11.98	\$119.80	\$122.20	\$124.64	\$366.64			
<b>Food Production</b>									
Meals	92,500	\$2.72	\$251,600.00	\$256,632.00	\$261,764.64	\$769,996.64			
<b>Total Non-personnel Costs</b>			\$274,559.34	\$266,736.72	\$272,071.46	\$813,367.52			



**Figure 2. Budget for Breakfast in the Classroom**

Personnel and Non-Personel Costs							
	Personnel Costs	Non- Personnel Costs	Number of Schools	Total			
Y1	\$109,200.00	\$274,559.34	28	\$10,745,261.52			
Y2	\$111,384.00	\$266,736.72	28	\$10,587,380.21			
Y3	\$113,611.68	\$272,071.46	28	\$10,799,127.81			
<b>Total Costs</b>				\$32,131,769.55			
Revenue/Income							
USDA Reimbursement	Number of Students	Number of Meals Per School Year	Reimbursement Rate	Y1	Y2	Y3	Total Revenue/Income
Free Breakfast	14,000	185	\$2.35	\$6,086,500.00	\$6,208,230.00	\$6,332,394.60	\$18,627,124.60
Grants	Number of Schools		Requested Grant Funds				
No Kid Hungry and Kellogg School Breakfast Grants	28		\$5,500.00	\$154,000.00	\$0.00	\$0.00	\$154,000.00
<b>Total Revenue/ Income</b>				\$6,240,500.00	\$6,208,230.00	\$6,332,394.60	\$18,781,124.60
Yearly Request	Y1	Y2	Y3				
Costs	\$10,745,261.52	\$10,587,380.21	\$10,799,127.81				
Revenue/Income	\$6,240,500.00	\$6,208,230.00	\$6,332,394.60				
<b>Total Request</b>	<b>\$4,504,761.52</b>	<b>\$4,379,150.21</b>	<b>\$4,466,733.21</b>				

## Appendix D

**Figure 1: Six-Item Short Form Food Security Survey Module (USDA, 2012).**

**These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.**

FILL INSTRUCTIONS: Select the appropriate fill from parenthetical choices depending on the number of persons and number of adults in the household.

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No (Skip AD1a)
- DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No
- DK

AD3. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

- Yes
- No
- DK

## Group Presentation Slides

### Slide 1:

# Expanding Food Security Through Breakfast in the Classroom In a Rural North Carolina Public School System

Marcellos Allison (LIP), Christine Craig (HPM), Ivonne Headley (NUTR/RD),  
Ji-Rong Jiang (NUTR) and Jaycee Reilly (NUTR/RD)

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### Slide 1 Script:

Jaycee: Good afternoon, we will be presenting on expanding food security through breakfast in the classroom in a rural NC public school system.

**Slide 2**

# Social Determinant of Health (SDoH)

## Social and Community Context <sup>1</sup>



Objective: Eliminate **very low food security** among children

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**Slide 2 Script:**

Jaycee: First, I wanted to introduce what Social Determinants of Health (SDoH) are and how they affect Cleveland County. Social Determinants of Health are non-medical factors that can impact one's health. This intervention that we are presenting today aims at targeting the SDoH of the Social and Community Context with the objective of decreasing very low food security among children.

### Slide 3

# Food Insecurity<sup>2, 3, 4</sup>

- Among **adults**, can increase the risk of:
  - Malnutrition,
  - Type 2 diabetes
  - Heart disease
  - Obesity
- Among **children**, can increase the risk of:
  - Stunted development,
  - Dental caries,
  - Anemia
  - Asthma
  - Increased aggression
  - Hyperactivity
  - Anxiety
  - Decreased academic success



#### Slide 3 Script:


Jaycee: What is food security? Food security is defined as the access to enough food at all times to sustain an active and healthy life. Low or very low food security, also called food insecurity can increase the risk of negative health outcomes in adults and children. Among adults, it is associated with an increased risk of malnutrition, type 2 diabetes, heart disease, and obesity. Childhood exposure to food insecurity can increase the risk of stunted development, dental caries, anemia, asthma, increased aggression, hyperactivity, anxiety and decreased academic success.

## Slide 4

Image source: <https://go.unc.edu/Ex5j3>

# Cleveland County

- Located in Southwestern NC
- Population: 97,645 <sup>5</sup>
  - 75.8% non-Hispanic White
  - 20.8% non-Hispanic Black <sup>6</sup>
- Economy based in general merchandising and grain farming <sup>7</sup>
- 16.4% of residents are food insecure vs. 13.5% of NC residents
- 23.3% of children under 18 were food insecure vs. 18.3% of NC children <sup>8</sup>



### Slide 4 Script:

Jaycee: Cleveland County is located in the southwestern region of North Carolina between the cities of Charlotte and Asheville. Cleveland County's economy is largely based in general merchandising and grain farming. Cleveland County is considered a tier 1 economically disadvantaged county as residents of Cleveland County experience higher rates of poverty compared to their counterparts in the rest of the state. Furthermore, Cleveland County residents experience higher rates of food insecurity. In general, households with children experience higher rates of food insecurity and this is true for those in Cleveland County as you can see from the statistics presented on this slide.

## Slide 5

# In What Settings Can We Expand Food Security Among Children?

### Slide 5 Script:

Jill: Considering food insecurity in Cleveland County is exacerbated in households with children, the question that we asked to solve the issue is “In what settings can we expand food security among children, besides their home?”

## Slide 6

Recommended Program/Policy  
is:  
**An Alternative School Breakfast  
Program Breakfast (SBP) Model  
called Breakfast in the Classroom  
(BIC)<sup>9, 10</sup>**

### Slide 6 Script:

Jill: And it turned out the answer is SCHOOL! Studies have shown school meals play an important role in caloric and nutrient intakes for children from food insecure households (Smith, 2017; Potamites & Gordon, 2010). To optimize the physical and learning outcomes among this population, our team proposed to implement the School Breakfast Program (SBP) in the Cleveland Public School System. Specifically, the Breakfast in the Classroom (BIC) model of SBP, so that they can start being nourished in the morning and ready to thrive in school (School Breakfast Report Card | Eos Foundation, n.d).



## Slide 7

**Benefits of Implementing BIC** <sup>11, 12, 13</sup>

- Eligibility for the Community Eligibility Provision (CEP)
- Successfully reduce the risk of food insecurity and improve healthy food consumption and school achievement
- The most effective way to increase School Breakfast Program participation and to alleviate barriers to participation

Image: <https://files.ips.org/2016/02/14/try-a-hot-grab-go-breakfast-every-morning-at-the-7th-grade-entrance/>

### Slide 7 Script:

Jill: Here is our supporting evidence.

1. Firstly, Cleveland County Schools are eligible for the Community Eligibility Provision (CEP), meaning that all students, regardless of income, would be eligible to receive school breakfast at no cost each day if schools in Cleveland County opted to participate in the program (Cleveland County Nutrition Services, n.d.; No Kid Hungry NC, 2020).
2. Secondly, the School Breakfast Program has successfully reduced the risk of food insecurity, increased healthy food consumption, and improved school achievement (Bartfeld & Ahn, 2011).
3. Lastly, Breakfast in the Classroom is the most effective model to increase school breakfast participation and to alleviate barriers among eligible students, including the social stigma of having breakfast in the cafeteria, late bus arrivals, or late student drop-offs (Dillard, 2018; Ferris et al., 2022).

## Slide 8

# Stakeholders Needed for Implementation <sup>14, 15, 16</sup>

- Followed recommendations from No Kid Hungry
- Identified 5 Key stakeholders:
  - Public Health Department, Board of Education, School Principals, School Nutrition Services, and No Kid Hungry
- Analyzed stakeholder concerns and interests

### Slide 8 Script:

Marcellos: To implement this program, No Kid Hungry's Pre Implementation Checklist served as a guideline for identifying essential stakeholders (No Kid Hungry). Based on these recommendations, five stakeholders were identified as essential stakeholders for implementing the BIC program in Cleveland County: Public Health Department, Board of Education, school principals, School Nutrition Services, and No Kid Hungry. Then, these stakeholders were analyzed to better understand their viewpoints and interests as stakeholders.

## Slide 9

# Engagement Strategy <sup>17, 18, 19</sup>

- Group collaboration session
  - Sharing feedback, concerns, and ideas
  - Set expectations across stakeholder roles
- Individual follow-up sessions
  - Address unmet needs, and concerns



### Slide 9 Script:

Marcellos: To accomplish this, a virtual group collaboration session will take place between stakeholders. During the collaborative session, stakeholders will participate in sharing feedback and concerns by utilizing the Nominal Group Technique (McMillian, King, & Tully, 2016). In this technique, stakeholders are able to share feedback and then the group is able to rank these concerns. Following this exercise, stakeholders will set group expectations by identifying what stakeholders will give and what they will need to receive to be successful (Spalluto, Audet, Murray, & Joosten, 2018). Following the engagement sessions, stakeholders will participate in an individual follow up session to offer feedback by utilizing the “Ways to Grow” design thinking method (Design Kit, n.d.).

## Slide 10

# ■ Responsibility & Accountability<sup>20</sup>

- Assign group roles and responsibility
- Assign accountability for project roles
- Establish partnership agreement for:
  - Public School System
  - Public Health Department



Image Source: <https://www.clevelandcountyschools.org/>



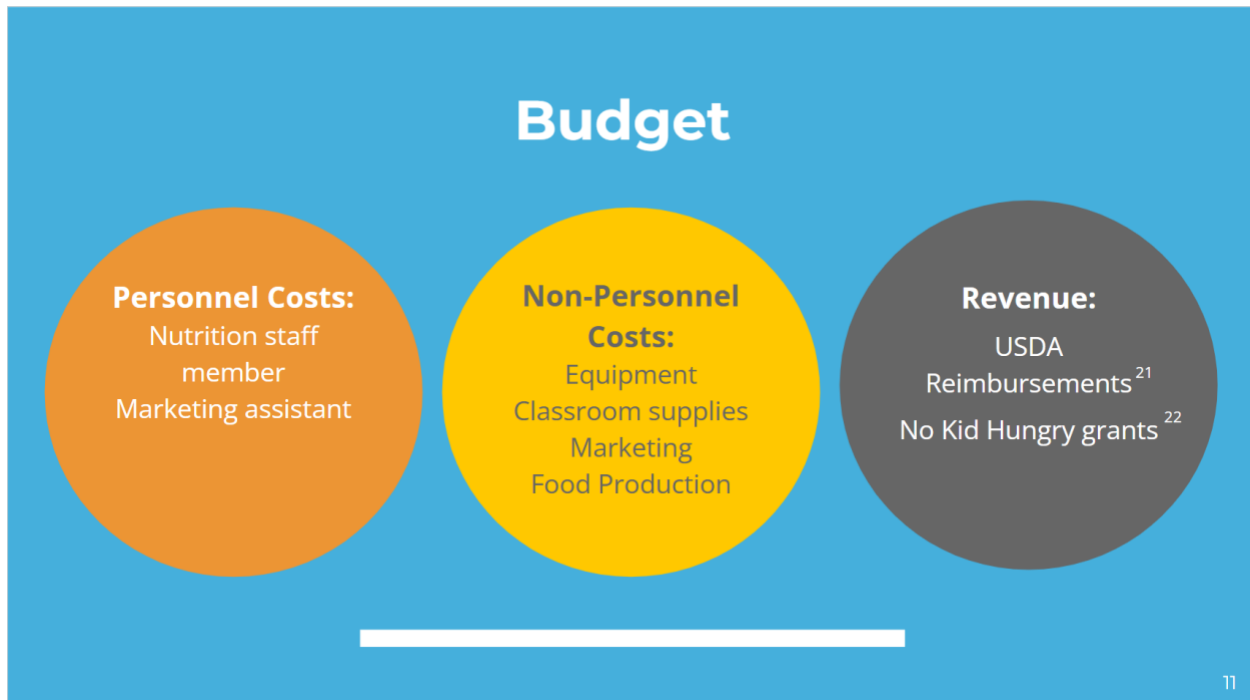
Image source: <https://bit.ly/38Plmfx>

10

### Slide 10 Script:

Marcellos: The group expectations discussed during the engagement session will shape the group roles and responsibilities. Stakeholders were assigned roles and select stakeholders were designated as responsible and or accountable. One example of these assigned roles is the partnership agreement between the Cleveland County Public School System and the Cleveland County Public Health Department. The Cleveland County Public Health Department is needed to support the Cleveland County Public School District during their implementation efforts.

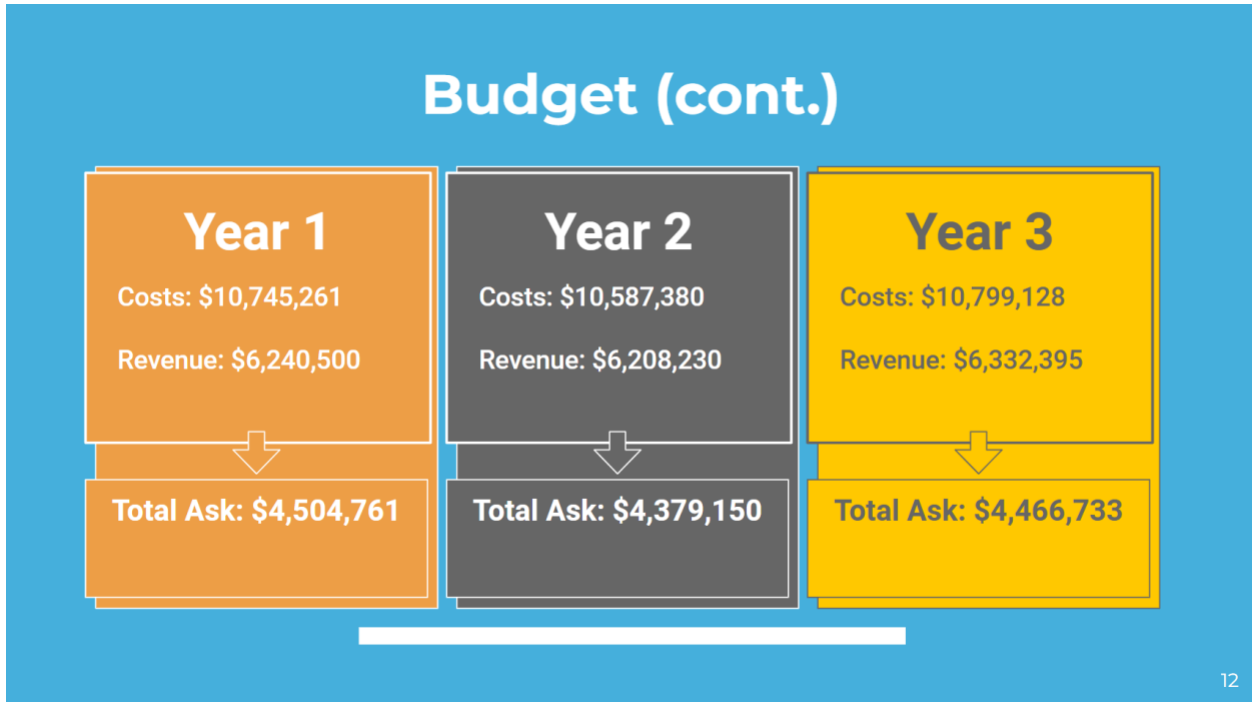
## Slide 11



### Slide 11 Script:

Christy: Now, I'll present an overview of key personnel costs, non-personnel costs, and revenue sources for Breakfast in the Classroom. Key personnel costs for each school include one nutrition staff member to plan meals and one marketing assistant to promote Breakfast in the Classroom. Schools already staff personnel such as custodians and food service staff, so these are not included in the budget. Key non-personnel costs include equipment such as portable breakfast carts and point of sale systems, classroom supplies such as wipes and placemats, marketing materials such as signs and logo design, and food production costs. Key sources of revenue that offset costs include USDA school breakfast reimbursements that help cover food production costs as well as grants from No Kid Hungry, a campaign that addresses childhood hunger; these grants can be used to cover start-up costs (School Nutrition Association, 2022; No Kid Hungry, n.d.).

Slide 12



**Slide 12 Script:**

Christy: Now let's dive into a more detailed breakdown of costs and revenue sources. When calculating costs and revenue, key assumptions are that all 28 schools who have not implemented Breakfast in the Classroom and all students will participate in Breakfast in the Classroom (No Kid Hungry NC, 2020). Additionally, costs and revenue sources are estimated to increase 2% each year to account for inflation. The total personnel and non-personnel costs for each of the three years are approximately \$10.7 million. These costs varied based on start-up costs and inflation. Revenue for each of the three years is approximately \$6.2 million. This results in a monetary request of approximately \$4.4 million for each of the three years.

## Slide 13

# Program Evaluation

- **Sample population:** All students & families who are part of Cleveland County Public Schools
- **Validated Measurement Tool:** USDA Six-Item Short Form Food Security Model
  - age, sex, gender identity
  - race/ethnicity (of child)
  - perceived level of household food security
  - current utilization of SBP
  - consumption of breakfast

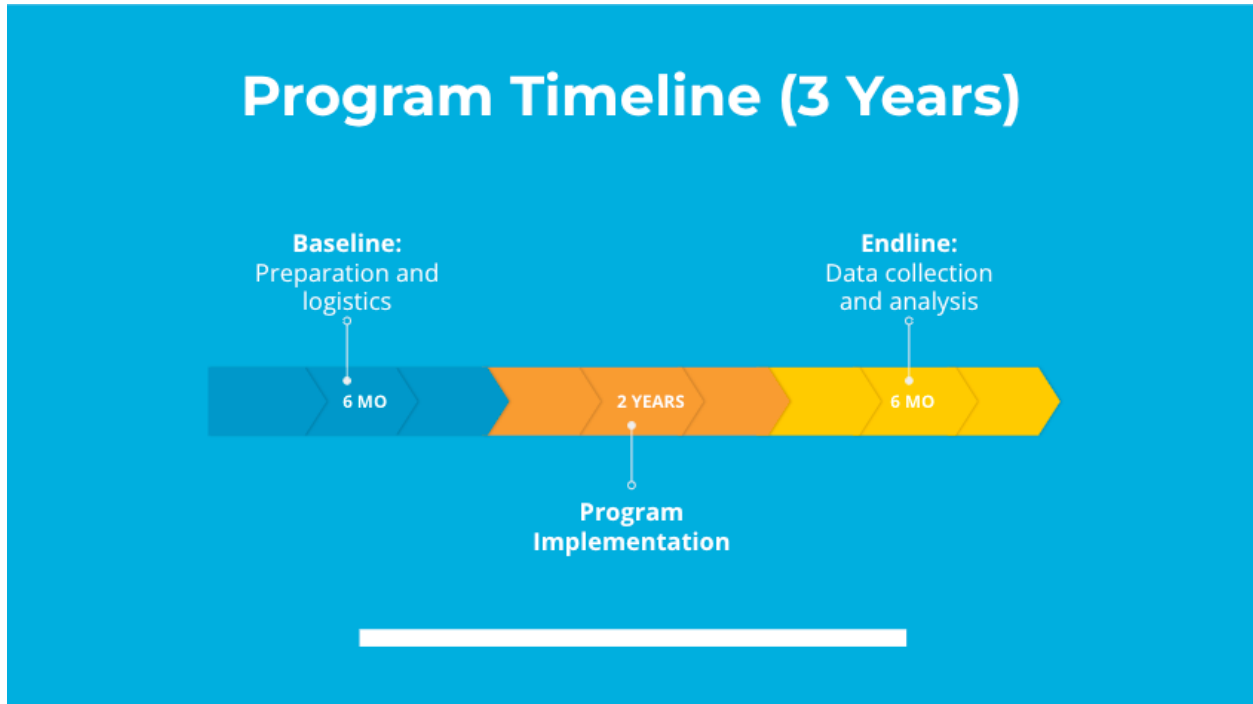


Image source: <https://bit.ly/3uyEYhA>

### Slide 13 Script:

Ivonne: All students and families who are part of Cleveland County Public Schools will be included in the sample population for evaluation. Questions adapted from the USDA Six-Item Short Form Food Security Module (see Appendix D for example) will include age, sex, gender identity, race/ethnicity (of child), perceived level of household food security, current utilization of SBP, and consumption of breakfast.

## Slide 14




### Slide 14 Script:

Ivonne: The program timeline will be three years long. The first six months will be utilized to prepare program logistics as well as for baseline data collection and analysis. Next, BIC will be implemented for two years, after which the final six months will be utilized to collect and analyze endline data.



**Slide 15**

## Measured Outputs



# breakfasts served

# surveys completed at baseline and endline

# children served

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**Slide 15 Script:**

Ivonne: Measured outputs will include the number of breakfasts served in the classroom, the number of surveys completed at baseline and at endline, and counts of children served.

## Slide 16

# Program Evaluation

**Strength:** evidenced-based & shown to increase SBP participation rates up to 88%.<sup>24</sup>



**Challenge:** ability to gauge amounts of breakfast consumed.

- Children might not consume entire meals.
- Strategies to analyze food waste?

Image source: <https://bit.ly/3xn65yF>

### Slide 16 Script:

Ivonne: Finally, the main strength of this program is that it is an evidence-based intervention shown to increase SBP participation rates up to 88% (Governor's Offices, n.d.). Conversely, one major challenge will be the ability to gauge amounts of breakfast consumed. It is possible that children will not consume entire meals, therefore, it will be important to consider strategies to analyze produced food waste.

## REFERENCES

- Bartfeld, J. S., & Ahn, H.-M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, *141*(3), 470–475. <https://doi.org/10.3945/jn.110.130823>
- Cleveland County Nutrition Services. (n.d.). *Community Eligibility Provision*. Cleveland County Nutrition Services. Retrieved March 24, 2022, from <https://www.clevelandcountynutrition.org/index.php?page=ClevelandCommunityEligibilityInfoPage&sid=1528144148888>
- Dillard, P. A. (2018). *Educational Leaders' Perceptions of the Implementation, Benefits, and Barriers to Breakfast in the Classroom*. Auburn University. January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/nutrition-and-healthy-eating/eliminate-very-low-food-security-children-nws-02>
- Feeding America. (n.d.). *Causes and Consequences of Food Insecurity*. Hunger and Health- Understanding Food Insecurity. Retrieved January 16, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/>
- Feeding America. (2018). *Child Food Insecurity*. Feeding America. <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-child-food-insecurity.pdf>
- Feeding America. (2019). *Child Hunger & Poverty in Cleveland County, North Carolina*. Map the Meal Gap. <https://map.feedingamerica.org/county/2019/child/north-carolina/county/cleveland>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, *14*(3), 511. <https://doi.org/10.3390/nu14030511>
- Governor's Office Partners with No Kid Hungry School Breakfast Leadership Institute to Expand Access to School Breakfast in 10 School Districts | NC Gov. Cooper. (n.d.). Retrieved March 6, 2022, from <https://governor.nc.gov/news/governor%E2%80%99s-office-partners-no-kid-hungry-school-breakfast-leadership-institute-expand-access>
- Holben, D. H., & Marshall, M. B. (2017). Position of the academy of nutrition and dietetics: food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, *117*(12), 1991–2002. <https://doi.org/10.1016/j.jand.2017.09.027>
- No Kid Hungry. (n.d.). No Kid Hungry and Kellogg School Breakfast Grants. No Kid Hungry. Retrieved March 6, 2022, from <https://www.nokidhungry.org/kellogg-breakfast-grants>
- No Kid Hungry NC. (2020). 2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools.
- Potamites, E., & Gordon, A. (2010). *USDA ERS - Children's Food Security and Intakes from School Meals: Final Report*. USDA Economic Research Service

- School Breakfast Report Card | Eos Foundation. (n.d.). Retrieved March 24, 2022, from <http://eosfoundation.org/school-breakfast-report-card/>
- Smith, T. A. (2017). Do school food programs improve child dietary quality? *American Journal of Agricultural Economics*, 99(2), 339–356. <https://doi.org/10.1093/ajae/aaw091>
- U.S. Census Bureau. (n.d.). *QuickFacts: Cleveland County, North Carolina*. Retrieved January 16, 2022, from <https://www.census.gov/quickfacts/clevelandcountynorthcarolina>
- USDA. (2017). The School Breakfast Program. <https://fns-prod.azureedge.net/sites/default/files/resource-files/SBPfactsheet.pdf>
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>

## INDIVIDUAL DELIVERABLES

Marcellos Allison

### Problem Statement

#### *Social Determinant of Health (SDoH)*

Food insecurity is a major factor contributing to poor health outcomes for individuals living in Cleveland County, North Carolina (NC), specifically, among families with children in the county. According to the United States Department of Agriculture, food insecurity is referred to as the “limited or uncertain access to adequate food”.<sup>2</sup> Historically, the risk for food insecurity increases as poverty or low-income status increases (Seefeldt & Castelli, 2009). This SDoH has the potential for several short-term impacts on the education, mental health, physical health, and health behavior of adolescents (Cleveland County Health Assessment [CCHA], 2019). Students facing food insecurity are at risk of poor academic achievement and leaving high school without a diploma (CCHA, 2019). As a result, there are numerous long-term impacts that can arise from food insecurity and poor educational experiences such as low income, unemployment, and negative health outcomes like obesity, diabetes, and heart disease (United States Department of Health and Human Services [USDHHS]). Likewise, food insecurity may even further perpetuate the likelihood for more children living in poverty and suffering from food insecurity (USDHHS).

#### *Geographic and historical context*

Cleveland County is located on the southwestern border of North Carolina approximately 42 miles to the west of Charlotte (County Health Rankings, 2021). According to the 2019 Cleveland County Community Health Assessment, Shelby, NC is the largest city in the county and has a population of 20,325. The county is a predominantly rural area and is labeled as a Tier 1 economically disadvantaged county just outside of the Mecklenburg County metropolitan area (County Health Rankings, 2021).

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<sup>2</sup> The United States Department of Agriculture describes two levels of food insecurity: a). Low food insecurity refers to the “reduced quality, variety, or desirability of diet”, b) Very low food insecurity refers to the “disrupted eating patterns and reduced food intake”. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>

Previously, unemployment in the area averaged 9.3% in 2001 which was during a time when many U.S. textile companies either reduced their workforce or were pushed to close down (CHR, 2021). However, the county has recruited new industries and distribution centers to the area to bring unemployment down to 6.3% in 2015. Since 2012, 2,836 new jobs have been announced, as a result of approximately 2 billion dollars of total investment in the county (CCHA, 2019). Despite these improvements, there is no central transportation system located in the county and many families have trouble accessing care because most of the healthcare services are located either in Shelby or Kings Mountain, NC (CHR, 2021). For these reasons, healthcare treatment is often delayed and many health issues go untreated and worsened by the time patients are seen by a provider (CHR, 2021). This has led to historical evidence of poor health outcomes throughout the county. In fact, the County Health Rankings and Roadmaps ranked Cleveland County, NC in the lower 25% of all NC counties for the number of poor health outcomes, and in the 25 - 50% range for poor health factors impacting families in 2021.

### ***Priority Population***

Children under the age of 18 are the priority population for addressing food insecurity in Cleveland County. In Cleveland County, the overall poverty rate in the county is 19.9% whereas the rate is 16.1% in the state (CHR, 2021). In addition, the county's poverty rate for children under the age of 18 is 27.5% (CHR, 2021). In comparison, the state's poverty rate for children under the age of 18 is 22.9% (CHR, 2021). In addition, black families are more likely to experience poverty than other residents within the state (CHR, 2021). In Kingstown, North Carolina, a town of predominantly African-American residents within the 28152 zip code, the median income is \$28,750 compared to the median household income of \$40,002 within the county, and \$50,320 within the state (CHR, 2021). Likewise, in Grover, North Carolina, a predominantly African-American town within the 29073 zip code, 9.1% of the population live at or below the federal poverty level (CHR, 2021). According to the Office of the Assistant Secretary for Planning and Evaluation (ASPE), the federal poverty level for a three-person household in 2019 was \$21,330.

### ***Measures of Problem Scope***

Moreover, in 2018 the North Carolina Institute of Medicine (NCIOM) found that 16.2% of the population were living with food insecurity compared to 14.8% of the population within the state. In fact, 16.7% of the county was found to have low access to a grocery store in 2015 (NCIOM, 2019). In 2017, 6.9% of families in the county were found to not have access to a vehicle for transportation compared to 6.5% in the state (NCIOM, 2019). These facts highlight the difficulties for many people in poverty within the county to access healthy food choices to promote their health. As a result, many of these issues tend to affect vulnerable populations such as school-age children who are without means of providing access to healthy food opportunities themselves.

Additionally, there is also a consistent trend seen over the years with roughly 60% or more of the students receiving free or reduced lunch (CHR, 2021). In the 2011 Cleveland County Community Health Assessment (CHA), over 9,000 students, or 58.6% of students in the district received free or reduced lunch. In the 2015 CHA, 66.97% of students received free or reduced lunch. Lastly, in the 2018-2019 school year, 57.57% of students received free or reduced lunch (CHR, 2021). Many of these students are living in single-mother households in poverty. These food insecurity conditions have been linked to many of the poor health outcomes found in the county's adults.

In fact, cardiovascular diseases were the leading cause of death from 2013 to 2017 with over 1200 deaths and a death rate of 254.7/100,000 (CHR, 2021). Diabetes was the seventh leading cause of death with 230 individuals and a death rate of 47.4/100,000 (CHR, 2021). For years, African American men have had the highest death rate in the county for cardiovascular diseases with a rate of 341.4 per 100,000 from 2013 to 2017, and 311.6 per 100,000 from 2014 to 2018 (CHR, 2021). There are many associated risk factors for heart disease and stroke, such as smoking, obesity, poor diet, and a lack of physical activity - most of which are all impacted by an individual's level of food insecurity (CHR, 2021).

### ***Rationale/Importance***

This social determinant of health historically impacts minority residents the most across the state (NCIOM, 2020). Minority residents are more likely to have low education levels, poor income, and a lack

of opportunities as a result of many social determinants of health (NCIOM, 2020). As a result, children of these families tend to suffer from many of the same social and community factors. Food insecurity is an example of a key social determinant of health impacting the lives of students. In fact, many children suffer from poor mental health, and poor health choices, and may even find themselves dropping out of school as a result of food insecurity (CCHA, 2019).

Therefore, it is important to tackle food insecurity in Cleveland County in order to create more opportunities for adolescents to grow into healthy adults. Many of the social determinants of health impacting Cleveland County residents are the result of historical trends and the perpetuation of similar health conditions for generations. As such, it is imperative to target approaches to expanding food security to prevent worse health disparities and health outcomes.

### ***Disciplinary Critique***

Public health leaders need to take charge of this issue because it is a representation of systematic racism and historical marginalization of communities. As protectors of public health, it is the duty of public health professionals to address these systems of historical racism and to develop new systems of justice and equity. The time is now for public health professionals to engage with community leaders and professionals across various fields to develop and implement innovative solutions and approaches to meet these issues. This can be accomplished by forming partnerships and collaborating in cross-organizational programs and projects to best meet the needs of the communities within Cleveland County North Carolina.



## REFERENCES

- Cleveland County 2019 Health Assessment (pdf). Retrieved January 20, 2022, from [https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment\\_.pdf](https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment_.pdf)
- County Health Rankings and Roadmaps. (2021). Cleveland County, North Carolina. Retrieved January 20, 2022, from <https://www.countyhealthrankings.org/app/north-carolina/2021/rankings/cleveland/county/outcomes/overall/snapshot>
- North Carolina Institute of Medicine [NCIOM] in partnership with North Carolina Department of Health and Human Services: Division of Public Health. (2020). Healthy North Carolina 2030: A Path Forward (pdf). Retrieved January 20, 2022, from <https://nciom.org/wp-content/uploads/2020/01/HNC-REPORT-FINAL-Spread2.pdf>
- North Carolina Institute of Medicine [NCIOM]. (2019). North Carolina Health Profile: Cleveland County. Retrieved January 28, 2022 from <https://nciom.org/counties/cleveland-county/>
- Office of the Assistant Secretary for Planning and Evaluation [ASPE]. 2019 Poverty Guidelines. Retrieved January 20, 2022, from <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines>
- Seefeldt, K, S., & Castelli, T. (2009). Low-Income Women's Experiences With Food Programs, Food Spending, and Food-Related Hardships: Evidence From Qualitative Data (pdf). University of Michigan. Contractor and Cooperator Report No.57. <https://naldc.nal.usda.gov/download/35894/PDF>
- United States Department of Agriculture (USDA): Economic Research Service. Definitions of Food Security. Retrieved January 28, 2022, from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>
- U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2030. Retrieved January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

## **Stakeholder Analysis**

### ***SDOH Key issue***

Food insecurity is a major social determinant of health that is impacting families located within Cleveland County, North Carolina (NC). According to the United States Department of Agriculture, food insecurity is referred to as “limited or uncertain access to adequate food”. Historically, the risk for food insecurity increases as poverty or low-income status increases (Seefeldt & Castelli, 2009). Within Cleveland County, there is a high correlation between single-parent households and lower-income levels (Cleveland County Health Assessment [CCHA], 2019). Children and adolescents within these single-parent households often face social and community challenges such as food insecurity as a result of lower family income (CCHA, 2019).

Moreover, this SDoH has the potential for several short-term impacts on the education, mental health, physical health, and health behavior of adolescents (CCHA, 2019). Students facing food security issues are at higher risk for poor academic achievement and leaving high school without a diploma (CCHA, 2019). As a result, children who experience food insecurity and poor educational experiences may be at an increased risk of several long-term impacts such as poor income, unemployment, and poor living environments (CCHA, 2019). These social factors are correlated with poor health outcomes like obesity, diabetes, and heart disease (United States Department of Health and Human Services [USDHHS]). For these reasons, food insecurity has been labeled as an area of improvement for Cleveland County, North Carolina.

### ***Policy/Program Intervention***

No Kid Hungry’s *Breakfast In the Classroom* (BIC) program has been identified as a successful evidence-based intervention to address food insecurity in Cleveland County (No Kid Hungry). No Kid Hungry, is a campaign promoted by Share Our Strength, a nonprofit that works to address food insecurity issues across the United States (No Kid Hungry). The BIC program provides students with flexible breakfast options, including breakfast in the classroom (BIC), second-chance breakfast, or grab-and-go breakfast (No Kid Hungry). No Kid Hungry’s breakfast programs have seen a huge benefit in the support

and resources offered to students (No Kid Hungry). In 2011, Maryland schools that implemented the breakfast programs have since seen an increase in school breakfast participation from 46% of students to 64% of all students (No Kid Hungry & Deloitte). As a result, schools with BIC programs were correlated with a 7.2% decrease in chronic school absences (No Kid Hungry & Deloitte). In addition, schools that provide breakfast in the classroom options had students that were 12.5% more likely to achieve proficiency on standardized tests (No Kid Hungry & Deloitte).

### ***Stakeholder Analysis Process and Utility***

When implementing this program, No Kid Hungry's Pre Implementation Checklist was utilized to identify essential stakeholders for the program. Based on these recommendations, five stakeholders were identified as essential stakeholders for implementing the BIC program in Cleveland County, NC. These stakeholders were analyzed using a CATWOE analysis (located in appendix A) to better understand their viewpoints and interests of stakeholders. The CATWOE Analysis is a public health stakeholder analysis tool that breaks down the customers, actors (stakeholders), transformation, worldview, owners, and the environment through the lens of the stakeholder (Augustsson, Churruca, and Braithwaite, 2019). The strength of the CATWOE Analysis is that it provides insight and understanding into the perspectives, motives, and concerns of the stakeholder (Augustsson, Churruca, and Braithwaite, 2019). However, the CATWOE Analysis can often time be misleading when public health professionals are importing information on the stakeholder's behavior (Augustsson, Churruca, and Braithwaite, 2019). Without the stakeholders filling out the table themselves, it can be difficult to capture a true perspective of the stakeholder (Augustsson, Churruca, and Braithwaite, 2019).

Within the table, stakeholders are listed as actors in the system and the people who they serve are listed as customers. In addition, the table highlights the transformation that these stakeholders wish to make, their worldview, and the environment they need to be successful. In addition, the owners represent those who have the power and authority to make changes in the system.

In addition to the CATWOE analysis, an interest and influence map was completed to highlight the power and concerns of the stakeholders and can be found in Appendix B. The strengths of interest and

influence map is that it highlights what the stakeholders are interested in as well as their capacity for bringing about change. The limitations of this map is that it may not be complete and therefore accurate with respects to the stakeholder unless the stakeholder filled out the map themselves (Sridharan, Think Insights). To analyze influence and interest, stakeholders were analyzed based on the information presented through their respective websites and online publications. For the interest and influence map, highly interested stakeholders are depicted for those individuals who are actively working to address this issue and it is part of their mission or sole purpose. This was done to prioritize key stakeholders and their roles in implementing this program. Within the map, high influence stakeholders are identified as stakeholders with the capacity to get things done or to create change for the system. All stakeholders that did not closely align with these definitions were placed in the low interests and low influence categories regardless if the stakeholders may have shown signs of support for the issues.

## Appendices

### Appendix A: Customer, Actor, Transformation, Worldview, Owner, Environment Analysis

Term	Actor 1	Actor 2	Actor 3	Actor 4	Actor 5
Customers	Food insecure children in the district	Food insecure children within the school	Food insecure children nationally	Students within the school district	Residents in Cleveland County
Actors	Cleveland County School Board & Superintendent	School health/wellness staff	No Kid Hungry	School Principals	Cleveland County Public Health Department
Transformation	To ensure that all schools in the district are provided with the resources and support to lead and develop students	To promote health and wellness for all students	To reduce food insecurity in areas of high food insecurity across the US	To promote positive educational experiences for students in the school	To ensure all residents are provided the resources and services they need to live healthy lives
Worldview	Food insecurity impacts academic performance in students	Food insecurity can lead to poor academic performance as well as poor health outcomes later in life	Food insecurity is a major public health problem in the US	Food insecurity provides academic challenges for our young people	All residents deserve to have access to healthy food options
Owner	Cleveland County School District Leadership	School leadership	Government and school leadership at the state and local levels	Cleveland County School District	Public Health Director
Environment	Buy-in and support from all school leaders within the district	There needs to be funding provided to implement the program	Leadership needs to make this change a priority in order to adopt the program	There needs to be more funding provided in order to implement these changes	There needs to be a committed effort towards expanding food security across stakeholder groups

## Appendix B: Influence & Interest MAP

<p>Low Influence, High Interest:</p> <ul style="list-style-type: none"><li>● Food insecure children</li><li>● Parent Teacher Association</li></ul>	<p>High Influence, High Interest:</p> <ul style="list-style-type: none"><li>● No Kid Hungry</li></ul>
<p>Low Influence, Moderate Interest:</p> <ul style="list-style-type: none"><li>● Teachers</li><li>● Cafeteria Staff</li><li>● School health/wellness staff</li></ul>	<p>High Influence, Moderate Interest:</p> <ul style="list-style-type: none"><li>● Cleveland County School Board</li><li>● Cleveland County Superintendent</li><li>● School Principals</li></ul>

## REFERENCES

- Augustsson, H., Churruca, K., and Braithwaite, J. (2019). Re-energizing the way we manage change in healthcare: the case for soft systems methodology and its application to evidence-based practice. Retrieved on March 22, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6744652/>
- Cleveland County 2019 Health Assessment (pdf). Retrieved January 20, 2022, from [https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment\\_.pdf](https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment_.pdf)
- County Health Rankings and Roadmaps. (2021). Cleveland County, North Carolina. Retrieved January 20, 2022, from <https://www.countyhealthrankings.org/app/north-carolina/2021/rankings/cleveland/county/outcomes/overall/snapshot>
- No Kid Hungry - Center for Best Practices. Implement Breakfast After the Bell. Retrieved on February 13, 2022 from <http://bestpractices.nokidhungry.org/programs/school-breakfast/implement-breakfast-after-the-bell>
- No Kid Hungry & Deloitte. No Kid Hungry Starts with Breakfast. Findings from Deloitte Analysis: Ending Childhood Hunger: A Social Impact Analysis (pdf). Retrieved on March 6, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/no-kid-hungry-starts-with-breakfast\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/no-kid-hungry-starts-with-breakfast_0.pdf)
- No Kid Hungry. Breakfast After the Bell: Pre-Implementation Checklist (pdf). Retrieved on February 13, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist_0.pdf)
- North Carolina Institute of Medicine [NCIOM] in partnership with North Carolina Department of Health and Human Services: Division of Public Health. (2020). Healthy North Carolina 2030: A Path Forward (pdf). Retrieved January 20, 2022, from <https://nciom.org/wp-content/uploads/2020/01/HNC-REPORT-FINAL-Spread2.pdf>
- North Carolina Institute of Medicine [NCIOM]. (2019). North Carolina Health Profile: Cleveland County. Retrieved January 28, 2022 from <https://nciom.org/counties/cleveland-county/>
- Office of the Assistant Secretary for Planning and Evaluation [ASPE]. 2019 Poverty Guidelines. Retrieved January 20, 2022, from <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines>
- Office of Superintendent of Public Instruction: Chris Reykdal, State Superintendent (Washington). Breakfast After the Bell Implementation Guide (pdf). Retrieved on February 13, 2022 from <https://www.k12.wa.us/sites/default/files/public/childnutrition/programs/nslbp/pubdocs/wababimplementationguide.pdf>
- Seefeldt, K, S., & Castelli, T. (2009). Low-Income Women's Experiences With Food Programs, Food Spending, and Food-Related Hardships: Evidence From Qualitative Data (pdf). University of

Michigan. Contractor and Cooperator Report No.57.  
<https://naldc.nal.usda.gov/download/35894/PDF>

Sridharan, M. Stakeholder Analysis: Interest - Influence Matrix. Think Insights. Retrieved on March 22, 2022, from <https://thinkinsights.net/strategy/stakeholder-analysis/>

United States Department of Agriculture (USDA): Economic Research Service. Definitions of Food Security. Retrieved January 28, 2022, from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2030. Retrieved January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>



## **Engagement & Accountability Plan**

### ***Purpose of Engagement***

In Cleveland County, North Carolina, food security is a key social determinant of health impacting county residents. To address this public health issue, this engagement plan will strategize the processes and methods for collaborating with stakeholders within Cleveland County. Many families with school-age children are suffering from financial and transportation issues that impact the ability to access healthy food options regularly (CCHA, 2019; NCIOM, 2020). In fact, evidence supports that breakfast intake within Cleveland County Public Schools (CCPS) is relatively low across students who qualify for free or reduced lunch (CCHA, 2019). In addition, many low-income students have a stigma associated with receiving free or reduced lunch in school because these students are distinguishable from other students due to separate eating times offered at school (CCHA, 2019). Therefore, to address this issue, the *Breakfast In the Classroom* program founded by the national non-profit No Kid Hungry (NKH) was recommended for implementation in CCPS (NKH - Center for Best Practices [CBP]). This program allows food insecure students to have the flexibility of eating breakfast in the classroom or after the bell to increase participation in school breakfast and to reduce the stigma associated with free or reduced meals (No Kid Hungry).

### ***Overview of Engagement Plan***

The priorities for this engagement plan are to establish agreement across school leadership, school district officials, teachers, cafeteria staff, and wellness staff regarding their roles and expectations from the group. These stakeholders were identified through leveraging No Kid Hungry's *Pre-Implementation Checklist*, which recommended a list of stakeholders that are essential to this specific program intervention. In addition, evidence shows that it is important for stakeholders to be in agreement on roles and expectations during public health interventions (Spalluto, Audet, Murry, & Joosten, 2018). To accomplish this, the stakeholders will engage in two group engagement exercises during a virtual 2-hour group meeting via zoom with a 15 min break after the first hour, followed by one individual-level follow-up session schedule within 2 weeks after the meeting. The group engagement methods for this

public health intervention are the Nominal Group Technique (NGT) and the Give-Get exercise (GG). The individual-level engagement method is a design thinking technique offered by IDEO's *Framing your Design Challenge Guide* called "Ways to Grow".

### ***Rationale and Explanation of Engagement***

The NGT is an evidence-based public health engagement method that is used traditionally for group idea generation and problem-solving (McMillian, King, & Tully, 2016). During this engagement plan, the NGT will be utilized to solicit feedback, and new perspectives, and to set priorities for the program implementation process. During this collaboration session, a designated notetaker will work to record comments shared amongst stakeholders during the allotted 2-hour time limit. This group process may look like stakeholders proposing alternative options or highlighting concerns that stakeholders may have with the proposed BIC program. This process starts with individuals within the group conducting a self-reflection (McMillian, King, & Tully, 2016). Then after the allotted time is up, individuals are then able to share their concerns with the group in a round-robin fashion to ensure that all group members can share and voice their opinions (McMillian, King, & Tully, 2016). Group members are then encouraged to participate in ranking the ideas in order of importance (McMillian, King, & Tully, 2016).

Often, public health professionals will engage in the Delphi group technique to build consensus and develop guidelines to supplement the NGT (McMillian, King, & Tully, 2016). In fact, careful consideration was given to the Delphi technique. However, the Delphi technique often consists of larger group participation in a multi-step questionnaire process over an extended period of time (McMillian, King, & Tully, 2016). Therefore, given the smaller group size, the NGT was prioritized to gather input in a singular and relatively quick group engagement exercise.

Next, the GG grid will be used to ensure that all stakeholders have a clear understanding of what each individual is expected to give and receive in order to make this collaborative intervention successful. The issues and concerns that were highlighted during the NGT will be the focal topics during the GG exercise. For each of the top 5 issues, stakeholders will need to work together as a group to identify relative stakeholders that may contribute to addressing the issue. Then the group will highlight what is

expected of each stakeholder, and individual stakeholders will highlight to the group what support they will need for the assigned task (McMillian, King, & Tully, 2016). This grid will be shared as a final product with all stakeholders following the meeting to ensure that all stakeholders are aware of their individual roles and group expectations.

Lastly, individual stakeholders will be consulted after the group planning session to learn more about how the group can improve future programs and policies to help address food security issues in the county. These follow-up sessions will utilize the IDEO.org's "Ways to Grow" design thinking method and a graphic representation of this mindset can be found in Appendix F (IDEO.org., 2015). In these individual follow-up sessions, stakeholders will be able to share whether or not all concerns are met with this program and offer additional options to maximize stakeholder resources. These stakeholder concerns will be recorded and will be kept in mind throughout the evaluation process for this program.

### ***Accountability Overview***

To ensure success with the proposed engagement plan, this accountability plan explains the committed efforts of partnership and collaboration between Cleveland County Public Schools (CCPS) and the Cleveland County Health Department (CCHD). The CCHD would like to support CCPS in its efforts to build upon food security options offered to low-income students within the district. This accountability plan establishes a set of guidelines and expectations between these stakeholder groups to ensure the BAB program's success. The goal is that from this partnership, CCPS can create an open and safe environment where students can feel safe accessing school nutrition resources and services. The vision of these efforts is to establish a blueprint for initiating strategic public health solutions within CCPS. The goals and metrics of this program align with our evaluation strategy. Success will be when there is an increase in the number of breakfast meals distributed to children and there is an increase in food security levels amongst students within CCPS.

### ***Backbone Agency***

Cleveland County Public Health Department will be the backbone agency for this program implementation process. The health department will provide support and guidance throughout the process.

The public health department will assist with training school staff and faculty on the importance of the program and the necessary steps that teachers, cafeteria staff, and student wellness staff could follow to best support the program.

***Partner/Stakeholder who will be responsible and accountable***

Stakeholder roles were established through a RASCI analysis that provides an overview of who is responsible, accountable, supported, consulted, and informed throughout the engagement process. The stakeholder who will ultimately be responsible for implementing this program will be the CCPS. CCPS leadership has been identified as a public health stakeholder that is responsible for this program implementation because it will be initiated within CCPS. The school is ultimately responsible for ensuring its students are provided with the adequate services it needs to provide holistic educational experiences for its students.

## Appendices

### Appendix C: Responsibility & Accountability Table

RASCI Levels		
Who is	Policy/Program Transformation	Rationale For Partner Participation
<b>Responsible</b> = owns problem/project	<ul style="list-style-type: none"> <li>● District School Board</li> <li>● School District Superintendent</li> </ul>	<ul style="list-style-type: none"> <li>● Wishes to create a learning environment suitable for all students</li> </ul>
<b>Accountable</b> = ultimately answerable for the correct and thorough completion of the deliverable or task, and the one who delegates the work to those responsible	<ul style="list-style-type: none"> <li>● School Principals</li> </ul>	<ul style="list-style-type: none"> <li>● Wants to ensure their school is providing optimal learning services for students</li> </ul>
<b>Supportive</b> = can provide resources or can play a supporting role in implementation	<ul style="list-style-type: none"> <li>● Teachers</li> <li>● Cafeteria Staff</li> <li>● Student Wellness Staff</li> </ul>	<ul style="list-style-type: none"> <li>● They are passionate about students and their well-being</li> </ul>
<b>Consulted</b> = has information and/or capability necessary to complete the work	<ul style="list-style-type: none"> <li>● No Kid Hungry</li> </ul>	<ul style="list-style-type: none"> <li>● Are instrumental in the work related to Breakfast after the Bell program</li> </ul>
<b>Informed</b> = must be notified of results, process and methods, but need not be consulted	<ul style="list-style-type: none"> <li>● Parents</li> <li>● Food Insecure children</li> </ul>	<ul style="list-style-type: none"> <li>● Believe that food insecurity is an important issue facing their families</li> </ul>

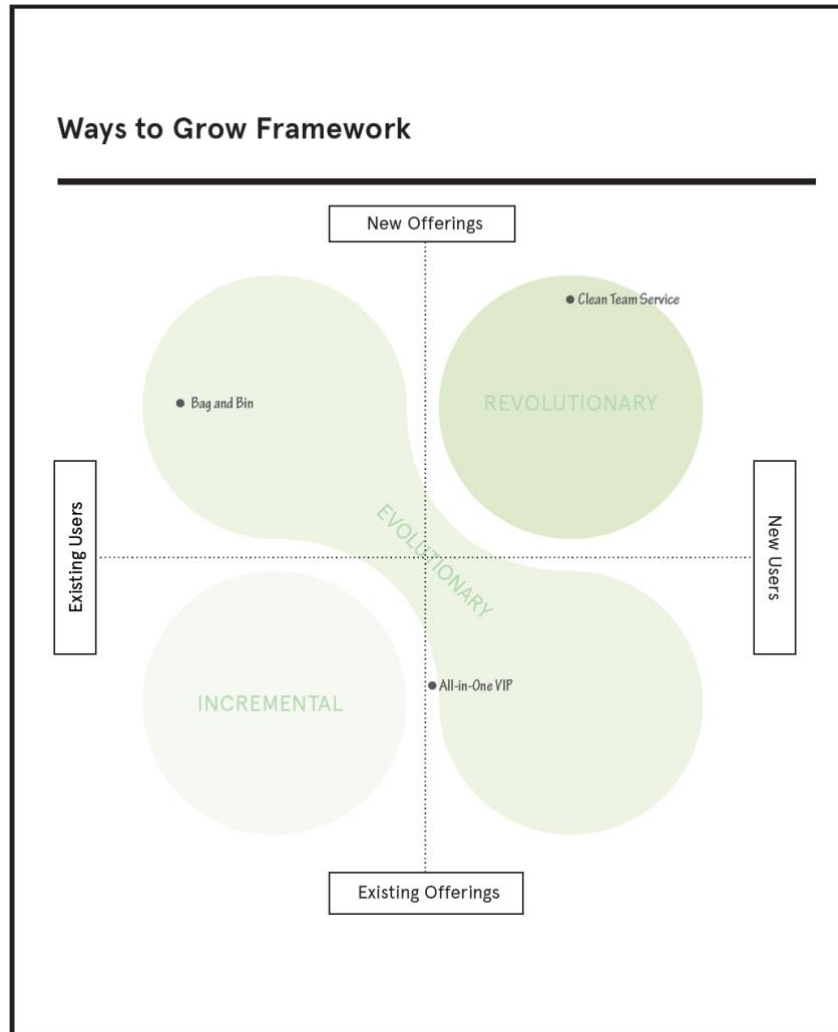
### Appendix D: Questions for Stakeholders

Topics	Questions
Program	How do feel about the selected program implementation?
Improvement	How can we improve?
Support	What support will you need?

**Appendix E: Table of Proposed Engagement Methods**

<b>Project Stage</b>	<b>Method</b>	<b>Techniques</b>	<b>Who &amp; Where</b>	<b>Estimated Timing</b>
List the stage	List the proposed engagement method	Describe the activity and techniques being used for each stage - eg mail out, workshop, online survey, focus group	Location & Stakeholders involved	Duration of engagement method
Feedback	Nominal Group Technique	Nominal Group Technique is allows members of a group to share ideas in a round-robin fashion and rank them according to group preference.	School conference room: school and district leadership, cafeteria and wellness staff, and teachers.	1 hour
Feedback	Give - Get Exercise	Allows stakeholders to “tasks” members with different roles and members can list their needs to perform assigned roles.	School conference room: school and district leadership, cafeteria and wellness staff, and teachers.	30 min
Feedback	Ways to Grow	Individual members are able to share their thoughts and opinions on areas to improve.	Virtually via zoom: school and district leadership, cafeteria and wellness staff, and teachers.	30 min - 1 hour

## Appendix F: IDEO's "Ways to Grow" Template





## REFERENCES

- Augustsson, H., Churruca, K., and Braithwaite, J. (2019). Re-energising the way we manage change in healthcare: the case for soft systems methodology and its application to evidence-based practice. Retrieved on March 22, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6744652/>
- Bezahler, A. (2019). RASCI 101: How to Move From Chaos To Order. The Innovation Framework. Retrieved on March 22, from <https://theinnovationframework.com/rasci-101-how-to-move-from-chaos-to-order/>
- Cleveland County 2019 Health Assessment (pdf). Retrieved January 20, 2022, from [https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment\\_.pdf](https://www.clevelandcounty.com/main/2019%20Cleveland%20County%20Community%20Health%20Assessment_.pdf)
- County Health Rankings and Roadmaps. (2021). Cleveland County, North Carolina. Retrieved January 20, 2022, from <https://www.countyhealthrankings.org/app/north-carolina/2021/rankings/cleveland/county/outcomes/overall/snapshot>
- IDEO.org. (2015). The Field Guide to Human-Centered Design: Design Kit.
- Lisinski, K. (2018). How to do RACI/RASCI analysis and finally get it right? LinkedIn. Retrieved on March 22, 2022, from <https://www.linkedin.com/pulse/how-do-raci-rasci-analysis-finally-get-right-ksawery-lisinski/>
- McMillian, S. S., King, M., & Tully, M. P. (2016). How to Use the Nominal Group and Delphi Techniques. International Journal of Clinical Pharmacy. PMC - US National Library of Medicine: National Institutes of Health. Retrieved on March 13, 2022 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4909789/>
- No Kid Hungry - Center for Best Practices. Implement Breakfast After the Bell. Retrieved on February 13, 2022 from <http://bestpractices.nokidhungry.org/programs/school-breakfast/implement-breakfast-after-the-bell>
- No Kid Hungry & Deloitte. No Kid Hungry Starts with Breakfast. Findings from Deloitte Analysis: Ending Childhood Hunger: A Social Impact Analysis (pdf). Retrieved on March 6, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/no-kid-hungry-starts-with-breakfast\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/no-kid-hungry-starts-with-breakfast_0.pdf)
- No Kid Hungry. Breakfast After the Bell: Pre-Implementation Checklist (pdf). Retrieved on February 13, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist_0.pdf)
- North Carolina Institute of Medicine [NCIOM] in partnership with North Carolina Department of Health and Human Services: Division of Public Health. (2020). Healthy North Carolina 2030: A Path Forward (pdf). Retrieved January 20, 2022, from <https://nciom.org/wp-content/uploads/2020/01/HNC-REPORT-FINAL-Spread2.pdf>
- North Carolina Institute of Medicine [NCIOM]. (2019). North Carolina Health Profile: Cleveland County. Retrieved January 28, 2022 from <https://nciom.org/counties/cleveland-county/>

- Office of the Assistant Secretary for Planning and Evaluation [ASPE]. 2019 Poverty Guidelines. Retrieved January 20, 2022, from <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines>
- Office of Superintendent of Public Instruction: Chris Reykdal, State Superintendent (Washington). Breakfast After the Bell Implementation Guide (pdf). Retrieved on February 13, 2022 from <https://www.k12.wa.us/sites/default/files/public/childnutrition/programs/nslbp/pubdocs/wababimplementationguide.pdf>
- Seefeldt, K, S., & Castelli, T. (2009). Low-Income Women's Experiences With Food Programs, Food Spending, and Food-Related Hardships: Evidence From Qualitative Data (pdf). University of Michigan. Contractor and Cooperator Report No.57. <https://naldc.nal.usda.gov/download/35894/PDF>
- United States Department of Agriculture (USDA): Economic Research Service. Definitions of Food Security. Retrieved January 28, 2022, from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>
- U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2030. Retrieved January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>
- Spalluto, L, B., Audet, C, M., Murray, V, M., & Joosten, Y, A. (2018). Vanderbilt University Medical Center: Department of Radiology and Radiological Services. Developing a Partnership to Facilitate Community-Engaged Research in Diagnostic Imaging. Retrieved on March 22, 2022, from [https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082\\_Spalluto.pdf](https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082_Spalluto.pdf)
- Sridharan, M. Stakeholder Analysis: Interest - Influence Matrix. Think Insights. Retrieved on March 22, 2022, from <https://thinkinsights.net/strategy/stakeholder-analysis/>

## Individual Presentation Slides

### Slide 8

# Stakeholders Needed for Implementation 14, 15, 16

- Followed recommendations from No Kid Hungry
- Identified 5 Key stakeholders:
  - Public Health Department, Board of Education, School Principals, School Nutrition Services, and No Kid Hungry
- Analyzed stakeholder concerns and interests

#### Slide 8 Script:

To implement this program, No Kid Hungry's Pre Implementation Checklist served as a guideline for identifying essential stakeholders (No Kid Hungry). Based on these recommendations, five stakeholders were identified as essential stakeholders for implementing the BIC program in Cleveland County: Public Health Department, Board of Education, school principals, School Nutrition Services, and No Kid Hungry. Then, these stakeholders were analyzed to better understand their viewpoints and interests as stakeholders.

## Slide 9

# Engagement Strategy <sup>17, 18, 19</sup>

- Group collaboration session
  - Sharing feedback, concerns, and ideas
  - Set expectations across stakeholder roles
- Individual follow-up sessions
  - Address unmet needs, and concerns



### Slide 9 Script:

To accomplish this, a virtual group collaboration session will take place between stakeholders. During the collaborative session, stakeholders will participate in sharing feedback and concerns by utilizing the Nominal Group Technique (McMillian, King, & Tully, 2016). In this technique, stakeholders are able to share feedback and then the group is able to rank these concerns. Following this exercise, stakeholders will set group expectations by identifying what stakeholders will give and what they will need to receive to be successful (Spalluto, Audet, Murray, & Joosten, 2018). Following the engagement sessions, stakeholders will participate in an individual follow up session to offer feedback by utilizing the “Ways to Grow” design thinking method (IDEO.org).

## Slide 10

# ■ Responsibility & Accountability<sup>20</sup>

- Assign group roles and responsibility
- Assign accountability for project roles
- Establish partnership agreement for:
  - Public School System
  - Public Health Department



Image Source: <https://www.clevelandcountyschools.org/>



Image source: <https://bit.ly/38Plmfx>

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### Slide 10 Script:

The group expectations discussed during the engagement session will shape the group roles and responsibilities. Stakeholders were assigned roles and select stakeholders were designated as responsible and or accountable. One example of these assigned roles is the partnership agreement between the Cleveland County Public School System and the Cleveland County Public Health Department. The Cleveland County Public Health Department is needed to support the Cleveland County Public School District during their implementation efforts.

## REFERENCES

- Augustsson, H., Churruca, K., and Braithwaite, J. (2019). Re-energising the way we manage change in healthcare: the case for soft systems methodology and its application to evidence-based practice. Retrieved on March 22, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6744652/>
- Bezahler, A. (2019). RASCI 101: How to Move From Chaos To Order. The Innovation Framework. Retrieved on March 22, from <https://theinnovationframework.com/rasci-101-how-to-move-from-chaos-to-order/>
- IDEO.org. (2015). The Field Guide to Human-Centered Design: Design Kit.
- McMillian, S. S., King, M., & Tully, M. P. (2016). How to Use the Nominal Group and Delphi Techniques. International Journal of Clinical Pharmacy. PMC - US National Library of Medicine: National Institutes of Health. Retrieved on March 13, 2022 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4909789/>
- No Kid Hungry. Breakfast After the Bell: Pre-Implementation Checklist (pdf). Retrieved on February 13, 2022 from [http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist\\_0.pdf](http://bestpractices.nokidhungry.org/sites/default/files/2020-01/Pre-Implementation%20Checklist_0.pdf)
- Spalluto, L, B., Audet, C, M., Murray, V, M., & Joosten, Y, A. (2018). Vanderbilt University Medical Center: Department of Radiology and Radiological Services. Developing a Partnership to Facilitate Community-Engaged Research in Diagnostic Imaging. Retrieved on March 22, 2022, from [https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082\\_Spalluto.pdf](https://www.acr.org/-/media/ACR/NOINDEX/Abstracts/2018/18082_Spalluto.pdf)
- Sridharan, M. Stakeholder Analysis: Interest - Influence Matrix. Think Insights. Retrieved on March 22, 2022, from <https://thinkinsights.net/strategy/stakeholder-analysis/>

Christine Craig

## **Problem Statement**

### ***Social Determinant of Health***

Social determinants of health (SDoH) are the conditions where people are born, live, work, play, learn, worship, and age that impact health (Office of Disease Prevention and Health Promotion & U.S. Department of Health and Human Services, n.d.). Research shows SDoH play a significant role in impacting health and that addressing them can improve health and reduce health disparities (Artiga & Hinton, 2018) (Braveman & Gottlieb, 2014). While there are many SDoH, the focus of this statement will be very low food security, which can be defined as “reports of multiple indications of disrupted eating patterns and reduced food intake” (Office of Disease Prevention and Promotion, 2021).

Food insecurity is closely associated with adverse health outcomes (Office of Disease Prevention and Promotion, 2021). In adults, food insecurity is associated with an increased risk for obesity and chronic diseases such as diabetes, hypertension, coronary heart disease, stroke, cancer, and chronic obstructive pulmonary disease (Gregory & Coleman-Jensen, 2017; Nagata et al., 2019). Meanwhile in children, research suggests a multitude of consequences including obesity, negative developmental effects, and mental health disorders (Burke et al., 2016; Gallegos et al., 2021; Kral et al., 2017; Office of Disease Prevention and Promotion, 2021). Food insecurity is connected to other SDoH, including income and social and community ties, amongst other things (Hunger and Health, n.d.). As an illustration, research demonstrates that social support has great potential to mitigate negative health impacts, including food insecurity (Martin et al., 2004; Thoits, 2011; Uchino, 2006). Thus, in order to address food insecurity, it is important to examine the broader social and community context in Cleveland County.

### ***Geographic and Historic Context***

Cleveland County is a rural, Tier 1 economically disadvantaged county located in Southwestern North Carolina on the southern border between North Carolina and South Carolina (Cleveland County Public Health Center, 2020; North Carolina Department of Commerce, 2022). As of 2019, Cleveland County had a population of 97,947, 21.9% of which were children under 18 (NCIOM, n.d.). Historically,

the county's economy has largely been based on agriculture, manufacturing, and textiles (Cleveland County Public Health Center, 2020). There are an increasing number of business parks, which offer the promise of high-paying jobs, but these are difficult for rural residents to access. This largely limited opportunity for high-paying jobs is reflected in the median household income for Cleveland County, \$40,002, compared to \$50,320 for North Carolina (Cleveland County Public Health Center, 2020). Given the relationship between income and food insecurity, this has important implications for the prevalence of food insecurity in Cleveland County (Office of Disease Prevention and Promotion, 2021).

As far as overall health, according to the 2021 County Health Rankings & Roadmaps, Cleveland County ranked 81st out of North Carolina's 100 counties (University of Wisconsin Population Health Institute, 2021). Cleveland County was in the bottom 25% of counties for health outcomes and in the lower middle range (25-50%) of counties for health factors. To identify which health issues should be the focus of their community health improvement efforts, Cleveland County began conducting a Community Health Assessment (CHA) in 2019. As part of this process, key community stakeholders ranked their top five priorities from a list of 21 health indicators drawn from *Healthy North Carolina 2030: A Path Toward Health* (Cleveland County Public Health Center, 2020; North Carolina Institute of Medicine, 2020). Notably, several food insecurity related indicators were ranked in the top 10 by stakeholders, including poverty (1) and limited access to healthy food (7) (Center for Hunger-Free Communities | Drexel University, 2019; Cleveland County Public Health Center, 2020).

### ***Priority Population***

When addressing very low food security in Cleveland County, the priority population will be all school-aged children under 18 who meet the criteria of very low food security, as defined above. Childhood is a crucial time for physical and mental development, thus food insecurity during this period can have significant, long-term impacts not only on health, but on educational outcomes (Hunger and Health, Feeding America, n.d.). For example, research shows that food insecurity can lead to impaired brain development, which in turn can lead to cognitive deficits, poor school achievement, and high rates of school dropout (de Oliveira et al., 2020). As for other population characteristics, income and



experiencing food insecurity are closely related, as evidenced by the statistic that 76% of food insecure children in Cleveland County would meet income eligibility criteria for federal nutrition programs. Given that the remaining 24% of children would not qualify and could still suffer adverse health outcomes associated with food insecurity, however, no income limits will be placed.

### ***Measures of Problem Scope***

The impetus for addressing very low food insecurity in children under 18 can be found in county-level data. According to 2019 data, 23.3% of children under 18 in Cleveland County are food insecure, compared to 16.4% of residents overall (Feeding America, 2019). North Carolina rates are 18.3% and 13.5%, respectively, indicating an even greater need to address the issue, especially in children (Feeding America, 2019). Further illustrating the importance of addressing food insecurity in children, as well as the connection between income and food security, is the statistic that 57.57% of K-12 students participated in free or reduced lunch programs in the 2018-2019 school year (Cleveland County Public Health Center, 2020).

### ***Rationale***

The above rankings and data reflect a need to address the determinants of food insecurity. While the top ranked indicator was poverty, the county ultimately chose to address other issues (Cleveland County Public Health Center, 2020). Similarly, the county did not deem limited access to healthy foods a priority for the Community Health Improvement Plans (Cleveland County Public Health Center, 2020). The county does, however, have some resources in place to address the aforementioned issues. Access to healthy foods was and will continue to be addressed by the Health Education Unit at the Cleveland County Public Health Center and the Eat Smart Move More Coalition of Cleveland County (Cleveland County Public Health Center, 2020). Likewise, in one of Cleveland County's high-risk neighborhoods that was previously the recipient of federal grant money, there are faith groups that offer support and food pantries (Cleveland County Public Health Center, 2020). These are positive indicators of social and community support.

Another indicator is that, when asked to rate the extent to which they agreed with the statement that, “There is plenty of help for people during times of need in Cleveland County”, most participants were neutral, agreed, or strongly agreed. Help included neighbors, support groups, faith community outreach, community organizations, and emergency monetary assistance. While these are indicators of existing social and community support, the county continues to have high rates of food insecurity. Given that community and social support can have a protective effect against food insecurity, it is important to bolster support to address very low food security in children (Martin et al., 2004; Thoits, 2011; Uchino, 2006).

### ***Disciplinary Critique***

From an equity perspective, health disparities in Cleveland County exist along geographic, age, income, and racial/ethnic lines. As discussed, certain neighborhoods are at risk because of limited economic opportunities, geographic isolation/barriers, poverty, etc. (Cleveland County Public Health Center, 2020). Addressing these health disparities is necessary if we want to improve quality of life and health outcomes for the most vulnerable populations (Ndugga & Artiga, 2021) – in this case, food insecure children. As for the role of policy in making these changes, research demonstrates that policy is an important tool for addressing public health issues and that, when policies address the political, economic, social, and physical determinants of health, they can improve health equity (Dubowitz et al., 2016; Pollack Porter et al., 2018).

## REFERENCES

- Artiga, S., & Hinton, E. (2018, May 10). *Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity*. KFF. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>
- Braveman, P., & Gottlieb, L. (2014). The social determinants of health: it's time to consider the causes of the causes. *Public Health Reports (Washington, D.C. : 1974)*, *129 Suppl 2*, 19–31. <https://doi.org/10.1177/00333549141291S206>
- Burke, M. P., Martini, L. H., Çayır, E., Hartline-Grafton, H. L., & Meade, R. L. (2016). Severity of Household Food Insecurity Is Positively Associated with Mental Disorders among Children and Adolescents in the United States. *The Journal of Nutrition*, *146*(10), 2019–2026. <https://doi.org/10.3945/jn.116.232298>
- Center for Hunger-Free Communities | Drexel University. (2019). *Adverse Childhood Experiences and Household Food Insecurity*. Center for Hunger-Free Communities | Drexel University.
- Cleveland County Public Health Center. (2020). *2019 Cleveland County Community Health Assessment*. Cleveland County Public Health Center.
- de Oliveira, K. H. D., de Almeida, G. M., Gubert, M. B., Moura, A. S., Spaniol, A. M., Hernandez, D. C., Pérez-Escamilla, R., & Buccini, G. (2020). Household food insecurity and early childhood development: Systematic review and meta-analysis. *Maternal & Child Nutrition*, *16*(3), e12967. <https://doi.org/10.1111/mcn.12967>
- Dubowitz, T., Orleans, T., Nelson, C., May, L. W., Sloan, J. C., & Chandra, A. (2016). Creating healthier, more equitable communities by improving governance and policy. *Health Affairs (Project Hope)*, *35*(11), 1970–1975. <https://doi.org/10.1377/hlthaff.2016.0608>
- Feeding America. (2019). *Food Insecurity in Cleveland County, North Carolina*. Feeding America. <https://map.feedingamerica.org/county/2017/overall/north-carolina/county/cleveland>
- Gallegos, D., Eivers, A., Sondergeld, P., & Pattinson, C. (2021). Food Insecurity and Child Development: A State-of-the-Art Review. *International Journal of Environmental Research and Public Health*, *18*(17). <https://doi.org/10.3390/ijerph18178990>
- Gregory, C. A., & Coleman-Jensen, A. (2017). *Food Insecurity, Chronic Disease, and Health Among Working-Age Adults*. USDA.
- Hunger and Health, Feeding America. (n.d.). *Children and Families*. Retrieved January 30, 2022, from <https://hungerandhealth.feedingamerica.org/explore-our-work/programs-target-populations/children-and-families/>
- Hunger and Health. (n.d.). *What Is Food Insecurity in America?* Hunger and Health | Feeding America. Retrieved January 21, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>
- Kral, T. V. E., Chittams, J., & Moore, R. H. (2017). Relationship between food insecurity, child weight status, and parent-reported child eating and snacking behaviors. *Journal for Specialists in*

*Pediatric Nursing : JSPN*, 22(2). <https://doi.org/10.1111/jspn.12177>

- Martin, K. S., Rogers, B. L., Cook, J. T., & Joseph, H. M. (2004). Social capital is associated with decreased risk of hunger. *Social Science & Medicine*, 58(12), 2645–2654. <https://doi.org/10.1016/j.socscimed.2003.09.026>
- Nagata, J. M., Palar, K., Gooding, H. C., Garber, A. K., Bibbins-Domingo, K., & Weiser, S. D. (2019). Food Insecurity and Chronic Disease in US Young Adults: Findings from the National Longitudinal Study of Adolescent to Adult Health. *Journal of General Internal Medicine*, 34(12), 2756–2762. <https://doi.org/10.1007/s11606-019-05317-8>
- NCIOM. (n.d.). *North Carolina Health Profile: Cleveland County*. Retrieved January 19, 2022, from <https://nciom.org/counties/cleveland-county/>
- Ndugga, N., & Artiga, S. (2021, May 11). *Disparities in Health and Health Care: 5 Key Questions and Answers*. KFF. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/disparities-in-health-and-health-care-5-key-question-and-answers/>
- North Carolina Department of Commerce. (2022). *NC Commerce: County Distress Rankings (Tiers)*. Nccommerce.Com. <https://www.nccommerce.com/grants-incentives/county-distress-rankings-tiers>
- North Carolina Institute of Medicine. (2020). *Healthy North Carolina 2030: A Path Toward Health*. North Carolina Institute of Medicine.
- Office of Disease Prevention and Health Promotion, & U.S. Department of Health and Human Services. (n.d.). *Social Determinants of Health - Healthy People 2030*. Health.Gov. Retrieved January 21, 2022, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>
- Office of Disease Prevention and Promotion. (2021). *Food Insecurity | Healthy People 2020*. Healthypeople.Gov. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity>
- Pollack Porter, K. M., Rutkow, L., & McGinty, E. E. (2018). The importance of policy change for addressing public health problems. *Public Health Reports (Washington, D.C. : 1974)*, 133(1\_suppl), 9S-14S. <https://doi.org/10.1177/0033354918788880>
- Thoits, P. A. (2011). Mechanisms Linking Social Ties and Support to Physical and Mental Health. *Journal of Health and Social Behavior*, 52(2).
- Uchino, B. N. (2006). Social support and health: a review of physiological processes potentially underlying links to disease outcomes. *Journal of Behavioral Medicine*, 29(4), 377–387. <https://doi.org/10.1007/s10865-006-9056-5>

## **Policy Analysis**

### ***Background Information***

Food insecurity can cause a multitude of adverse outcomes, especially in children who are at a critical point in development (Burke et al., 2016; Gallegos et al., 2021; Hunger and Health, Feeding America, n.d.; Kral et al., 2017; Office of Disease Prevention and Promotion, 2021). Outcomes include an increased risk for obesity, negative developmental effects, and mental health disorders as well as impacts on education and job readiness (Burke et al., 2016; Gallegos et al., 2021; Hunger and Health, Feeding America, n.d.; Kral et al., 2017; Office of Disease Prevention and Promotion, 2021). The implications of child food insecurity are significant in Cleveland County where, according to 2019 data, 23.3% of children under 18 are food insecure, compared to 16.4% of Cleveland County residents overall (Feeding America, 2019). North Carolina rates are 18.3% and 13.5%, respectively, indicating an even greater need to address the issue, especially in children (Feeding America, 2019). Food insecurity is associated with family income, specifically low-income, as well as lower dietary quality (Gundersen et al., 2011; Hanson & Connor, 2014). Thus, the proposed programs address adequate access to food, as well as nutrient intake, while accounting for income constraints.

### ***Policy Descriptions***

To provide a strategic recommendation for Cleveland County Commissioners for addressing food insecurity in children under 18, two policy options were evaluated. The policy options include a (1) Breakfast After the Bell Program (BATB) and a 2) Fruit and Vegetable Incentive Program (FVIP). BATB approaches focus on increasing participation in School Breakfast Programs (SBP) (Parks et al., 2021). Three BATB models include: 1) Breakfast in the Classroom (BIC), where breakfast is offered during the class period 2) Second Chance Breakfast, where breakfast is provided after first period or at a later time in the morning and 3) Grab and Go, where students pick up breakfast items and eat them in the cafeteria, classroom, or another school location (No Kid Hungry | Center for Best Practices, n.d.).

The second policy, FVIPs, aims to increase fruit and vegetable consumption and reduce food insecurity among those with low incomes (Parks et al., 2021). One of the most robust FVIP models is the

Double Up Food Bucks (DUFEB) program (Parks et al., 2021). DUFEB was launched in Detroit, Michigan in 2009 and has since been adopted in communities across 28 states (Fair Food Network, n.d.). This program works by matching every SNAP dollar participants spend on eligible items in farmers markets (any SNAP eligible item) and grocery stores (fruits and vegetables) (Parks et al., 2021).

### ***Policy Option 1: Breakfast after the Bell Program***

There is evidence that SBPs reduce the risk of marginal food insecurity, increase healthy food consumption, and improve school achievement (Bartfeld & Ahn, 2011). BATB programs have been found to be effective at increasing the number of students that participate in SBP (Ferris et al., 2022), thus increasing the likelihood of the above positive outcomes occurring for more students. Of the three BATB models, BIC has had the highest impact on breakfast participation – 88% participation compared to 58% and 59% for Second Chance and Grab and Go, respectively (No Kid Hungry | Center for Best Practices, n.d.). Additionally, it has the potential to reduce the stigma associated with school breakfast, particularly if all students receive free breakfast, regardless of income (Soldavini & Ammerman, 2019). For this reason, BIC will be incentivized through this policy.

### ***Policy Option 2: Fruit and Vegetable Incentive Program***

Several studies have shown that FVIPs increase access, purchase, and consumption of fruit and vegetables (Olsho et al., 2016; Polacsek et al., 2018; Steele-Adjognon & Weatherspoon, 2017). One study, however, showed modest effects on fruit and vegetable consumption that were not sustainable without continued financial incentive (Parks et al., 2021; Savoie-Roskos et al., 2016; Steele-Adjognon & Weatherspoon, 2017). FVIPs have also been found to have positive impacts on food security (Durward et al., 2019); (Parks et al., 2021; Savoie-Roskos et al., 2016; Steele-Adjognon & Weatherspoon, 2017).

### ***Assessment Criteria and Evaluation***

To assess each program option, four criteria were selected: political feasibility, cost to the county, impact, and equity. Below is a brief analysis of each policy based on the assessment criteria. A more detailed analysis of each policy can be found in Appendix A and Appendix B.

**Political Feasibility.** The first criteria, political feasibility, refers to level of support from the Cleveland County Commissioners as well as other relevant stakeholders. Stakeholders influencing political feasibility of BATB include the Cleveland County Public Health Center, Feeding Kids Cleveland County Food Program, and the Cleveland County School System. Cleveland County Schools may oppose this program based on the fact that there is potential for teacher resistance and interruption to instructional time (Food Research and Action Center & National Association of Secondary School Principals, 2015). That being said, all 29 schools in Cleveland County already have SBP in place and this program offers a way to increase participation (No Kid Hungry NC, 2020) and thus positive outcomes. Stakeholders influencing political feasibility of FVIP include Eat Smart Move More NC, who will likely support this policy, and the Cleveland County GOP, who may oppose this policy. Cleveland County is a Republican County, as indicated by the political affiliation of the County Commissioners. The commissioners may oppose a policy requiring additional tax dollars to support low-income families. There may also be concern that this policy creates a work disincentive, so this policy ranks lower than BATB.

**Cost to the County.** The second criteria, cost to the county, represents the sum of all costs, such as implementation and maintenance, to the county. In terms of BATB, the USDA reimburses schools for meals and grants to cover start-up costs such as equipment, supplies, and technology (No Kid Hungry, n.d.; USDA, 2017). In terms of FVIP, the Gus Schumacher Nutrition Incentive Program (GusNIP) provides grants to nonprofits and government agencies for programs aimed at increasing fruit and vegetable consumption for low-income consumers (National Institute of Food and Agriculture, n.d.). While this funding helps support programming, it does not cover full program costs and is not a sustainable source (Hamilton, 2021). Further, only a limited number of projects across the country are covered each year (Budd Nugent et al., 2021). In this manner, this option ranks lower in cost than BATB.

**Impact.** The third criteria, impact, refers to the number of people the program is likely to positively impact. BATB programs, including BIC, are shown to be effective at increasing the number of students that participate in school breakfast programs (No Kid Hungry | Center for Best Practices, n.d.). Cleveland County data shows that SBPs already touch a significant number of student lives (No Kid

Hungry NC, 2020). This means a program that increases participation will increase positive outcomes associated with BATB. The limitation of this approach is that it does not reach children younger than 5, but the county's WIC program is there to support that age group. In terms of FVIP impact, even with the limitation that BATB does not cover children under 5, BATB likely still impacts more children than FVIPs. FVIPs incentivize fruit and vegetable consumption amongst SNAP participants, but parents oversee food purchases for most children, and these programs do not include children ineligible for SNAP. Further, the fruit and vegetables purchased can be consumed by the whole family, not just the children under 18.

**Equity.** The fourth criteria, equity, refers to the extent to which the program will improve rates of food insecurity among children under 18 who are low-income, as measured by the 200% poverty level set for SNAP and other nutrition programs in North Carolina (Feeding America, 2019). BATB has the potential to reach additional children who experience food insecurity and helps overcome barriers to traditional school breakfast, such as timing, convenience, and stigma (No Kid Hungry | Center for Best Practices, n.d.). That said, the best way to increase participation is to offer universal breakfast. Universal breakfast will not address the disparity in food insecurity rates between those above and below the 200% poverty level. In comparison, FVIPs incentivize fruit and vegetable purchases among low-income households receiving SNAP benefits. Thus, this program will help address the disparity in food insecurity based on income. It therefore scores higher on equity in this category compared to BATB.



## ***Final Recommendation***

**Table 1**

*Summary Policy Evaluation Matrix, With the “✓” Marking the Winning Policy for That Criteria*

Criterion	Breakfast after the Bell Program: Breakfast in the Classroom	Fruit and Vegetable Incentive Program
Political Feasibility	✓	
Cost to the County	✓	
Impact	✓	
Equity		✓
Total	3	1

While both policy options have the potential to address food insecurity in children under 18, BIC is the most politically feasible, cost-effective, and impactful means of doing so (Table 1). While it scores lower on equity, the higher scoring in the other categories, particularly impact, makes BIC the superior option to address low food security among children under 18. One process and one outcome measure have been selected to evaluate whether the policy is being implemented appropriately and achieving desired outcomes. The process measure will be the number of students being served by BIC (broken down by students eligible for free and reduced breakfast). This is an important measure because program efficacy and profitability increase with increased participation. The outcome measure will be the percent change in rates of low food security among school-aged children served by the program during its first year. This is the main objective of this proposal and is therefore a crucial measure.

## REFERENCES

- An, R. (2015). Nationwide expansion of a financial incentive program on fruit and vegetable purchases among Supplemental Nutrition Assistance Program participants: A cost-effectiveness analysis. *Social Science & Medicine*, *147*, 80–88. <https://doi.org/10.1016/j.socscimed.2015.09.032>
- Bartfeld, J. S., & Ahn, H.-M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, *141*(3), 470–475. <https://doi.org/10.3945/jn.110.130823>
- Budd Nugent, N., Byker Shanks, C., Seligman, H. K., Fricke, H., Parks, C. A., Stotz, S., & Yaroch, A. L. (2021). Accelerating evaluation of financial incentives for fruits and vegetables: A case for shared measures. *International Journal of Environmental Research and Public Health*, *18*(22). <https://doi.org/10.3390/ijerph182212140>
- Burke, M. P., Martini, L. H., Çayır, E., Hartline-Grafton, H. L., & Meade, R. L. (2016). Severity of Household Food Insecurity Is Positively Associated with Mental Disorders among Children and Adolescents in the United States. *The Journal of Nutrition*, *146*(10), 2019–2026. <https://doi.org/10.3945/jn.116.232298>
- Cleveland County Public Health Center, & Eat Smart Move More Cleveland County. (n.d.). *About / Live Healthy Cleveland County*. Live Healthy Cleveland County. Retrieved February 6, 2022, from <https://livehealthyclevelandcounty.com/about/>
- Cleveland County Public Health Center. (n.d.). *Cleveland County About*. Cleveland County Public Health Center. Retrieved February 6, 2022, from <https://www.clevelandcountyhdnc.com/about/index.php>
- Agriculture Improvement Act of 2018*, House (2018) (testimony of K M Conaway). <https://www.congress.gov/bill/115th-congress/house-bill/2>
- Durward, C. M., Savoie-Roskos, M., Atoloye, A., Isabella, P., Jewkes, M. D., Ralls, B., Riggs, K., & LeBlanc, H. (2019). Double Up Food Bucks Participation is Associated with Increased Fruit and Vegetable Consumption and Food Security Among Low-Income Adults. *Journal of Nutrition Education and Behavior*, *51*(3), 342–347. <https://doi.org/10.1016/j.jneb.2018.08.011>
- Fair Food Network. (n.d.). *About Double Up Food Bucks*. Double Up Food Bucks. Retrieved February 6, 2022, from <https://doubleupfoodbucks.org/about-us/>
- Feeding America. (2019). *Food Insecurity in Cleveland County, North Carolina*. Feeding America. <https://map.feedingamerica.org/county/2017/overall/north-carolina/county/cleveland>
- Feeding Kids Cleveland County. (n.d.). *About Us — Feeding Kids Cleveland County*. Feeding Kids Cleveland County. Retrieved February 6, 2022, from <http://www.feedingkidscc.org/about-us>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, *14*(3), 511. <https://doi.org/10.3390/nu14030511>
- Food Research and Action Center, & National Association of Secondary School Principals. (2015). *School Breakfast After the Bell: Equipping Students for Academic Success*. Food Research and Action Center and National Association of Secondary School Principals.

- Gallegos, D., Eivers, A., Sondergeld, P., & Pattinson, C. (2021). Food Insecurity and Child Development: A State-of-the-Art Review. *International Journal of Environmental Research and Public Health*, 18(17). <https://doi.org/10.3390/ijerph18178990>
- Gundersen, C., Kreider, B., & Pepper, J. (2011). The economics of food insecurity in the united states. *Applied Economic Perspectives and Policy*, 33(3), 281–303. <https://doi.org/10.1093/aep/ppr022>
- Hamilton, W. (2021). *Fiscal Brief: Double Up Food Bucks*. Michigan House Fiscal Agency.
- Hanson, K. L., & Connor, L. M. (2014). Food insecurity and dietary quality in US adults and children: a systematic review. *The American Journal of Clinical Nutrition*, 100(2), 684–692. <https://doi.org/10.3945/ajcn.114.084525>
- Hilleren, H. (2007). *School Breakfast Program Cost/Benefit Analysis*. UW Family Living Program.
- Hunger and Health, Feeding America. (n.d.). *Children and Families*. Retrieved January 30, 2022, from <https://hungerandhealth.feedingamerica.org/explore-our-work/programs-target-populations/children-and-families/>
- Kral, T. V. E., Chittams, J., & Moore, R. H. (2017). Relationship between food insecurity, child weight status, and parent-reported child eating and snacking behaviors. *Journal for Specialists in Pediatric Nursing : JSPN*, 22(2). <https://doi.org/10.1111/jspn.12177>
- National Institute of Food and Agriculture. (n.d.). *Gus Schumacher Nutrition Incentive Program*. National Institute of Food and Agriculture. Retrieved February 6, 2022, from <https://nifa.usda.gov/program/gus-schumacher-nutrition-incentive-grant-program>
- No Kid Hungry. (n.d.). *No Kid Hungry and Kellogg School Breakfast Grants*. No Kid Hungry. Retrieved March 6, 2022, from <https://www.nokidhungry.org/kellogg-breakfast-grants>
- No Kid Hungry NC. (2020). *2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools*.
- No Kid Hungry | Center for Best Practices. (n.d.). *Implement Breakfast After the Bell*. No Kid Hungry. Retrieved February 6, 2022, from <http://bestpractices.nokidhungry.org/programs/school-breakfast/implement-breakfast-after-the-bell>
- Office of Disease Prevention and Promotion. (2021). *Food Insecurity | Healthy People 2020*. Healthypeople.Gov. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity>
- Olsho, L. E., Klerman, J. A., Wilde, P. E., & Bartlett, S. (2016). Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot. *The American Journal of Clinical Nutrition*, 104(2), 423–435. <https://doi.org/10.3945/ajcn.115.129320>
- Parks, C. A., Han, P., Fricke, H. E., Parker, H. A., Hesterman, O. B., & Yaroch, A. L. (2021). Reducing food insecurity and improving fruit and vegetable intake through a nutrition incentive program in Michigan, USA. *SSM - Population Health*, 15, 100898. <https://doi.org/10.1016/j.ssmph.2021.100898>

- Polacsek, M., Moran, A., Thorndike, A. N., Boulos, R., Franckle, R. L., Greene, J. C., Blue, D. J., Block, J. P., & Rimm, E. B. (2018). A Supermarket Double-Dollar Incentive Program Increases Purchases of Fresh Fruits and Vegetables Among Low-Income Families With Children: The Healthy Double Study. *Journal of Nutrition Education and Behavior*, 50(3), 217-228.e1. <https://doi.org/10.1016/j.jneb.2017.09.013>
- Savoie-Roskos, M., Durward, C., Jeweks, M., & LeBlanc, H. (2016). Reducing food insecurity and improving fruit and vegetable intake among farmers' market incentive program participants. *Journal of Nutrition Education and Behavior*, 48(1), 70-76.e1. <https://doi.org/10.1016/j.jneb.2015.10.003>
- Soldavini, J., & Ammerman, A. S. (2019). Serving Breakfast Free to All Students and Type of Breakfast Serving Model Are Associated with Participation in the School Breakfast Program. *Journal of the Academy of Nutrition and Dietetics*, 119(7), 1142–1149. <https://doi.org/10.1016/j.jand.2019.03.001>
- Steele-Adjognon, M., & Weatherspoon, D. (2017). Double Up Food Bucks program effects on SNAP recipients' fruit and vegetable purchases. *BMC Public Health*, 17(1), 946. <https://doi.org/10.1186/s12889-017-4942-z>
- University of Washington Population Health Institute. (2019). *School breakfast programs*. County Health Rankings. <https://www.countyhealthrankings.org/take-action-to-improve-health/what-works-for-health/strategies/school-breakfast-programs>
- USDA. (2017). *The School Breakfast Program*. <https://fns-prod.azureedge.net/sites/default/files/resource-files/SBPfactsheet.pdf>

## Appendices

### Appendix A: Evaluation of Breakfast after the Bell Program: Breakfast in the Classroom

<i>Policy Option #1: Breakfast after the Bell Program: Breakfast in the Classroom</i>	
Political Feasibility	<p>All 29 schools in Cleveland County already have breakfast programs in place and this program offers a way to increase participation in these programs (No Kid Hungry NC, 2020) and thus the positive impacts school breakfast can have on health and educational outcomes. Stakeholders influencing political feasibility include the Cleveland County Public Health Center and Feeding Kids Cleveland County Food Program, both entities that are likely to support this policy. The Cleveland County Public Health Center is a strong entity and is likely to get involved as this initiative aligns with their mission “To assure, enhance, and protect the health of Cleveland County citizens, through education and prevention” (Cleveland County Public Health Center, n.d.). It also complements the SNAP and WIC programs, administered by the county’s Department of Social Services and the health department, respectively. Feeding Kids Cleveland County helps ensure children get the food they need on weekends when they do not have school (Feeding Kids Cleveland County, n.d.). They are not as powerful, but their organizational purpose aligns with this program, so they may get involved. Cleveland County Schools are a powerful stakeholder and are extremely likely to get involved. They may oppose this legislation because only one of the 29 schools offering breakfast in the county has implemented a BATB option (No Kid Hungry NC, 2020). Additionally, in a report examining 2014-2015 findings from schools who implemented BATB, a small number of principals reported challenges including teacher resistance and interruption to instructional time (Food Research and Action Center &amp; National Association of Secondary School Principals, 2015).</p>
Cost to the County	<p>Schools get reimbursed by the USDA for SBPs (USDA, 2017). This program would be implemented as a policy wherein the county provides incentive funding that would cover remaining start-up/expansion costs to Cleveland County schools looking to implement BATB. Higher participation, which is likely to occur with Breakfast in the Classroom (especially if universal breakfast is provided) helps ensure profitability of the program (Hilleren, 2007; No Kid Hungry   Center for Best Practices, n.d.).</p>
Impact	<p>BATB are shown to be effective at increasing the number of students that participate in school breakfast programs and Cleveland County data shows that SBPs already touch a significant number of student lives (No Kid Hungry NC, 2020). This means a program that increases participation will help impact many children. The limitation of this approach is that it does not reach children younger than 5, but the county’s WIC program is there to support that age group.</p>
Equity	<p>BATB has the potential to reach additional children who experience food insecurity and helps overcome barriers to traditional school breakfast, such as timing, convenience, and stigma (No Kid Hungry   Center for Best Practices, n.d.). That said, the best way to increase participation is to offer universal breakfast. Universal breakfast will not address the disparity in food insecurity rates between those above and below the 200% poverty level. Thus, this program scores lower on equity.</p>

**Appendix B: Evaluation of Fruit and Vegetable Incentive Program**

<b><i>Policy Option #2: Fruit and Vegetable Incentive Program</i></b>	
Political Feasibility	Stakeholders influencing political feasibility include Eat Smart Move More NC, who will likely support this policy, while the Cleveland County GOP may oppose this policy. Eat Smart Move More NC is a coalition that manages the Live Healthy Cleveland County website, a “one-stop shop” for guidance on physical activity and access to nutritious foods (Cleveland County Public Health Center & Eat Smart Move More Cleveland County, n.d.). They are likely to get involved because of alignment in program goals. The Cleveland County GOP is a fairly powerful stakeholder and may oppose this program based on a cost versus benefit analysis. A study assessing the fruit and vegetable incentive program Healthy Incentives Pilot (HIP) found that it was a cost effective way to increase fruit and vegetable consumption amongst SNAP participants, however the authors note several limitations to their methods (An, 2015). Cleveland County is a Republican County, as indicated by the political affiliation of the County Commissioners. The commissioners may oppose a policy requiring additional tax dollars to support low-income families. There may also be concern that this policy creates a work disincentive.
Cost to the County	To help fund FVIPs, the federal government offers the Gus Schumacher Nutrition Incentive Program (GusNIP). GusNIP was authorized by the Agriculture Improvement Act of 2018 ( <i>Agriculture Improvement Act of 2018</i> , 2018). This program provides grants to nonprofits and government agencies for programs aimed at increasing fruit and vegetable consumption for low-income consumers by providing cash incentives at time of purchase (National Institute of Food and Agriculture, n.d.). While this funding helps support programming, it does not cover full program costs (Hamilton, 2021). Further, only a limited number of projects across the country are covered each year (Budd Nugent et al., 2021). Thus, these programs often require financial support from nonprofits, private foundations, or local governments (University of Washington Population Health Institute, 2019). In this manner, this option ranks lower in cost than BIC.
Impact	Even with the limitation that BATB does not cover children under 5, BATB likely still impacts more children than FVIPs. FVIPs incentivize fruit and vegetable consumption amongst SNAP participants, but parents oversee food purchases for most children, and these programs do not include children ineligible for SNAP. Further, the fruit and vegetables purchased can be consumed by the whole family, not just the children under 18.
Equity	FVIPs are intended to incentivize fruit and vegetable purchases among low-income households (200% poverty level in North Carolina) receiving SNAP benefits. Thus, this program will help address the disparity in food insecurity based on income. It therefore scores higher on equity in this category compared to BATB.

## **Breakfast after the Bell: Breakfast in the Classroom Summary and Budget Narrative**

### ***Summary***

Studies show that School Breakfast Programs (SBP) reduce the risk of marginal food insecurity, increase healthy food consumption, and improve school achievement (Bartfeld & Ahn, 2011). One type of SBP, Breakfast in the Classroom (BIC) has been found to increase participation in SBPs, increasing the likelihood of positive program outcomes (Ferris et al., 2022; No Kid Hungry | Center for Best Practices, n.d.). A summary of key activities for BIC is as follows: First, food service staff pack food into portable food carts and coolers to deliver to classrooms (Food Research & Action Center, n.d.). Teachers, food service staff, volunteers, or students distribute meals to students at their desks or before they take their seats, and then record which, or how many, students eat breakfast for reimbursement purposes. Students eat breakfast in the first 10-15 minutes of class while the teacher takes attendance or makes announcements. Finally, students wipe down their placements and dump their trash in trash cans in the hallways for custodial staff to collect.

### ***Budget Justification***

Below is a justification of personnel costs, non-personnel costs, and revenue sources. A detailed budget can be found in Figures 1 and 2 in Appendix C.

#### **Personnel Costs**

- Personnel estimates increase two percent each year to account for inflation. While each school already employs some of the below personnel, additional staff will need to be hired because BIC has been found to greatly increase participation in SBPs.
- 1 school nutrition staff member at 1 FTE and a salary of \$42,000 is needed to plan menus and manage costs (ZipRecruiter, 2022).
- 1 marketing assistant at 1 FTE and a salary of \$42,000 is needed to promote the program (Salary.com, 2022).
- Personnel such as custodians and food service staff are already employed by schools and thus not included in personnel costs.
- Fringe benefits include 30% for taxes and health insurance for full and part-time employees.
- The total personnel costs for one school were multiplied by 27 schools to get total estimated costs to the county, assuming that these schools are motivated to implement this program using county funding. There are 29 county schools, but two of them have already implemented innovative breakfast programs (No Kid Hungry NC, 2020).

## Non-personnel Costs

- The calculations were made for one school in year 1 in Cleveland County using the information that there are 14,500 students in Cleveland County and 29 schools, putting each school size at approximately 500 students (U.S. News Education, n.d.).
- Non-personnel estimates increase two percent each year to account for inflation.
- Equipment costs for one school:
  - One time cost for five portable breakfast carts at \$1,999 per item (Hubert, n.d.) based on the information that 500 students per school and 500 students/ 5 breakfast carts per school= ~ 100 students per breakfast cart.
  - One time cost for five iPads, one per portable breakfast cart, at \$329 per item (Apple, n.d.).
  - One point of sale system per school at \$932.75. Cost per school using a calculator for POS systems (EZ School Apps, n.d.). Calculation based on the fact that there are ~534 students and employees per school in the Cleveland County school district. There are 500 students and a student teacher ratio of 15:1 (U.S. News Education, n.d.) puts the number of employees at approximately 34 employees (14,500 students/15 teachers/ 1 student=967 employees/28 schools= ~34 employees).
- Classroom supply costs for one school:
  - 580 wipes at \$11.29 per 160 ct of wipes (Boxed, n.d.) assuming 500 students per school x 185 school days per year x 1 wipe per student per day=~92,500 wipes per school per school year. 92,500 / 160 wipes per sale= 580 units needed.
  - One time cost for 10 trash cans at \$31.00 per trash can (Uline, n.d.-b) given that there are 500 students and that trash cans will be placed between classrooms in hallways with approximately 50 students to one trash can.
  - 8 cartons of trash bags at \$99 per carton (Uline, n.d.-a) based on the fact that 10 trash cans x 1 trash bag per can per school day x 185 school days= 1,850 trash bags -> round up to 2,000. 2,000 trash bags/ 250 trash bags per carton= 8 cartons.
  - 63 packs of placements at \$17.68 per pack given that 500 students/ 8 placemats per pack= ~63 packs of placemats (Walmart.com, n.d.).
- Marketing costs for one school:
  - One time cost of five signs at \$20.55 per sign (Sandwich Boards on the Cheap, n.d.).
  - One time cost of logo design at \$1000 (99designs, n.d.).
  - 20 uniforms with logos for newly hired and existing food service staff that assist with implementing this program at \$20 per uniform (Happy Chef, n.d.).
  - 10 t-shirts with logos for nutrition and marketing staff that assist with implementation at \$11.98 per t-shirt (Big City Sportswear, n.d.).
- Food production costs for one school:
  - 500 students x 185 school days= 92,500 meals per school at \$2.72 per meal based on average cost to produce school breakfast (School Nutrition Association, 2022).
- The total non-personnel and personnel costs for one school were added together for each of the three years and multiplied by 28 schools to get total estimated costs to the county, assuming all schools in the county are motivated to implement this program using county funding.

## Revenue

- Revenue from USDA school breakfast reimbursements is estimated to increase two percent each year to account for inflation.
- Cleveland County Schools are eligible for the Community Eligibility Provision (CEP), meaning that all students, regardless of income, are eligible to receive school breakfast at no cost each day (Cleveland County Nutrition Services, n.d.; No Kid Hungry NC, 2020).



- USDA reimbursements calculated based on the fact that there are 14,000 students (14,500- 500 in the one school that already implemented BIC) x 185 school meals per year with a reimbursement rate of \$2.35.
- Reimbursement rates based on source for SY 2021/2022 (School Nutrition Association, 2022). \$0.38 was added to each FRP meal because the school meets criteria for "severe need" (School Nutrition Association, 2022).
- Revenues were calculated under the assumption that all schools opt to participate in this program.
- The USDA reimbursements assume 100% of students participate in BIC, which is reasonable given that BIC has been shown to garner participation rates of approximately 88% (No Kid Hungry | Center for Best Practices, n.d.).
- No Kid Hungry has grants available where each school can request up to \$5,500 to cover start up costs (No Kid Hungry, n.d.).

### **Yearly Request**

- The monetary request for BIC, factoring in costs and revenues for all 28 schools, is as follows:
  - Year 1:\$4,504,761.52
  - Year 2: \$4,379,150.21
  - Year 3: \$4,466,733.21

## REFERENCES

- 99designs. (n.d.). *How Much Does a Logo Design Cost?* . 99designs. Retrieved April 5, 2022, from <https://99designs.com/blog/logo-branding/logo-design-cost/>
- Apple. (n.d.). *10.2-inch iPad Wi-Fi 64GB - Space Gray* . Apple. Retrieved April 5, 2022, from [https://www.apple.com/shop/buy-ipad/ipad-10-2/64gb-space-gray-wifi?afid=p238%7CsEzHSfE91-dc\\_mtId\\_1870765e38482\\_pcrId\\_494527726286\\_pgrid\\_106784825684\\_pntwk\\_g\\_pchan\\_online\\_pexid\\_\\_&cid=aos-us-kwgo-pla-ipad--slid---product-MK2K3LL/A](https://www.apple.com/shop/buy-ipad/ipad-10-2/64gb-space-gray-wifi?afid=p238%7CsEzHSfE91-dc_mtId_1870765e38482_pcrId_494527726286_pgrid_106784825684_pntwk_g_pchan_online_pexid__&cid=aos-us-kwgo-pla-ipad--slid---product-MK2K3LL/A)
- Bartfeld, J. S., & Ahn, H.-M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, *141*(3), 470–475. <https://doi.org/10.3945/jn.110.130823>
- Big City Sportswear. (n.d.). *Team 365 Zone Embroidered Performance Polo*. Big City Sportswear. Retrieved April 5, 2022, from [https://www.bigcitysportswear.com/team-365-zone-embroidered-performance-polo.html?color=Black&gclid=CjwKCAiA1JGRBhBSEiwAxXblwWNmjd-VzKhKLxf\\_Cbj\\_chOwnsp3Elz\\_pW6Pi9U8yQqr7j0LqQRoC3q0QAvD\\_BwE](https://www.bigcitysportswear.com/team-365-zone-embroidered-performance-polo.html?color=Black&gclid=CjwKCAiA1JGRBhBSEiwAxXblwWNmjd-VzKhKLxf_Cbj_chOwnsp3Elz_pW6Pi9U8yQqr7j0LqQRoC3q0QAvD_BwE)
- Boxed. (n.d.). *Lysol Disinfecting Wipes 2 x 80 ct - Lemon & Lime Blossom* . Boxed. Retrieved April 5, 2022, from [https://www.boxed.com/product/57719/lysol-disinfecting-wipes-2-x-80-ct-lemon-lime-blossom?pf=3&gid=57719&utm\\_source=google&utm\\_medium=cpc&utm\\_campaign=Google%7CShopping%7CUS%7CNB%7CHealth\\_Wellness%7CDT&utm\\_purpose=acquisition&utm\\_experiment=none&utm\\_ad\\_id=506484243967&utm\\_term=&cmp=12549214273&dev=c&gclid=CjwKCAiA1JGRBhBSEiwAxXblwcIXlj-8K8I\\_IDcW-CzehmPtzC7eAanggJaiwYe4UKhFpDEQJPKq-hoC04AQAvD\\_BwE](https://www.boxed.com/product/57719/lysol-disinfecting-wipes-2-x-80-ct-lemon-lime-blossom?pf=3&gid=57719&utm_source=google&utm_medium=cpc&utm_campaign=Google%7CShopping%7CUS%7CNB%7CHealth_Wellness%7CDT&utm_purpose=acquisition&utm_experiment=none&utm_ad_id=506484243967&utm_term=&cmp=12549214273&dev=c&gclid=CjwKCAiA1JGRBhBSEiwAxXblwcIXlj-8K8I_IDcW-CzehmPtzC7eAanggJaiwYe4UKhFpDEQJPKq-hoC04AQAvD_BwE)
- Cleveland County Nutrition Services. (n.d.). *Community Eligibility Provision*. Cleveland County Nutrition Services. Retrieved March 24, 2022, from <https://www.clevelandcountynutrition.org/index.php?page=ClevelandCommunityEligibilityInfoPage&sid=1528144148888>
- EZ School Apps. (n.d.). *School Lunch Software POS* . EZ School Apps. Retrieved April 5, 2022, from <https://www.ezschoollapps.com/Solutions/School-Lunch-Software.aspx>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, *14*(3), 511. <https://doi.org/10.3390/nu14030511>
- Food Research & Action Center. (n.d.). *How It Works: Making Breakfast Part of the School Day*.
- Happy Chef. (n.d.). *K-12 Food Service*. Happy Chef. Retrieved April 5, 2022, from <https://happychef.com/k-12-foodservice-uniforms.html>
- Hubert. (n.d.). *Mobile Breakfast Cart by Hubert® - Stainless Steel with Ice Bin*. Hubert. Retrieved April 5, 2022, from <https://www.hubert.com/product/76306/Mobile-Breakfast-Cart-by-Hubert---Stainless-Steel-with-Ice-Bin>
- No Kid Hungry. (n.d.). *No Kid Hungry and Kellogg School Breakfast Grants*. No Kid Hungry. Retrieved March 6, 2022, from <https://www.nokidhungry.org/kellogg-breakfast-grants>

- No Kid Hungry NC. (2020). *2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools* .
- No Kid Hungry | Center for Best Practices. (n.d.). *Implement Breakfast After the Bell* . No Kid Hungry. Retrieved February 6, 2022, from <http://bestpractices.nokidhungry.org/programs/school-breakfast/implement-breakfast-after-the-bell>
- Salary.com. (2022, March). *Marketing Assistant I Salary in North Carolina* . Salary.Com. <https://www.salary.com/research/salary/benchmark/marketing-assistant-i-salary/nc>
- Sandwich Boards on the Cheap. (n.d.). *Cheap Sandwich Boards and A-Frame Signs* . Sandwich Boards on the Cheap. Retrieved April 5, 2022, from [https://www.sandwichboardsonthecheap.com/?productname=Custom%20A%20Frame%20Signs&pcode=SBOTCSEMEEvergreen&mpn=SBOTC10102&skuid=10102&productprice=24.00&width=24&height=36&productid=hold&gclid=CjwKCAiA1JGRBhBSEiwAxXblwZozGvn0gIA6Fxr\\_dCNJqxxC0GTS2RRo6LntEulq2VmbCSpK-0BTZBoCM6AQAuD\\_BwE](https://www.sandwichboardsonthecheap.com/?productname=Custom%20A%20Frame%20Signs&pcode=SBOTCSEMEEvergreen&mpn=SBOTC10102&skuid=10102&productprice=24.00&width=24&height=36&productid=hold&gclid=CjwKCAiA1JGRBhBSEiwAxXblwZozGvn0gIA6Fxr_dCNJqxxC0GTS2RRo6LntEulq2VmbCSpK-0BTZBoCM6AQAuD_BwE)
- School Nutrition Association. (2022). *School Meal Trends & Stats*. Schoolnutrition.Org. <https://schoolnutrition.org/aboutschoolmeals/schoolmealtrendsstats/>
- U.S. News Education. (n.d.). *Cleveland County Schools* . U.S. News Education. Retrieved March 6, 2022, from <https://www.usnews.com/education/k12/north-carolina/districts/cleveland-county-schools-107539>
- Uline. (n.d.-a). *Trash Liners - 33 Gallon, Gray S-15542GR* . Uline. Retrieved April 5, 2022, from [https://www.uline.com/Product/Detail/S-15542GR/Trash-Liners-Bags/Trash-Liners-33-Gallon-Gray?pricode=WB0930&gadtype=pla&id=S-15542GR&gclid=CjwKCAiA1JGRBhBSEiwAxXblwgc7cXbmTe9v892p\\_ySiw25eR\\_rX\\_bQOjbohqm3HK0gQ8Yo4GSITGBoC1AMQAuD\\_BwE&gclsrc=aw.ds](https://www.uline.com/Product/Detail/S-15542GR/Trash-Liners-Bags/Trash-Liners-33-Gallon-Gray?pricode=WB0930&gadtype=pla&id=S-15542GR&gclid=CjwKCAiA1JGRBhBSEiwAxXblwgc7cXbmTe9v892p_ySiw25eR_rX_bQOjbohqm3HK0gQ8Yo4GSITGBoC1AMQAuD_BwE&gclsrc=aw.ds)
- Uline. (n.d.-b). *Uline Trash Can - 32 Gallon, Gray H-3687GR* . Uline. Retrieved April 5, 2022, from [https://www.uline.com/Product/Detail/H-3687GR/Trash-Cans/Uline-Trash-Can-32-Gallon-Gray?pricode=WA9597&gadtype=pla&id=H-3687GR&gclid=CjwKCAiA1JGRBhBSEiwAxXblwa9o5Ls\\_L6A4aQkC78WcgyXuaTk5dpgxmYu4uxQ6Wfa0ZM5MCIsFlhoCnNkQAuD\\_BwE&gclsrc=aw.ds](https://www.uline.com/Product/Detail/H-3687GR/Trash-Cans/Uline-Trash-Can-32-Gallon-Gray?pricode=WA9597&gadtype=pla&id=H-3687GR&gclid=CjwKCAiA1JGRBhBSEiwAxXblwa9o5Ls_L6A4aQkC78WcgyXuaTk5dpgxmYu4uxQ6Wfa0ZM5MCIsFlhoCnNkQAuD_BwE&gclsrc=aw.ds)
- Walmart.com. (n.d.). *Clear Placemats Set of 8* . Walmart.Com. Retrieved April 5, 2022, from [https://www.walmart.com/ip/Clear-Placemats-Set-of-8/675688319?wmlspartner=wlp&selectedSellerId=1656&&adid=2222222227153883676&w10=&w11=g&w12=c&w13=265242720448&w14=aud-1307710396780:pla-437987152254&w15=9009666&w16=&w17=&w18=&w19=pla&w110=112550034&w111=online&w112=675688319&veh=sem&gclid=CjwKCAiA1JGRBhBSEiwAxXblwS3-RvAd\\_sB1G0EbBuYFFidNkuSaKdggNwt-m21\\_YGMLYTAKBfgAQBoC\\_hYQAuD\\_BwE&gclsrc=aw.ds](https://www.walmart.com/ip/Clear-Placemats-Set-of-8/675688319?wmlspartner=wlp&selectedSellerId=1656&&adid=2222222227153883676&w10=&w11=g&w12=c&w13=265242720448&w14=aud-1307710396780:pla-437987152254&w15=9009666&w16=&w17=&w18=&w19=pla&w110=112550034&w111=online&w112=675688319&veh=sem&gclid=CjwKCAiA1JGRBhBSEiwAxXblwS3-RvAd_sB1G0EbBuYFFidNkuSaKdggNwt-m21_YGMLYTAKBfgAQBoC_hYQAuD_BwE&gclsrc=aw.ds)
- ZipRecruiter. (2022, March). *School Nutrition Annual Salary in North Carolina* . ZipRecruiter. <https://www.ziprecruiter.com/Salaries/School-Nutrition-Salary--in-North-Carolina>

### Appendix C: Budget for Breakfast in the Classroom

**Figure 1.**

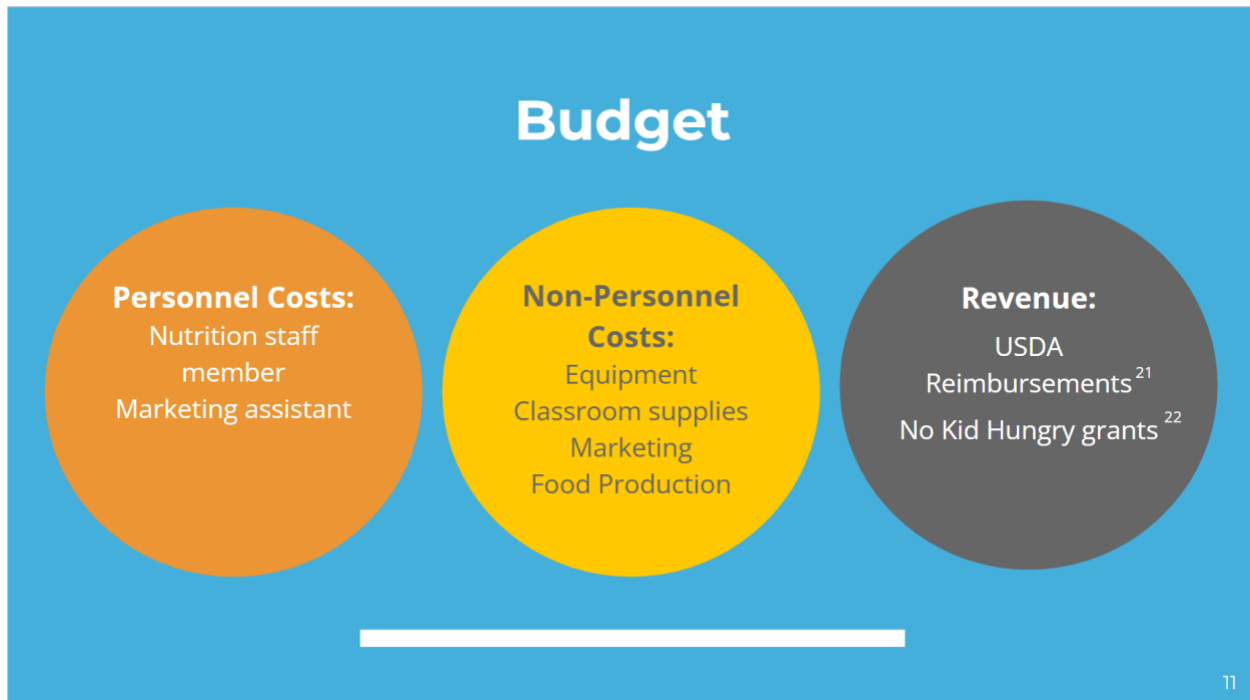
Three Year Breakfast in the Classroom Budget									
Personnel Costs	Number of Staff	FTE	Rate	Salary	Fringe Benefits	Y1	Y2	Y3	Total
Nutrition staff	1	1	\$42,000.00	\$42,000.00	\$12,600.00	\$54,600.00	\$55,692.00	\$56,805.84	\$167,097.84
Marketing assistant	1	1	\$42,000.00	\$42,000.00	\$12,600.00	\$54,600.00	\$55,692.00	\$56,805.84	\$167,097.84
<b>Total Personnel Costs</b>						\$109,200.00	\$111,384.00	\$113,611.68	\$334,195.68
Non-personnel Costs	Quantity	Cost per Item	Y1	Y2	Y3	Total			
<b>Equipment</b>									
Portable breakfast carts	5	\$1,999.00	\$9,995.00	\$0.00	\$0.00	\$9,995.00			
iPad	5	\$329.00	\$1,645.00	\$0.00	\$0.00	\$1,645.00			
Point of sale system	1	\$932.75	\$932.75	\$951.41	\$970.43	\$2,854.59			
<b>Classroom supplies</b>									
Wipes	580	\$11.29	\$6,548.20	\$6,679.16	\$6,812.75	\$20,040.11			
Trash cans	10	\$31.00	\$310.00	\$0.00	\$0.00	\$310.00			
Trash bags	8	\$99.00	\$792.00	\$807.84	\$824.00	\$2,423.84			
Pack of placemats	63	\$17.68	\$1,113.84	\$1,136.12	\$1,158.84	\$3,408.80			
<b>Marketing</b>									
Signage	5	\$20.55	\$102.75	\$0.00	\$0.00	\$102.75			
Logo design	1	\$1,000.00	\$1,000.00	\$0.00	\$0.00	\$1,000.00			
Uniform with logo	20	\$20.00	\$400.00	\$408.00	\$416.16	\$1,224.16			
T-shirt with logo	10	\$11.98	\$119.80	\$122.20	\$124.64	\$366.64			
<b>Food Production</b>									
Meals	92,500	\$2.72	\$251,600.00	\$256,632.00	\$261,764.64	\$769,996.64			
<b>Total Non-personnel Costs</b>			\$274,559.34	\$266,736.72	\$272,071.46	\$813,367.52			

**Figure 2.**

<b>Personnel and Non-Personel Costs</b>							
	<b>Personnel Costs</b>	<b>Non- Personnel Costs</b>	<b>Number of Schools</b>	<b>Total</b>			
<b>Y1</b>	\$109,200.00	\$274,559.34	28	\$10,745,261.52			
<b>Y2</b>	\$111,384.00	\$266,736.72	28	\$10,587,380.21			
<b>Y3</b>	\$113,611.68	\$272,071.46	28	\$10,799,127.81			
<b>Total Costs</b>				\$32,131,769.55			
<b>Revenue/Income</b>							
<b>USDA Reimbursement</b>	<b>Number of Students</b>	<b>Number of Meals Per School Year</b>	<b>Reimbursement Rate</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Total Revenue/Income</b>
Free Breakfast	14,000	185	\$2.35	\$6,086,500.00	\$6,208,230.00	\$6,332,394.60	\$18,627,124.60
<b>Grants</b>	<b>Number of Schools</b>	<b>Requested Grant Funds</b>					
No Kid Hungry and Kellogg School Breakfast Grants	28		\$5,500.00	\$154,000.00	\$0.00	\$0.00	\$154,000.00
<b>Total Revenue/ Income</b>				\$6,240,500.00	\$6,208,230.00	\$6,332,394.60	\$18,781,124.60
<b>Yearly Request</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>				
<b>Costs</b>	\$10,745,261.52	\$10,587,380.21	\$10,799,127.81				
<b>Revenue/Income</b>	\$6,240,500.00	\$6,208,230.00	\$6,332,394.60				
<b>Total Request</b>	<b>\$4,504,761.52</b>	<b>\$4,379,150.21</b>	<b>\$4,466,733.21</b>				

## Individual Presentation Slides

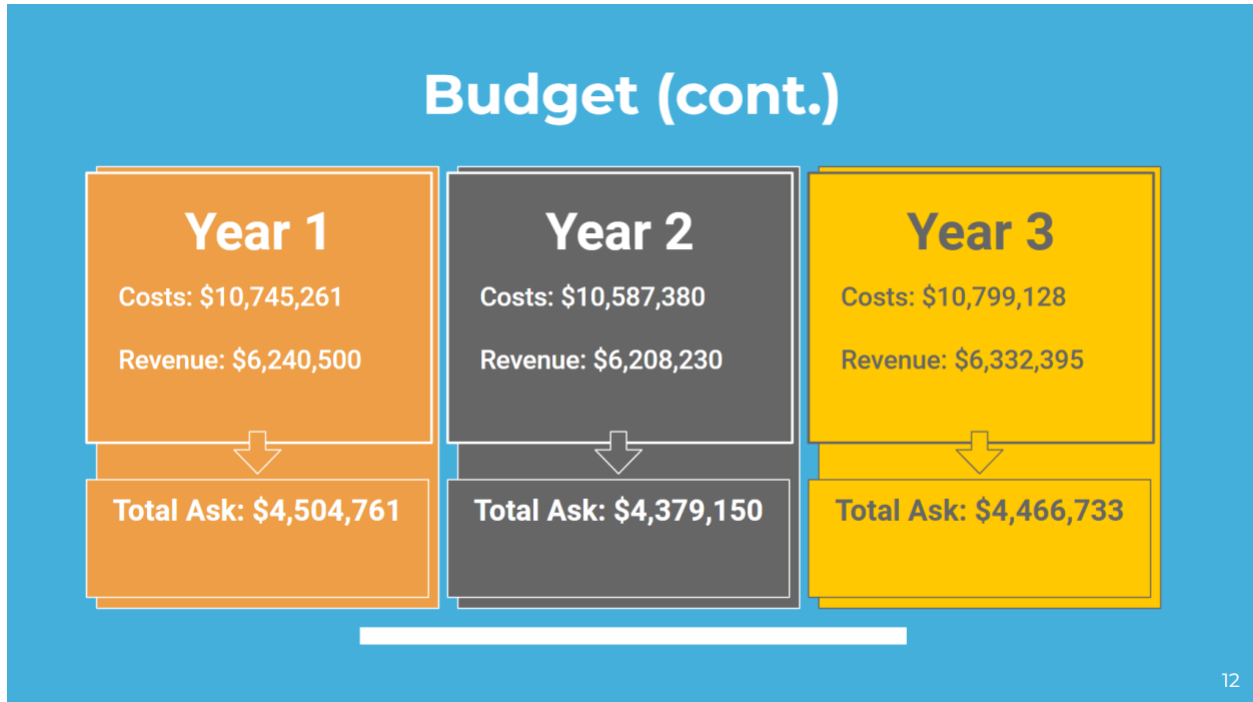
### Slide 11



#### Slide 11 Script:

Now, I'll present an overview of key personnel costs, non-personnel costs, and revenue sources for Breakfast in the Classroom. Key personnel costs for each school include one nutrition staff member to plan meals and one marketing assistant to promote Breakfast in the Classroom. Schools already staff personnel such as custodians and food service staff, so these are not included in personnel costs. Key non-personnel costs include equipment such as portable breakfast carts and point of sale systems, classroom supplies such as wipes and placemats, marketing materials such as signs and logo design, and food production costs. Key sources of revenue that offset costs include USDA school breakfast reimbursements that help cover food production costs as well as grants from No Kid Hungry, a campaign put on by Share our Strength, a non-profit that addresses childhood hunger; these grants can be used to cover start-up costs (School Nutrition Association, 2022; No Kid Hungry, n.d.).

Slide 12



**Slide 12 Script:**

Now let's dive into a more detailed breakdown of costs and revenue sources. When calculating costs and revenue, key assumptions are that the 28 schools who have not implemented an alternative breakfast program and that all students will participate in Breakfast in the Classroom. Additionally, costs and revenue sources are estimated to increase 2% each year to account for inflation. The total personnel and non-personnel costs for each of the three years are approximately \$10.7 million. These costs varied based on start-up costs and inflation. Revenue for each of the three years is approximately \$6.2 million. This results in a monetary request of approximately \$4.4 million for each of the three years.

## REFERENCES

No Kid Hungry. (n.d.). No Kid Hungry and Kellogg School Breakfast Grants. No Kid Hungry. Retrieved March 6, 2022, from <https://www.nokidhungry.org/kellogg-breakfast-grants>

No Kid Hungry NC. (2020). 2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools.

USDA. (2017). The School Breakfast Program. <https://fns-prod.azureedge.net/sites/default/files/resource-files/SBPfactsheet.pdf>



Ivonne Headley

## **Problem Statement**

### ***Social Determinant of Health***

The World Health Organization defines social determinants of health (SDOH) as non-medical factors that influence health outcomes (Social Determinants of Health, n.d.). These include a wider array of conditions that impact daily life such as where one is born, raised, socio-cultural norms, where one works, age, race, and ethnicity to name a few examples. Healthy People 2030 divided these SDOH into five domains, one of which is Social and Community Context (Burke-Miller, 2010). Within the domain of Social and Community Context can be found the social determinant of health of very low food insecurity among children. According to the Office of Disease Prevention and Health Promotion, this SDOH can be defined as the disruption of food intake or eating patterns due to lack of access to necessary resources (Food Insecurity, n.d.). In Cleveland County, 23% of children are food insecure, therefore, addressing food insecurity among children under eighteen years of age will impact the vulnerability many children currently face.

### ***Geographic and Historic Context***

Cleveland County, North Carolina is a rural county located in the south-western region of the State (NC Rural Center, n.d), otherwise known as the Piedmont region. Prior to its formation as part of the United States of America, Cleveland County's land was originally inhabited by two bands of Native Americans – the Catawba and Cherokee Tribes (Cleveland County, n.d.). Named after an American Revolutionary War hero, Colonel Benjamin Cleveland, in 1841 Cleveland County was formed. Bordering the state of South Carolina, surrounding North Carolina counties include Burke, Gaston, Lincoln, and Rutherford counties (Cleveland County, n.d.). According to 2019 census data, the demographic make-up of Cleveland County consists of predominantly White identifying individuals (69%), with African Americans (21.5%), Hispanics (9.1%), and Multi-Racial identifying individuals (7.6%) composing a majority of the less represented populations.

### ***Priority Population***

In Cleveland County, six out of ten children live in homes struggling with hunger and as previously stated, 23.3% of children are food insecure (Counties with., n.d.). Children under the age of eighteen are vulnerable to the results of human interrelationships, due to their dependency for necessities such as food, water, shelter (Hauser-Cram et al., 2013). By nurturing and teaching children, families play an important role in ensuring that children under age 18 are supported enough to thrive (Why is family support important?, n.d.). Nonetheless, this can be difficult to achieve if family households are facing food insecurity as well.

### ***Measures of Problem Scope***

Food insecurity – the lack of access to adequate, nutritious, and safe food to lead a healthy life (Mahan, 2016) – impacted an estimated 17 million children across the United States in 2020. As the pandemic forced children out of schools and parents out of work, kids of all ages have been lacking crucial meals (USGLC, 2020). Cleveland County’s most recent health assessment shone light on the reality that 66.9% of students are participating in free and reduced lunch programs (Welcome to Cleveland County, n.d). This information is crucial because children need to be living in homes where income falls below 130% of the federal poverty level, or be receiving supplemental nutrition assistance program (SNAP) qualifying meals, or temporary assistance for needy families (TANF) aid (School Lunch Program, 2021), in order to receive free and reduced school meals. A statistic indicating that 66.9% of students in Cleveland County are participating in the National school lunch program highlights not only that children 18 years old and younger are lacking access to food at home but that they are also living in financially challenged homes, due to the eligibility needed to participate in school lunch programs. Due to the distinct link between food insecure children in Cleveland County and those facing problems such as poverty, addressing food security among children in Cleveland County is of priority.

### ***Rationale/Importance***

Achieving food security will improve child nutrition, which will in turn impact child learning and behavior development (Hauser-Cram et al., 2013). Through prioritizing how to grant the families of

Cleveland County access to nutritious and quality foods, county officials will shift their attention to why financial resources for food are lacking to begin with (What is food insecurity in America?, 2016). Food insecurity often does not exist as an isolated issue, and Cleveland County, North Carolina is no exception to this reality. In addition to the 23.3% of children facing food insecurity, as of 2019, 5.2% of children under the age of 18 in Cleveland County do not have health insurance, and 16.7% of families have low access to a grocery store, with 6.9% of homes not having access to a vehicle (Cleveland County, 2017). Lack of transportation as a resource further exacerbates the problem of food insecurity in Cleveland County and access to obtaining food.

### ***Disciplinary Critique***

There has yet to be a sustainable approach towards mitigating food insecurity within the field of Public Health. This is largely due to siloed approaches to the issue, versus recognizing the problem of food insecurity is bound to a larger system. Especially in the fields of nutrition and public health, there seems to be an onus on the importance of roles schools play in establishing healthy eating behaviors (Nutrition Education in US Schools, 2021). Cleveland County officials and public health leaders are called today to address the problem of food insecurity among children 18 years and younger and concentrate on its intersectionality in order to best fill existing gaps.

## REFERENCES

- Burke-Miller, J. K. (2010). Social and Community Contexts. In *A Public Health Perspective of Women's Mental Health* (pp. 335–345). Springer New York.
- Cleveland county. (n.d.). Ncpedia.Org. Retrieved January 31, 2022, from <https://www.ncpedia.org/geography/cleveland>
- Cleveland county. (2017, November 10). NCIOM. <https://nciom.org/counties/cleveland-county/> Counties with the highest rate of food insecure children in North Carolina. (n.d.). Stacker. Retrieved January 31, 2022, from <https://stacker.com/north-carolina/counties-highest-rate-food-insecure-children-north-carolina>
- Food insecurity. (n.d.). Healthypeople.Gov. Retrieved April 4, 2022, from <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity>
- Hauser-Cram, P., Nugent, J. K., Thies, K. M., & Travers, J. F. (2013). *The development of children and adolescents: An applied perspective*. John Wiley & Sons.
- Mahan, L. K., & Raymond, J. L. (2016). *Krause's food & the nutrition care process* (14th ed.). Saunders.
- NC Rural Center. (n.d.). NC Rural Center. Retrieved January 20, 2022, from <https://www.ncruralcenter.org/>
- Nutrition education in US schools. (2021, February 16). Cdc.Gov. [https://www.cdc.gov/healthyschools/nutrition/school\\_nutrition\\_education.htm](https://www.cdc.gov/healthyschools/nutrition/school_nutrition_education.htm)
- School lunch program. (2021, June 30). NC211. <https://nc211.org/2021/06/30/schoollunch-program/>
- Social determinants of health. (n.d.). Who.Int. Retrieved January 20, 2022, from <https://www.who.int/health-topics/social-determinants-of-health>
- USGLC. (2020, April 1). COVID-19 brief: Impact on food security – Retrieved January 31, 2022, from Usglc.org website: <https://www.usglc.org/coronavirus/global-hunger/>
- Welcome to Cleveland County, NC. (n.d.). Clevelandcounty.Com. Retrieved January 19, 2022, from [https://www.clevelandcounty.com/main/government/about\\_cleveland\\_county.php](https://www.clevelandcounty.com/main/government/about_cleveland_county.php)
- What is food insecurity in America? (2016, December 29). Hunger and Health. <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>
- Why is family support important? (n.d.). Smart Beginnings MHC. Retrieved January 31, 2022, from <http://www.smartbeginningsmhc.org/Why-is-family-support-important-.html>

## **Implementation Plan**

### ***Background Information:***

The World Health Organization defines social determinants of health (SDOH) as non-medical factors that influence health outcomes (Social Determinants of Health, n.d.). These include a wide array of conditions that impact daily life, such as where one is born, raised, socio-cultural norms, where one works, age, race, and ethnicity (Social Determinants of Health, n.d.). One of Healthy People's key objectives is to eliminate very low food security in children. Very low food security can be defined as individuals who are "food insecure to the extent that eating patterns are disrupted (skipping meals), and food intake is reduced because the household cannot afford enough food" (USDA, n.d.). In 2018 alone, 59% of households in the United States with children under 18 experienced very low food security (Social Determinants of Health, n.d.), and according to the most recent statistics on Cleveland County, North Carolina, 23.3% of its children are food insecure and six out of ten children live in homes struggling with hunger and (Counties with., n.d.).

Cleveland County's most recent health assessment indicated that 66.9% of students are participating in free and reduced lunch programs (Welcome to Cleveland County, n.d). This is crucial to consider because to qualify for such programs, children need to be living in homes where income falls below 130% of the federal poverty level, or be receiving supplemental nutrition assistance program (SNAP) qualifying meals, or receiving temporary assistance for needy families (TANF) aid (School Lunch Program, 2021). In Cleveland County, with 66.9% of students participating in national school lunch programs, children under 18 are not only lacking access to food at home but also live in low resourced homes, highlighting how food insecurity does not exist as an isolated issue (Welcome to Cleveland County, n.d).

### ***Purpose***

Prioritizing food insecurity in Cleveland County will impact health outcomes in children such as anemia, anxiety, aggression, low nutrient intake, and cognitive problems (Gunderson et. al., 2015).

Breakfast after the Bell is an evidenced based nutrition program that will help mitigate the problem of food insecurity among children under 18 by providing children with food security and meal consistency at the beginning of their school day (Reykdal, C. n.d.). Nationally, a growing number of states are incorporating Breakfast after the Bell into county level legislation, including New Mexico, Colorado, and District of Columbia (State breakfast legislation, n.d.). Research shows disrupted eating patterns or food intake among children is associated with higher risk of hospitalization, depression, suicide ideation, behavioral problems, deprived oral health, development of asthma, and overall poor general health (Gunderson et al., 2015). Therefore, providing a meal at the start of every day can have direct, positive impacts on the children of Cleveland County.

### ***Evidence Based Outcomes***

Short-term objectives “are the initial expected changes in your target population after implementing specific activities or interventions” (Developing Program Goals, n.d.). Currently there are 29 schools in Cleveland County that serve breakfast, however, only one school utilizes a model that provides students the option to have breakfast after the morning bell (2019-20, n.d.). Implementation of Breakfast after the Bell meal options, such as breakfast in the classroom (BIC) or a grab-n-go method, would result in the short term outcome of expanded access to morning meals among children 18 years or younger in Cleveland County’s public school system (Governor’s Office, n.d.). Moreover, several nutrition experts refer to breakfast as the most important meal of the day (Anzman-Frasca, S., Djang, H. C., Halmo, M., et al., 2015) and an avenue for improved nutrition. Therefore, another short term outcome of Breakfast after the Bell implementation would be improved nutrition via daily consumption of favorable nutrients such as dietary fiber and micronutrients including vitamin D, B-vitamins, and iron (Adolphus et.al, 2013).

Long-term objectives are “achieved only after the program has been in place for some time” (Developing Program Goals, n.d.). Over an academic year, research demonstrates that students who eat breakfast are better academic performers, more attentive, and less likely to act out (Breakfast Blueprint, n.d.). Based on this evidence, over the long-term time period of approximately one year, Cleveland County can expect to achieve similar learning outcomes among children 18 years and younger who participate in the breakfast program. Furthermore, evidence indicates that breakfast after the bell implementation has been shown to increase participation rates of the school breakfast programs in other school districts to up to 88% (Governor’s Office, n.d.). Therefore, another long-term objective for Cleveland County is to achieve similar participation rates upon program implementation within their own county.

### ***Strategies and Activities***

Key components of this intervention include educating teachers about the positive impact of offering breakfast to students after the morning bell. Incorporating this type of activity in program implementation will alleviate concerns regarding hypothetical disruption of instruction time by providing breakfast in classroom settings. (School Breakfast, n.d.). Another strategy for successful implementation of this nutrition program in Cleveland County will be properly marketing its availability to the priority population – children 18 years and younger – so they are aware of how to participate. While further research is needed to identify the best way to enroll students, current evidence suggests minimizing prerequisites for eligibility (i.e. household income) would minimize stigma associated with children who participate in the breakfast program (2019-20, n.d.). In other words, ideally, all children under the age of 18 will be able to participate without needing to “qualify” in order to maximize program participation. Additionally, each participating school will need to identify the service model which best suits their school, of which some examples are: Second Chance Breakfast, Breakfast in the Classroom, and Grab-n-Go (Reykdal, C., n.d.). Time of food service, point of service, and how food will be stored and prepared, are also activities that need to be strategized, as these details will vary from school to school. Moreover, waste collection is another variable to be accounted for, as many children may not complete all of their

breakfast meals every day, and it would be of interest to explore best practices for collecting food waste. Finally, to turn this intervention into a reality, it will be imperative that sustainable partnerships and coalitions are formed with all identified community stakeholders.

### ***Stakeholders***

Cleveland County Schools and various leadership bodies will be key parties in implementing Breakfast after the Bell. These leadership entities include: the school board, parent-teacher association (PTA), teachers, cafeteria staff and school nutrition managers, and Cleveland County Department of Public Health. As an organization whose mission is to end child hunger in America, No Kid Hungry will be another important partner, as will the organization Feeding Kids in Cleveland County, to better amplify advocating voices for Breakfast after the Bell's implementation. Last but certainly not least, children 18 years and younger in Cleveland County will be one of the most important stake holding groups to consider, as they are the direct beneficiaries of Breakfast after the Bell's implementation.

### ***Budget***

In 2018, various school districts in North Carolina received between \$8,000 and \$12,276 to institute school breakfast programs (Governor's Office, n.d.). As previously alluded to, of the participating school districts – Anson County, Cabarrus County, Cumberland County, Edgecombe County, Gaston County, Johnston County, Kannapolis County, Robeson County, Wayne County, and Winston-Salem/Forsyth Counties – implementation of a Breakfast after the Bell school breakfast model achieved an average 88% participation rate among their student population (Governor's Office, n.d.). Although limited evidence exists regarding the specific number of children who benefitted in each of these counties, amounts each county received in grant funding, and major expenses incurred, based on this knowledge, it can be inferred that a similar amount of funding will be required to implement Breakfast after the Bell in Cleveland County and achieve similar participation results. (Governor's Office, n.d.).



## ***Conclusion***

The overarching advantage of implementing this program is that it will provide children with the nutrition they need to be better prepared for learning (School Breakfast, n.d.). Better preparation for learning will potentially lead to increased academic achievement which will result in overall healthy cognitive development and attitude (Health and Academic Achievement, n.d.). While Breakfast after the Bell has the potential to have major positive impacts within Cleveland County, it is equally important to discuss a few of the tradeoffs that will come with its implementation. Firstly, by utilizing the Cleveland County school system as the central mode through which the priority population would receive their meals, children under 18 who are unable to attend public school will be left out. Another disadvantage would be that for children who are able to access school meals, once they return home, the Breakfast After the Bell program would be unable to influence consistent access to food outside of the school building.

## REFERENCES

- Adolphus, K., Lawton, C. L., & Dye, L. (2013). The effects of breakfast on behavior and academic performance in children and adolescents. *Frontiers in Human Neuroscience*, 7, 425. <https://doi.org/10.3389/fnhum.2013.00425>
- Anzman-Frasca, S., Djang, H. C., Halmo, M. M., Dolan, P. R., & Economos, C. D. (2015). Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatrics*, 169(1), 71–77. <https://doi.org/10.1001/jamapediatrics.2014.2042>
- Breakfast Blueprint. (n.d.). Frac.Org. Retrieved February 23, 2022, from <https://frac.org/wp-content/uploads/breakfast-blueprint-report-july2017.pdf>
- Burke-Miller, J. K. (2010). Social and Community Contexts. In *A Public Health Perspective of Women's Mental Health* (pp. 335–345). Springer New York.
- Cleveland county. (n.d.). Ncpedia.Org. Retrieved January 31, 2022, from <https://www.ncpedia.org/geography/cleveland>
- Counties with the highest rate of food insecure children in North Carolina. (n.d.). Stacker. Retrieved January 31, 2022, from <https://stacker.com/north-carolina/counties-highest-rate-food-insecure-children-north-carolina>
- Developing program goals and measurable objectives. (n.d.). Cdc.Gov. Retrieved February 23, 2022, from <https://www.cdc.gov/std/program/pupestd/developing%20program%20goals%20and%20objectives.pdf>
- Governor's office partners with no kid hungry school breakfast leadership institute to expand access to school breakfast in 10 school districts. (n.d.). Governor.Nc.Gov. Retrieved February 14, 2022, from <https://governor.nc.gov/news/governor%E2%80%99s-office-partners-no-kid-hungry-school-breakfast-leadership-institute-expand-access>
- Gundersen, C., & Ziliak, J. P. (2015). Food insecurity and health outcomes. *Health Affairs (Project Hope)*, 34(11), 1830–1839. <https://doi.org/10.1377/hlthaff.2015.0645>
- Health and Academic Achievement. (n.d.). Cdc.Gov. Retrieved February 14, 2022, from [https://www.cdc.gov/healthyyouth/health\\_and\\_academics/pdf/health-academic-achievement.pdf](https://www.cdc.gov/healthyyouth/health_and_academics/pdf/health-academic-achievement.pdf)
- Reykdal, C. (n.d.). Breakfast after the Bell Implementation Guide. K12.Wa.Us. Retrieved February 23, 2022, from <https://www.k12.wa.us/sites/default/files/public/childnutrition/programs/nslbp/pubdocs/wababimplementationguide.pdf>
- School breakfast. (n.d.). Nokidhungry.Org. Retrieved February 14, 2022, from <http://bestpractices.nokidhungry.org/policy-and-advocacy/school-breakfast>
- School lunch program. (2021, June 30). Retrieved January 20, 2022, from NC211 website: <https://nc211.org/2021/06/30/school-lunch-program/>

State breakfast legislation: Combining breakfast after the bell with offering it at no charge to all students. (n.d.). Frac.Org. Retrieved April 5, 2022, from <https://frac.org/wp-content/uploads/state-bkfst-leg-combining-free-with-breakfast-after-bell.pdf>

Social determinants of health. (n.d.). Who.Int. Retrieved January 20, 2022, from <https://www.who.int/health-topics/social-determinants-of-health>  
USDA. (n.d.). Usda.Gov. Retrieved February 23, 2022, from <https://www.usda.gov>

Welcome to Cleveland County, NC. (n.d.). Clevelandcounty.Com. Retrieved January 19, 2022, from [https://www.clevelandcounty.com/main/government/about\\_cleveland\\_county.php](https://www.clevelandcounty.com/main/government/about_cleveland_county.php)  
2019-20 North Carolina School Breakfast Program fact sheet Cleveland County Schools. (n.d.).

*2019-20 North Carolina School Breakfast Program fact sheet Cleveland County Schools.* (n.d.). Nokidhungrync.Org. Retrieved February 14, 2022, from [http://nokidhungrync.org/wp-content/uploads/2020/07/October-2019-North-Carolina-School-Breakfast-Program-Fact-Sheet\\_Cleveland-County-Schools.pdf](http://nokidhungrync.org/wp-content/uploads/2020/07/October-2019-North-Carolina-School-Breakfast-Program-Fact-Sheet_Cleveland-County-Schools.pdf)

## **Evaluation Plan**

### ***Intervention Summary***

One of Healthy People's key objectives is to eliminate very low food security in children (Social Determinants of Health, n.d.). Very low food security can be defined as individuals who are "food insecure to the extent that eating patterns are disrupted, and food intake is reduced because the household cannot afford enough food" (USDA, n.d.). In Cleveland County, 23.3% of children are food insecure (Counties with., n.d.).

Breakfast after the Bell is an evidenced based nutrition program that has served about 12 million children nationwide (Implement breakfast after the bell, n.d.) and will help mitigate the problem of food insecurity among children under 18 by providing children with food security and meal consistency at the beginning of their school day (Reykdal, C. n.d.). Research shows disrupted eating patterns or food intake among children is associated with higher risk of hospitalization, depression, suicide ideation, behavioral problems, deprived oral health, development of asthma, and overall poor general health (Gunderson et al., 2015). Therefore, providing a meal at the start of every day will have direct, positive impacts on the children of Cleveland County.

## **Evaluation Plan**

### ***Study Design/Data Collection***

Study design and data collection techniques will include requesting access to food service management data systems within Cleveland County to count breakfast meals that were provided before and after program implementation. Additionally, a survey adapted from the USDA Six-Item Short Form Food Security Module (see appendix A for example survey) will be utilized to collect quantitative and qualitative data regarding meal satisfaction. This survey will be sent home with children to be completed by parents through conversation with their kids to help gauge effectiveness of breakfast after the bell implementation. Additionally, use of the USDA's Six-Item Short Form Food Security Model will facilitate Cleveland County to measure perceived food insecurity by asking questions that gather information regarding access to food.

### ***Sample/Sampling Strategy***

All children 18 years and younger who form part of the Cleveland County public school system will be included in sampling for program evaluation. Before implementation of Breakfast after the Bell in Cleveland County, baseline demographic data will be collected via a separate survey honing in on questions regarding age, sex, gender, race, ethnicity, SES, etc. Halfway through program implementation, the survey tool exemplified in appendix A will be conducted for mid-point data collection, and upon program implementation conclusion, data collection will occur once again for optimal analysis.

### ***Specific Measures***

Specific outputs to be measured include breakfast meals prepared and waste produced from uneaten foods. Inquiry with county officials is needed to determine if Cleveland County Public schools currently has a system in place that efficiently measures these two outputs. Awareness of this knowledge will help further inform how to move forward with output evaluation. Moreover, another output to focus on is participation in the school breakfast program. While further research is needed to inform measurement of this output, measuring program participation may involve the development of additional survey questions, not featured in Appendix A, that hone in on how much food was eaten by participating children during breakfast meals and which foods were consumed. Such questions would need to be based on verified questionnaire resources such as the USDA or CDC. Nonetheless, by measuring food specific information and analyzing this type of data, program implementers would be able to possibly gauge the nutritional benefits associated with served breakfast meals for children who participate.

### ***Analysis Plan***

The difference in perceived food security before and after the intervention can be measured based on survey results and analyzed by using an odds difference to compare baseline and endline results. The goal with these results will be to define if perceived food insecurity improved as a result of program implementation, and thus influence future programming at the county level. This type of data analysis will require use of statistical analysis software such as STATA. Another analysis that can be conducted

with STAT is paired t-tests to measure the differences in average breakfasts distributed before and after the implementation of the Breakfast after the Bell program.

### ***Timing***

In terms of a program time-line, ideally the evaluation will roll-out over a three year period. The first six months will be for preparation of logistics and baseline data collection, followed by two years of Breakfast after the Bell program implementation, and finalized by six months of end-line data collection and analysis.

### ***Strengths and Challenges***

One strength of this intervention is how it will increase breakfast consumption among students enrolled in Cleveland County's public school system. Especially among children who are food insecure, this program will increase access to a meal many students may have previously not been consuming. Nonetheless, it will be important to note the potential challenge that will come with gauging the amount of breakfast children are actually consuming vs. wasting, and implications for evaluation results. In the end, upon securing funding, program implementation and evaluation results will be disseminated on the Cleveland County public school system website, No Kid Hungry website, and presented at community advisory board (CAB) meetings with stakeholders to inform future action.

## Appendix A

*Six-Item Short Form Food Security Survey Module (USDA, 2012).*

**These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.**

FILL INSTRUCTIONS: Select the appropriate fill from parenthetical choices depending on the number of persons and number of adults in the household.

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No (Skip AD1a)
- DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No
- DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

- Yes
- No
- DK

## REFERENCES

- Cleveland county. (n.d.). Ncpedia.Org. Retrieved January 31, 2022, from <https://www.ncpedia.org/geography/cleveland>
- Counties with the highest rate of food insecure children in North Carolina. (n.d.). Stacker. Retrieved January 31, 2022, from <https://stacker.com/north-carolina/counties-highest-rate-food-insecure-children-north-carolina>
- Gundersen, C., & Ziliak, J. P. (2015). Food insecurity and health outcomes. *Health Affairs (Project Hope)*, 34(11), 1830–1839. <https://doi.org/10.1377/hlthaff.2015.0645>
- Household Food Insecurity Access Scale (HFIAS) for measurement of food access: Indicator guide. (n.d.). Fantaproject.Org. Retrieved March 24, 2022, from <https://www.fantaproject.org/monitoring-and-evaluation/household-food-insecurity-access-scale-hfias>
- Implement breakfast after the bell. (n.d.). Nokidhungry.Org. Retrieved March 24, 2022
- Reykdal, C. (n.d.). Breakfast after the Bell Implementation Guide. Retrieved February 23,2022,
- USDA. (2012, September). *Six-Item Food Security Module*. <https://www.ers.usda.gov/media/8282/short2012.pdf>
- USDA. (n.d.). Usda.Gov. Retrieved February 23, 2022, from <https://www.usda.gov>



## Individual Presentation Slides

### Slide 13

# Program Evaluation

- **Sample population:** All students & families who are part of Cleveland County Public Schools
- **Validated Measurement Tool:** USDA Six-Item Short Form Food Security Model
  - age, sex, gender identity
  - race/ethnicity (of child)
  - perceived level of household food security
  - current utilization of SBP
  - consumption of breakfast


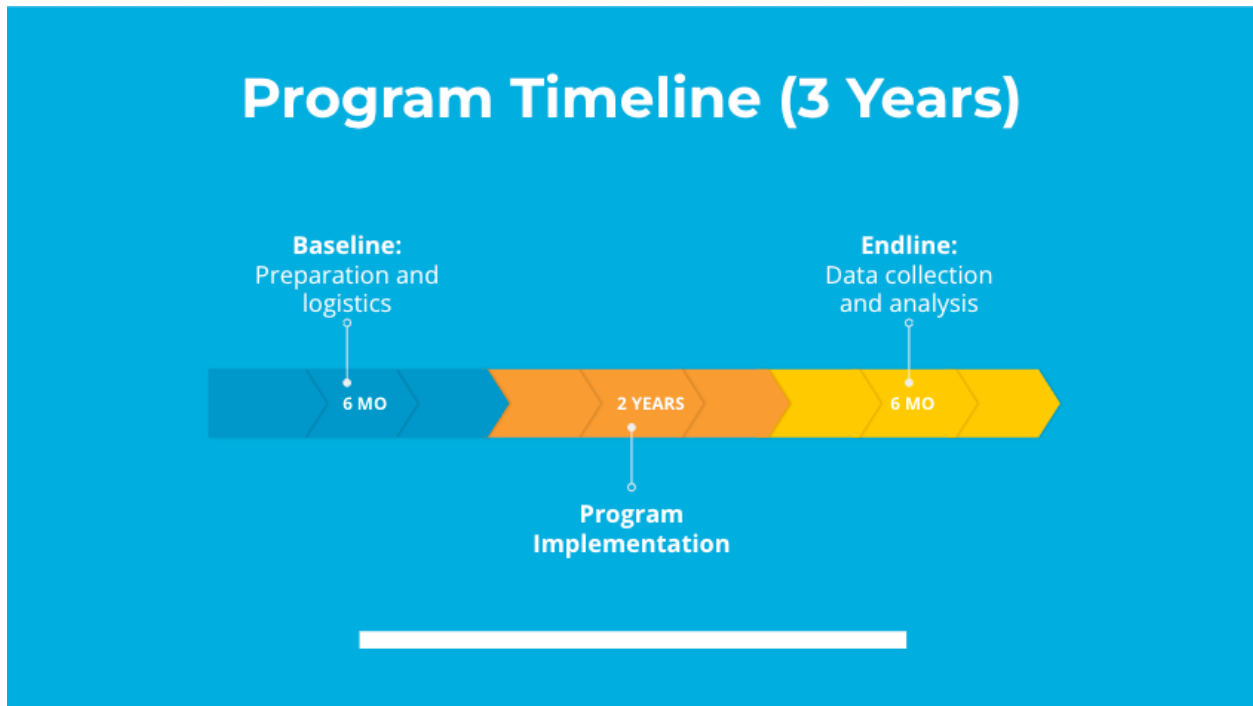


Image source: <https://bit.ly/3uyEYhA>

#### Slide 13 Script:

All students and families who are part of Cleveland County Public Schools will be included in the sample population for evaluation. Questions adapted from the USDA Six-Item Short Form Food Security Module will include age, sex, gender identity, race/ethnicity (of child), perceived level of household food security, current utilization of SBP, and consumption of breakfast.

## Slide 14




### Slide 14 Script:


The program timeline will be three years long. The first six months will be utilized to prepare program logistics as well as for baseline data collection and analysis. Next, BIC will be implemented for two years, after which the final six months will be utilized to collect and analyze endline data.

**Slide 15**


## Measured Outputs



# breakfasts served



# surveys completed  
at baseline and  
endline



# children served

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**Slide 15 Script:**

Measured outputs will include the number of breakfasts served in the classroom, the number of surveys completed at baseline and at endline and counts of children served.

## Slide 16

# Program Evaluation

**Strength:** evidenced-based & shown to increase SBP participation rates up to 88%.<sup>24</sup>



**Challenge:** ability to gauge amounts of breakfast consumed.

- Children might not consume entire meals.
- Strategies to analyze food waste?

Image source: <https://bit.ly/3xn65yF>

### Slide 16 Script:

Finally, the main strength of this program is that it is an evidence-based intervention shown to increase SBP participation rates up to 88% (Governor's Offices, n.d.). Conversely, one major challenge will be the ability to gauge amounts of breakfast consumed. It is possible that children will not consume entire meals, therefore, it will be important to consider strategies to analyze produced food waste.

## REFERENCES

Governor's Office Partners with No Kid Hungry School Breakfast Leadership Institute to Expand Access to School Breakfast in 10 School Districts | NC Gov. Cooper. (n.d.). Retrieved March 6, 2022, from <https://governor.nc.gov/news/governor%E2%80%99s-office-partners-no-kid-hungry-school-breakfast-leadership-institute-expand-access>

USDA. (2012, September). *Six-Item Food Security Module*. <https://www.ers.usda.gov/media/8282/short2012.pdf>

Ji-Rong Jiang

### **Problem Statement**

Different domains of social determinants of health (SDoH) are mentioned and prioritized in Healthy North Carolina 2030, such as the severe housing problem or limited access to healthy food from the category of the neighborhood and built environment. The Social Determinant of Health (SDoH) that is going to be addressed in Cleveland County, North Carolina (NC) is the social and community context, and the objective of addressing the SDoH is to decrease food insecurity<sup>3</sup> rate among children under 18 in Cleveland County, NC (The Cleveland County Public Health Center, n.d.).

Food insecurity is defined as limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire food in socially acceptable ways (Shankar, P., Chung, R., & Frank, D. A., 2017). Children in the United States with food-insecure households often have difficulty obtaining food of adequate quality and quantity as well as having healthy eating patterns. Individuals experiencing food insecurity have increased risks of malnutrition in infancy and childhood, anxiety and depression, showing adverse short- and long-term physical and cognitive development, increased use of emergency department (ED) services, diabetes, hypertension, asthma, and cancer (Thomas et al., 2019 & Pourmotabbed et al., 2020). Food insecurity influences not only physical and mental health, but may also professional and interpersonal skills (Pourmotabbed et al., 2020). A lack of macronutrients and micronutrients for a sustained period of time is associated with learning and behavioral problems, including impairments in academic performance, linguistic development, self-regulation and attention-deficit/hyperactivity, and social development (Shankar, P., Chung, R., & Frank, D. A., 2017).

### ***Geographic and Historical Context***

Cleveland County is designated as a Tier 1 economically disadvantaged county in NC, and both the 2015 Community Health Assessment (CHA) and 2019 CHA rank low income/poverty as a top issue

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<sup>3</sup> Food insecurity without hunger: reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake. Food insecurity with hunger: reports of multiple indications of disrupted eating patterns and reduced food intake.

affecting the quality of life in Cleveland County among selected participants. Moreover, the significant unemployment prevalence in Cleveland County has reflected on the food environment as well. The access to grocery stores is focused in the Shelby, Kings Mountain, and Boiling Springs areas, and the more rural parts of the county are served by corner stores and retailers such as Dollar General or Family Dollar Stores which do not consistently provide healthy food choices (The Cleveland County Public Health Center, n.d.).

### ***Priority Population***

Food insecurity is associated with children's behavioral, academic, and emotional problems from infancy to adolescence (Shankar, P., Chung, R., & Frank, D. A., 2017). Among preschoolers, studies have found an association between food insecurity and externalizing and internalizing behaviors, mental health symptoms, and less optimal self-control. In school-aged children, there is an association between food insecurity and impaired academic performance, such as being less proficient at math and reading, increased hyperactivity, aggressive behavior, less adaptive interpersonal relations, and a greater likelihood of having seen a psychologist and missing school (Shankar, P., Chung, R., & Frank, D. A., 2017). Moreover, studies have indicated an association between food insecurity and anxiety and depression, attempted suicide, dysthymia, suspension from school, and substance use disorder among adolescents (Thomas et al., 2019 & Pourmotabbed et al., 2020).

Food insecurity is also prevalent among low-income families with children (Shankar, P., Chung, R., & Frank, D. A., 2017). According to the 2019 county health rankings, 7% of Cleveland County residents have limited access to healthy foods and 15% of households suffer from food insecurity. Considering low income/poverty is the top issue among residents of Cleveland County and the long-lasting consequences of food insecurity in children under 18, it is necessary to prioritize the population in Cleveland County.

### ***Measures of Problem Scope***

Living in poverty is a significant risk factor for food insecurity (Fernald, L. C. H., & Gosliner, 2019). In 2019, Cleveland County had 12% higher of children in poverty than the state average and there

were 23.2% of children with food insecurity compared with 18.3% of children with food insecurity in NC (Child Hunger & Poverty in North Carolina, 2019).

The prevalence of children under 18 with food insecurity in Cleveland County is significant but still underestimated, because there may be young residents with food insecurity who are not eligible for food assistance programs, such as SNAP due to immigration status or household income above FPL but living in food deserts, such as the rural areas of Cleveland County.

### ***Rationale/Importance***

Food insecurity is predominantly a consequence of poverty (Cook, J., & Jeng, K, 2009). Children in food-insecure homes may face higher probabilities of delayed or foregone health care and experience a 25.9 % increase in emergency department visits. Food-insecure households have higher annual mean health care expenditures (\$6,072) than food-secure households (\$4,208) (Thomas et al., 2019). The heavy financial burden to families already strapped for financial resources causes food-insecure children under 18 in poverty to be more vulnerable and financially disadvantaged.

### ***Disciplinary Critique***

Hunger is the biggest problem of children from low-income families (No Kid Hungry, 2022). Although there are several effective federal nutrition programs addressing food insecurity among this population in school, there are obstacles to solving this issue, such as the social stigma of participating in those programs and the physical barriers of consistent access to nutritious and healthy foods among the population (School Breakfast Report Card | Eos Foundation, n.d). However, schools could still be safe shelters for them to improve their physical development in the early life stage and to thrive professionally. The goal of addressing food insecurity among children is not only to support them physically but also to break the cycle of poverty in their future life.



## REFERENCES

- Child Hunger & Poverty in North Carolina | Map the Meal Gap. (n.d.). Retrieved January 28, 2022, from <https://map.feedingamerica.org/county/2017/child/north-carolina>
- Cleveland County, North Carolina | County Health Rankings & Roadmaps. (n.d.). Retrieved January 13, 2022, from <https://www.countyhealthrankings.org/app/north-carolina/2021/rankings/cleveland/county/outcomes/overall/snapshot>
- Cook, J., & Jeng, K. (2009). Child Food Insecurity: The Economic Impact on our Nation (pp. 1–31). Feeding America.
- Facts About Childhood Hunger in America. (n.d.). Retrieved March 18, 2022, from <https://www.nokidhungry.org/who-we-are/hunger-facts>
- Fernald, L. C. H., & Gosliner, W. (2019). Alternatives to SNAP: global approaches to addressing childhood poverty and food insecurity. *American Journal of Public Health*, 109(12), 1668–1677. <https://doi.org/10.2105/AJPH.2019.305365>
- Healthy North Carolina 2030 - NCIOM. (n.d.). Retrieved January 27, 2022, from <https://nciom.org/healthy-north-carolina-2030/>
- Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M. E., & Miraghajani, M. (2020). Food insecurity and mental health: a systematic review and meta-analysis. *Public Health Nutrition*, 23(10), 1778–1790. <https://doi.org/10.1017/S136898001900435X>
- School Breakfast Report Card | Eos Foundation. (n.d.). Retrieved March 24, 2022, from <http://eosfoundation.org/school-breakfast-report-card/>
- Shankar, P., Chung, R., & Frank, D. A. (2017). Association of Food Insecurity with Children’s Behavioral, Emotional, and Academic Outcomes: A Systematic Review. *Journal of Developmental and Behavioral Pediatrics*, 38(2), 135–150. <https://doi.org/10.1097/DBP.0000000000000383>
- Social Determinants of Health: Food Insecurity in the United States :: Altarum - Healthcare Value Hub. (n.d.). Retrieved January 30, 2022, from <https://www.healthcarevaluehub.org/advocate-resources/publications/social-determinants-health-food-insecurity-united-states>
- The Cleveland County Public Health Center. (n.d.). 2019 Cleveland County Community Health Assessment. Retrieved January 16, 2022, from <https://schs.dph.ncdhhs.gov/units/ldas/cha2019/2019%20Cleveland%20County%20Community%20Health%20Assessment.pdf>
- Thomas, M. M. C., Miller, D. P., & Morrissey, T. W. (2019). Food insecurity and child health. *Pediatrics*, 144(4). <https://doi.org/10.1542/peds.2019-0397>
- USDA ERS - Definitions of Food Security. (n.d.). Retrieved January 22, 2022, from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>

5 Facts About Hungry Children in America. (n.d.). Retrieved March 18, 2022, from  
<https://blog.feedingwestchester.org/blog/5-facts-about-hungry-children-in-america>

## **Evidence-Based Nutrition Program**

### ***Background Information***

The Social Determinant of Health (SDoH) that is going to be addressed in Cleveland County, North Carolina (NC) is the social and community context, and the objective of addressing the SDoH is to decrease food insecurity rate with and without hunger <sup>4</sup>among children under 18 in Cleveland County, NC. Cleveland County is an economically disadvantaged county, and both the 2015 Community Health Assessment (CHA) and 2019 CHA rank low income/poverty as a top issue affecting the quality of life in Cleveland County among selected participants. Living in poverty is a significant risk factor for food insecurity (Fernald, L. C. H., & Gosliner, 2019). Due to insufficient food budgets, food-insecure households are more likely to purchase energy-dense foods or skip meals in a day, which leads to lower diet quality and negative physical developments for children within food-insecure households (Thomas et al., 2019)

### ***Purpose***

According to the 2019 county health rankings, 7% of Cleveland County residents have limited access to healthy foods and 15% of households suffer from food insecurity (2019 County Health Rankings Key Findings Report). Studies have found children experiencing food insecurity have increased risks of malnutrition in infancy and childhood as well as poorer weight outcomes and immune system functioning (Thomas et al., 2019 & Pourmotabbed et al., 2020). Besides the negative physical outcomes among children with food insecurity, researchers have found that there are associations between food insecurity and mental health symptoms (e.g., anxiety and depression), impaired academic performance, and less adaptive interpersonal relations among this population as well (Shankar, P., Chung, R., & Frank, D. A., 2017).

Furthermore, food insecurity leads to additional economic costs not only for individuals and families with food insecurity, but also for the whole socio-economic system. Individuals experiencing

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<sup>4</sup> Food insecurity without hunger: reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.

food insecurity have a 25.9 % increase in Emergency Department (ED) visits, and it is found to be a higher annual mean health care expenditures (\$6,072) within food-insecure households compared with food-secure households (\$4,208) (Thomas et al., 2019). More importantly, food insecurity increases the need for special education among children experiencing this issue. In 2006, the federal budget for special education was \$11.46 billion, and some part of that was attributable to food insecurity and hunger (Cook, J., & Jeng, K, 2009).

Food insecurity is predominantly a consequence of poverty (Cook, J., & Jeng, K, 2009). Considering how vulnerable and financially disadvantaged children with food insecurity could be, it is necessary to implement a potential solution to address food insecurity with and without hunger among children under 18 and break the cycle of poverty in Cleveland County, NC.

### ***Evidence-Based Outcomes***

The School Breakfast Program (SBP) is anticipated to be implemented in all public schools in Cleveland County, NC, and the specific intervention model of SBP is Breakfast in the Classroom (BIC). The assumption is that school-age children who are eligible for free or reduced-price meals in public schools will participate in BIC as well. Therefore, the short-term outcome objective of this intervention is by the end of the academic year of launching the intervention, the number of breakfasts served to students who are eligible for free or reduced-price meals will increase from 4,277 (38%) to 7,433 (66%) (No Kid Hungry NC 2019). SBP is required to follow the breakfast meal pattern for different school-age children (Cuadros-Meñaca, A., Thomsen, M. R., & Nayga Jr, R. M, 2021), which means school-age children with food insecurity or poor diet quality can start being nourished in the morning (School Breakfast Report Card | Eos Foundation, n.d). Moreover, the students who benefit from the intervention will have potentially positive impacts on their eating patterns in the future and will have improved academic performance (Wixom et al., 2020) (School Breakfast Report Card | Eos Foundation, n.d).

### ***Strategies and Activities***

Like the National School Lunch Program, the School Breakfast Program (SBP) is administered by the US Department of Agriculture and aims to reduce food insecurity and malnutrition among low-

income children at the start of the day. There are several delivery models of SBP, such as the breakfast in the classroom (BIC), grab-and-go breakfasts, and second-chance breakfasts. However, studies have found that BIC is the most effective way to significantly increase the participation rate and to alleviate barriers of access to breakfast among eligible students, including late bus arrivals, late students' drop-offs, and the social stigma of having breakfast in the cafeteria as the students from low-income households. (Bauer et al., 2020 & Dillard, 2018 & Ferris et al., 2022).

According to the fact sheet from No Kid Hungry NC 2019, of the 29 Cleveland County schools serving school meals, 29 (100%) served breakfast. However, Breakfast in the Classroom model had only been applied in 1 (3%) of Cleveland County schools. Among students eligible for free or reduced-price meals, 7,433 (66%) participated in school lunch, and 4,277 (38%) participated in school breakfast. Once launching the BIC program, it could fill up the breakfast gap, expecting to reach 3,156 students not participating but eligible for the SBP. The eligibility for free or reduced-price breakfast is that school-age children can have free breakfasts from households when  $\leq 130\%$  of the federal poverty line (FPL), whereas those from households with an income  $\leq 185\%$  of FPL are eligible for reduced-price breakfast. However, all students are welcome to join SBP and have a nutritious breakfast.

During the implementation of BIC, breakfast is packaged in coolers and transported to classrooms either by staff or volunteer students each morning. During the first 10 or 15 minutes of class, breakfast is served in the classroom, and students can make a breakfast selection, mark what items they selected, and enjoy their meal in a safe and comfortable environment. Teachers play an important role in the whole process, including facilitating breakfast services and cleanup, recording breakfast participation, and incorporating breakfast into instructional time (Dillard, 2018).

BIC addresses the individual to the national level of the socio-ecological framework (SEF). By providing various and nutritious breakfast items that are required to meet federal dietary recommendations, school-age children no longer are at risk of hunger or food insecurity in the morning. From the perspective of teachers, students who are fed are more likely to concentrate and are less tardy (School Breakfast Report Card | Eos Foundation, n.d). While school-age children experiencing food

insecurity tend to have aggressive behaviors and do not get along with classmates, BIC alleviates these issues and addresses the interpersonal level of SEF (Shankar, Chung & Frank, 2017; Cuadros-Meñaca, Thomsen & Nayga Jr, 2021). Moreover, researchers found that students with improved nutritional status due to participation in SBP experience increased school attendance by four days (Anzman-Frasca, Djang, Halmo, Dolan, & Economos, 2015 & Kleinman et al., 2002), which potentially increases the academic attachment among the population and engages them in the academic communities more. Lastly, BIC aligns with the national mission of ending hunger among children in the United States, indicating that this program addresses the national level of SEF as well.

### ***Stakeholders***

There are many key stakeholders in this program, including Cleveland County Public Health Center, No Kid Hungry NC, school-age children under 18 experiencing or at the risk of food insecurity in Cleveland County, School Board/Administration, Parent-Teacher Association (PTA), teachers, school nutrition managers/food service directors, and school principals. No Kid Hungry NC advocates food security among children, which issue is a priority for Cleveland County Public Health Center as well. As for teachers, school nutrition managers/food service directors, and school principals, their key roles are to execute and manage the program as well as to report the progress of the implementation to the School Board/Administration and/or Parent-Teacher Association (PTA) to drive better decision-making for the best interest of school-age children under 18 experiencing or at the risk of food insecurity in Cleveland County. As for the specific role and responsibilities of each stakeholder, please see the table (Appendix A).

### ***Budget***

The source of funding is the USDA reimbursement of implementing the BIC program. Please see the table (Appendix B), which provides an overview of the source of the fund, and how the fund will be used towards personnel, equipment, and food.

### ***Conclusion***

Breakfast is recognized as the brain food in a day, which supports academic learning and

improves the rate of school absence (Adolphus et al., 2013) A recent study states the significant improvement of GPA in high school among those low-resource students (Hearst et al., 2019). Although skipping breakfast is sometimes used as a means to control weight gain among adolescents (Hearst et al., 2016) or the breakfast items served might not be desirable or appealing (Bauer et al., 2022), BIC is still widely recognized as a gold standard to ensure low-income children/children with food insecurity consume breakfast in the morning and can concentrate with satiety (No Kid Hungry NC). Financially, the program could increase the net revenue annually, which is beneficial for schools with a high poverty rate in Cleveland County (School Breakfast Report Card | Eos Foundation, n.d).

## Appendices

### Appendix A: Stakeholders

Stakeholders	Role	Responsibility
Cleveland County Public Health Center	Health promotion and disease prevention	Reduce food insecurity rate and support School Breakfast Program
No Kid Hungry NC	To reduce food insecurity in areas of high food insecurity across the US	Reduce food insecurity rate and support School Breakfast Program
School-age children under 18 experiencing or at the risk of food insecurity in Cleveland County	Ask for help and provide constructive feedback for the program improvement	Participate in School Breakfast Program
School Board/Administration	Decision-making	Introduce the program into their school environment
Parent-Teacher Association (PTA)	Advocate for a supportive learning environment for children's wellness	Double check the diet quality of breakfasts and provide constructive feedback for the program improvement
Teachers	Support learning environments	Implement BIC and make sure each student is fed/meet their physical needs
School Nutrition Managers/ Food Service Director	Provide healthy and nutritious meals which meet federal nutrition standards	Manage food waste and safety and dedicate to serve healthy and various breakfast items for children in schools
School Principals	Execute and monitor the program	Implement the program and improve the participation rate



## Appendix B: Budget

<b>Monthly Expense of Breakfast in the Classroom in a Public School</b>							
<b>Monthly Total Expense: \$21,900</b>							
<b>Monthly USDA Reimbursement: \$23,500 (500 meals per day x 20 days)</b>							
<b>Monthly Net Revenue: \$1,600</b>							
<b>(USDA Breakfast Reimbursement—\$2.35 for providing per free breakfast)</b>							
<b>Category</b>	<b>Personnel</b>						
	Item	Number	Type	Hour/Day	Total Hours	Wage/Hour	Total
	Program Manager		1 Hourly	3	60	45	2,700
	Dietitian		1 Hourly	3	60	22	1,320
	Staff		6 Hourly	3	180	11	1,980
	Teacher	35(estimated)	Reward				3,500
							<b>\$ 9,500</b>
<b>Category</b>	<b>Purchased and Leased Equipment and Supplies (kitchen)</b>						
	Item	Number	Type		Total Cost		
	Electricity / water		Exsiting in School Lunch Services		0		
	Cooler	20	New, 20qt, <b>one time purchase</b>		400		
	Repair / maintenance		Exsiting in School Lunch Services		0		
					<b>\$ 400</b>		
<b>Category</b>	<b>Food</b>						
	Item	Number	Type	Serving	Price	Cost/Day	Total(20days)
	Fruit	500(estimated)	Juice,Fresh,Canned	1	0.5	250	<b>\$ 5,000</b>
	Grain products	500(estimated)		1	0.3	150	<b>\$ 3,000</b>
	Milk	500(estimated)	Low-fat and/or lactose-free	1	0.4	200	<b>\$ 4,000</b>

## REFERENCES

- Adolphus, K., Lawton, C. L., & Dye, L. (2013). The effects of breakfast on behavior and academic performance in children and adolescents. *Frontiers in Human Neuroscience*, 7, 425. <https://doi.org/10.3389/fnhum.2013.00425>
- Anzman-Frasca, S., Djang, H. C., Halmo, M. M., Dolan, P. R., & Economos, C. D. (2015). Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatrics*, 169(1), 71–77. <https://doi.org/10.1001/jamapediatrics.2014.2042>
- Bauer, K. W., Foster, G. D., Weeks, H. M., Polonsky, H. M., Davey, A., Sherman, S., Abel, M. L., Ruth, K. J., Dale, L. C., & Fisher, J. O. (2020). Breakfast in the classroom initiative and students' breakfast consumption behaviors: A group randomized trial. *American Journal of Public Health*, 110(4), 540–546. <https://doi.org/10.2105/AJPH.2019.305511>
- Child Hunger & Poverty in North Carolina | Map the Meal Gap. (n.d.). Retrieved January 28, 2022, from <https://map.feedingamerica.org/county/2017/child/north-carolina>
- Cleveland County, North Carolina | County Health Rankings & Roadmaps. (n.d.). Retrieved January 13, 2022, from <https://www.countyhealthrankings.org/app/north-carolina/2021/rankings/cleveland/county/outcomes/overall/snapshot>
- Cook, J., & Jeng, K. (2009). *Child Food Insecurity: The Economic Impact on our Nation* (pp. 1–31). Feeding America.
- Cuadros-Meñaca, A., Thomsen, M. R., & Nayga Jr, R. M. (2021). The effect of school breakfast on student behavior: an evaluation of breakfast after the bell. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3806620>
- Dillard, P. (2018). *Educational Leaders' Perceptions of the Implementation, Benefits, and Barriers to Breakfast in the Classroom*. [https://etd.auburn.edu/bitstream/handle/10415/6427/Dillard\\_Edited%20Dissertation\\_2018.10.2.18%202.pdf?sequence=2](https://etd.auburn.edu/bitstream/handle/10415/6427/Dillard_Edited%20Dissertation_2018.10.2.18%202.pdf?sequence=2)
- End Child Hunger in America | No Kid Hungry. (n.d.). Retrieved February 10, 2022, from <https://www.nokidhungry.org/>
- Fernald, L. C. H., & Gosliner, W. (2019). Alternatives to SNAP: global approaches to addressing childhood poverty and food insecurity. *American Journal of Public Health*, 109(12), 1668–1677. <https://doi.org/10.2105/AJPH.2019.305365>
- Farris, A. R., Roy, M., Serrano, E. L., & Misyak, S. (2019). Impact of breakfast in the classroom on participation and food waste. *Journal of Nutrition Education and Behavior*, 51(7), 893–898. <https://doi.org/10.1016/j.jneb.2019.04.015>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, 14(3), 511. <https://doi.org/10.3390/nu14030511>

- Healthy North Carolina 2030 - NCIOM. (n.d.). Retrieved January 27, 2022, from <https://nciom.org/healthy-north-carolina-2030/>
- Hearst, M. O., Jimbo-Llapa, F., Grannon, K., Wang, Q., Nanney, M. S., & Caspi, C. E. (2019). Breakfast is brain food? the effect on grade point average of a rural group randomized program to promote school breakfast. *The Journal of School Health*, 89(9), 715–721. <https://doi.org/10.1111/josh.12810>
- Kleinman, R. E., Hall, S., Green, H., Korzec-Ramirez, D., Patton, K., Pagano, M. E., & Murphy, J. M. (2002). Diet, breakfast, and academic performance in children. *Annals of Nutrition & Metabolism*, 46 Suppl 1, 24–30. <https://doi.org/66399>
- McKeon, G. P., Shukaitis, J., & Cuite, C. L. (2021). Teachers’ perceptions and attitudes toward breakfast in the classroom: the importance of health. *The Journal of School Health*, 91(9), 741–749. <https://doi.org/10.1111/josh.13064>
- National School Lunch, Special Milk, and School Breakfast Programs, National Average Payments/Maximum Reimbursement Rates (July 1, 2021 - June 30, 2022) | Food and Nutrition Service. (n.d.). Retrieved February 22, 2022, from <https://www.fns.usda.gov/cn/fr/071621>
- Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M. E., & Miraghajani, M. (2020). Food insecurity and mental health: a systematic review and meta-analysis. *Public Health Nutrition*, 23(10), 1778–1790. <https://doi.org/10.1017/S136898001900435X>
- Rates of Reimbursement | Food and Nutrition Service. (n.d.). Retrieved February 22, 2022, from <https://www.fns.usda.gov/cn/rates-reimbursement>
- Salary.com - Salary Calculator, Salary Comparison, Compensation Data. (n.d.). Retrieved February 22, 2022, from <https://www.salary.com/>
- School Breakfast Report Card | Eos Foundation. (n.d.). Retrieved March 24, 2022, from <http://eosfoundation.org/school-breakfast-report-card/>
- School Meal Trends & Stats. (n.d.). Retrieved February 21, 2022, from <https://schoolnutrition.org/AboutSchoolMeals/SchoolMealTrendsStats/#6>
- Shankar, P., Chung, R., & Frank, D. A. (2017). Association of Food Insecurity with Children’s Behavioral, Emotional, and Academic Outcomes: A Systematic Review. *Journal of Developmental and Behavioral Pediatrics*, 38(2), 135–150. <https://doi.org/10.1097/DBP.0000000000000383>
- SNMCS Webinar Series - School Meal Costs and Foodservice Revenues | Food and Nutrition Service. (n.d.). Retrieved February 22, 2022, from <https://www.fns.usda.gov/snmcs-webinar-series-school-meal-costs>
- Social Determinants of Health: Food Insecurity in the United States :: Altarum - Healthcare Value Hub. (n.d.). Retrieved January 30, 2022, from <https://www.healthcarevaluehub.org/advocate-resources/publications/social-determinants-health-food-insecurity-united-states>

- Stokes, N., Spruance, L., Patten, E. V., & Lybbert, E. K. (2019). Teachers' experience and perspectives of traditional breakfast and breakfast in the classroom. *Journal of Nutrition Education and Behavior*, 51(8), 936–945. <https://doi.org/10.1016/j.jneb.2019.04.004>
- Thomas, M. M. C., Miller, D. P., & Morrissey, T. W. (2019). Food insecurity and child health. *Pediatrics*, 144(4). <https://doi.org/10.1542/peds.2019-0397>
- USDA ERS - Definitions of Food Security. (n.d.). Retrieved January 22, 2022, from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>
- Wixom, N., Walther, C., Urbach, K., & Yussman, S. M. (2020). 47. Introduction and Progression of a “Breakfast after the Bell” Program in an Urban Middle School From 2016-2019. *Journal of Adolescent Health*, 66(2), S25–S26. <https://doi.org/10.1016/j.jadohealth.2019.11.050>

## **Evaluation Plan**

### ***Intervention summary***

The Social Determinant of Health (SDoH) that is addressed in Cleveland County, North Carolina (NC) is the social and community context, and the objective of addressing the SDoH is to decrease food insecurity<sup>5</sup> rate among children under 18 in Cleveland County, NC (Healthy North Carolina 2030). The proposed intervention to address this issue is the implementation of the breakfast in the classroom program (BIC) in all public schools in Cleveland County. Each morning, breakfast is packaged in coolers and transported to classrooms either by staff or volunteer students. During the first 10 or 15 minutes of class, breakfast is served in the classroom, and teachers would facilitate breakfast services and cleanup (Dillard, 2018). Studies have stated that BIC is the most effective approach to increase the participation rate of the school breakfast program (SBP) and to alleviate barriers of access to breakfast among eligible students (Bauer et al., 2020 & Dillard, 2018 & Ferris et al., 2022), so the short-term outcome that will be measured is the number of breakfasts served to students who are eligible for free or reduced-price meals and the expected participation rate after the end of the intervention.

### ***Study Design/Data Collection***

The study design will be observational and tools that are used include both surveys regarding breakfast satisfaction and the improvement of food security among households and food service management data system to count breakfast served as well as to investigate the discrepancy between the number of eligible students and the actual number of participants of the BIC program. Questions of the survey are carefully selected from the Household Food Insecurity Access Scale (HFIAS) generic questions and U.S. Household Food Security Survey Module of US Department of Agriculture (USDA), which are known as validated sources, adapting in cultural contexts and particular U.S. populations and measuring the severity of food insecurity among households. The surveys are sent home to parents per

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<sup>5</sup> Food Insecurity:

Food insecurity without hunger: reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.

Food insecurity with hunger: reports of multiple indications of disrupted eating patterns and reduced food intake.

quarter throughout the implementation timeline and the questions are designed to be closed-ended and slightly modified from the sources to minimize the respondent burden. A sample survey can be found in Appendix C.

### ***Sample and Sampling Strategy***

All students who are in the food service management data system of the Cleveland County Public Schools will participate in the evaluation. However, the participation of their parents/caregivers is voluntary but encouraged. An informed consent to fill out surveys for the evaluation will be sent to them via either email or postal services before implementation. The purpose of the survey, the total time commitment, the collection of identifying information, and the dissemination plan of the survey data are mentioned in the consent form.

### ***Specific Measures***

The predicted outcome is the participants increased from 4,277 (38%) to 7,433 (66%) among eligible students in public schools of Cleveland County (No Kid Hungry NC 2019). Specific measures of the evaluation are the number of breakfasts served and the participation rate of Breakfast in the Classroom (BIC) program. As for food waste management, food service staff will track how many breakfast items are returned on a daily basis to adjust the number of breakfasts served accordingly (Formula: Number of breakfasts served per day/ Average daily attendance) (Huang, Lee & Shanklin, 2006).

### ***Analysis Plan***

The qualitative and quantitative data collected from both the survey and the food service management data system will be stratified by demographic, socio-economic status, and the level of food insecurity and analyzed by statistical analysis software, such as Stata as well as presented by data visualization software, such as Tableau Desktop.

Descriptive statistics will be applied according to the assigned score of the questions in the survey as well as the number of breakfasts served and the number of participants from the food service management data system. To analyze the trend of food insecurity rate and the participation rate of the BIC program over time, there are several time points to collect data and compare to, including baseline (during

the six months before the beginning of the program), per quarter throughout the implementation phase, and the end line of the program.

### ***Timing***

The data collection and analysis process are anticipated to take 2.5 years to complete, which includes data collection for two years and data analysis for six months afterwards. The data will be collected from the baseline, the 1-year implementation of BIC program, and the 12 months post-intervention. The definition of the progress is the increasing participation rate of BIC by 30% during the halfway of the BIC program (Bernstein et al., 2004) as well as the total number of breakfasts served during the program can create positive net revenue for the operation of the program after the 1-year implementation. To ensure the progress is on the track, the frequency of data collection will be per three months considering the different use of between semester systems and quarter system among schools,

### ***Sources of Funding***

There were several school districts in NC that have received funding from \$8,000 to 12,000 from No Kid Hungry in 2018 to support the operation of the school breakfast program (NC Gov. Cooper, n.d.). Based on this fact, the public school system in Cleveland County is expected to receive a similar amount of funding to cover the cost of the evaluation plan. Moreover, the revenue from USDA school breakfast reimbursements could be a part of funding sources for the evaluation plan.

### ***Data Use and Dissemination***

The data will be used for organizations against hunger and food insecurity, such as No Kid Hungry, Feeding America, and the public health department of Cleveland County etc. More importantly, findings will be disseminated through school system websites, community advisory boards, and parent–teacher association meetings.

### ***Strengths and Challenges***

The BIC program could increase the accessibility of breakfast among students enrolled in the Cleveland County Public Schools, especially to those students within food insecure households. Potentially, the increasing participation rate could lead to an increase in school attendance by four days as

well (Anzman-Frasca, Djang, Halmo, Dolan, & Economos, 2015 & Kleinman et al., 2002). However, the challenge is the consistency of the diet quality of breakfast served among schools, the actual food consumption among each participant, and possible food waste.



## Appendices

### Appendix C. Sample Survey

Q1: In the past four weeks, “(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more.” Was that often true, sometimes true, or never true for (you/your household)?

Often true

Sometimes true

Never true

DK or Refused

Q2: In the last four weeks, did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

Yes

No

DK

Q3: In the last four weeks, did (your child/any of the children) ever skip meals or not eat for a day because there wasn't enough money for food?

Yes

No

DK

Q4: In the last four weeks, since participating in the BIC program, did (your child/any of the children) skip meals either lunch or dinner because there wasn't enough money for food?

Yes

No

Did not participate in the BIC program

Q5: Since participating in the BIC program, do you agree that the program ease the food insecurity in your household?

Yes

No

Did not participate in the BIC program

Q6: Since participating in the BIC program, does your child have the kind of food items they prefer for breakfast?

Often true

Sometimes true

Never true

DK or Refused

## **Appendix D. Household Food Insecurity Access Scale (HFIAS) generic questions**

Each of the questions in the following table is asked with a recall period of four weeks (30 days). The respondent is first asked an occurrence question – that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers “yes” to an occurrence question, a frequency-of-occurrence question is asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks.

1. In the past four weeks, did you worry that your household would not have enough food?
2. In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?
3. In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?
4. In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?
5. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?
6. In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?
7. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?
8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?
9. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?

## Appendix E. U.S. Household Food Security Survey Module of USDA

Household Stage 1: Questions HH2-HH4 (asked of all households; begin scale items).

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHETICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD."] Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

HH2. The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

HH3. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

Screener for Stage 2 Adult-Referenced Questions: If affirmative response (i.e., "often true" or "sometimes true") to one or more of Questions HH2-HH4, OR, response [3] or [4] to question HH1 (if administered), then continue to Adult Stage 2; otherwise, if children under age 18 are present in the household, skip to Child Stage 1, otherwise skip to End of Food Security Module. NOTE: In a sample similar to that of the general U.S. population, about 20 percent of households (45 percent of households with incomes less than 185 percent of poverty line) will pass this screen and continue to Adult Stage 2.

Adult Stage 2: Questions AD1-AD4 (asked of households passing the screener for Stage 2 adult-referenced questions).

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food? [ ] Yes [ ] No (Skip AD1a) [ ] DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months? [ ] Almost every month [ ] Some months but not every month [ ] Only 1 or 2 months [ ] DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? [ ] Yes [ ] No [ ] DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food? [ ] Yes [ ] No [ ] DK AD4. In the last 12 months, did you lose weight because there wasn't enough money for food? [ ] Yes [ ] No [ ] DK

Screener for Stage 3 Adult-Referenced Questions: If affirmative response to one or more of questions

AD1 through AD4, then continue to Adult Stage 3; otherwise, if children under age 18 are present in the household, skip to Child Stage 1, otherwise skip to End of Food Security Module. NOTE: In a sample similar to that of the general U.S. population, about 8 percent of households (20 percent of households with incomes less than 185 percent of poverty line) will pass this screen and continue to Adult Stage 3.

Adult Stage 3: Questions AD5-AD5a (asked of households passing screener for Stage 3 adult-referenced questions).

AD5. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food? [ ] Yes [ ] No (Skip AD5a) [ ] DK (Skip AD5a)

AD5a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months? [ ] Almost every month [ ] Some months but not every month [ ] Only 1 or 2 months [ ] DK

Child Stage 1: Questions CH1-CH3 (Transitions and questions CH1 and CH2 are administered to all households with children under age 18) Households with no child under age 18, skip to End of Food

Security Module. SELECT APPROPRIATE FILLS DEPENDING ON NUMBER OF ADULTS AND NUMBER OF CHILDREN IN THE HOUSEHOLD. Transition into Child-Referenced Questions: Now I'm going to read you several statements that people have made about the food situation of their children. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true in the last 12 months for (your child/children living in the household who are under 18 years old).

CH1. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

CH2. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

CH3. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?  Often true  Sometimes true  Never true  DK or Refused

Screener for Stage 2 Child Referenced Questions: If affirmative response (i.e., "often true" or "sometimes true") to one or more of questions CH1-CH3, then continue to Child Stage 2; otherwise skip to End of Food Security Module. NOTE: In a sample similar to that of the general U.S. population, about 16 percent of households with children (35 percent of households with children with incomes less than 185 percent of poverty line) will pass this screen and continue to Child Stage 2.

Child Stage 2: Questions CH4-CH7 (asked of households passing the screener for stage 2 child-referenced questions). NOTE: In Current Population Survey Food Security Supplements, question CH6 precedes question CH5.

CH4. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?  Yes  No  DK

CH5. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?  Yes  No (Skip

CH5a)  DK (Skip CH5a) CH5a. [IF YES ABOVE ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?  Almost every month  Some months but not every month  Only 1 or 2 months  DK

CH6. In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?  Yes  No  DK CH7. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?  Yes  No  DK

## REFERENCES

- Anzman-Frasca, S., Djang, H. C., Halmo, M. M., Dolan, P. R., & Economos, C. D. (2015). Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatrics*, 169(1), 71–77. <https://doi.org/10.1001/jamapediatrics.2014.2042>
- Bauer, K. W., Foster, G. D., Weeks, H. M., Polonsky, H. M., Davey, A., Sherman, S., Abel, M. L., Ruth, K. J., Dale, L. C., & Fisher, J. O. (2020). Breakfast in the classroom initiative and students' breakfast consumption behaviors: A group randomized trial. *American Journal of Public Health*, 110(4), 540–546. <https://doi.org/10.2105/AJPH.2019.305511>
- Bernstein, L. S., McLaughlin, J. E., Crepinsek, M. K., & Daft, L. M. (2004). Evaluation of the School Breakfast Program Pilot Project: Final Report. Special Nutrition Programs. Report Number CN-04-SBP. Nutrition Assistance Program Report Series. US Department of Agriculture.
- Coates, J., Swindale, A., & Bilinsky, P. (2014). Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide: Version 3. American Psychological Association (APA). <https://doi.org/10.1037/e576842013-001>
- Dillard, P. (2018). Educational Leaders' Perceptions of the Implementation, Benefits, and Barriers to Breakfast in the Classroom. [https://etd.auburn.edu/bitstream/handle/10415/6427/Dillard\\_Edited%20Dissertation\\_2018.10.2.18%202.pdf?sequence=2](https://etd.auburn.edu/bitstream/handle/10415/6427/Dillard_Edited%20Dissertation_2018.10.2.18%202.pdf?sequence=2)
- End Child Hunger in America | No Kid Hungry. (n.d.). Retrieved February 10, 2022, from <https://www.nokidhungry.org/>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, 14(3), 511. <https://doi.org/10.3390/nu14030511>
- Governor's Office Partners with No Kid Hungry School Breakfast Leadership Institute to Expand Access to School Breakfast in 10 School Districts | NC Gov. Cooper. (n.d.). Retrieved March 6, 2022, from <https://governor.nc.gov/news/governor%E2%80%99s-office-partners-no-kid-hungry-school-breakfast-leadership-institute-expand-access>
- Healthy North Carolina 2030 - NCIOM. (n.d.). Retrieved January 27, 2022, from <https://nciom.org/healthy-north-carolina-2030/>
- Huang, H., Lee, K.-I., & Shanklin, C. W. (2006). Evaluation of the Free School Breakfast Program in St. Joseph, Missouri. *Journal of Child Nutrition & Management : A Publication of the American School Food Service Association*.



Kleinman, R. E., Hall, S., Green, H., Korzec-Ramirez, D., Patton, K., Pagano, M. E., & Murphy, J. M. (2002). Diet, breakfast, and academic performance in children. *Annals of Nutrition & Metabolism*, 46 Suppl 1, 24–30. <https://doi.org/66399>

US Department of Agriculture. (2012). U.S. Household Food Security Survey Module: Three-Stage Design, With Screeners.

## Individual Presentation Slides

### Slide 5



# In What Settings Can We Expand Food Security Among Children?

### Slide 5 Script:

Considering food insecurity in Cleveland County is exacerbated in households with children, the question that we asked to solve the issue is “In what settings can we expand food security among children, besides their home?”

## Slide 6

Recommended Program/Policy  
is:  
**An Alternative School Breakfast  
Program Breakfast (SBP) Model  
called Breakfast in the Classroom  
(BIC)<sup>9, 10</sup>**

### Slide 6 Script:

And it turned out the answer is SCHOOL! Studies have shown school meals play an important role in caloric and nutrient intakes for children from food insecure households (Smith, 2017; Potamites & Gordon, 2010). To optimize the physical and learning outcomes among this population, our team proposed to implement the School Breakfast Program (SBP) in the Cleveland Public School System. Specifically, the Breakfast in the Classroom (BIC) model of SBP, so that they can start being nourished in the morning and ready to thrive in school (School Breakfast Report Card | Eos Foundation, n.d).

## Slide 7

**Benefits of Implementing BIC** <sup>11, 12, 13</sup>

- Eligibility for the Community Eligibility Provision (CEP)
- Successfully reduce the risk of food insecurity and improve healthy food consumption and school achievement
- The most effective way to increase School Breakfast Program participation and to alleviate barriers to participation

Image: <https://files.ips.org/2016/02/14/try-a-hot-grab-go-breakfast-every-morning-at-the-7th-grade-entrance/>

### Slide 7 Script:

Here is our supporting evidence.

1. Firstly, Cleveland County Schools are eligible for the Community Eligibility Provision (CEP), meaning that all students, regardless of income, would be eligible to receive school breakfast at no cost each day if schools in Cleveland County opted to participate in the program (Cleveland County Nutrition Services, n.d.; No Kid Hungry NC, 2020).
2. Secondly, the School Breakfast Program has successfully reduced the risk of food insecurity, increased healthy food consumption, and improved school achievement (Bartfeld & Ahn, 2011).
3. Lastly, Breakfast in the Classroom is the most effective model to increase school breakfast participation and to alleviate barriers among eligible students, including the social stigma of having breakfast in the cafeteria, late bus arrivals, or late student drop-offs (Dillard, 2018; Ferris et al., 2022).

## REFERENCES

- Bartfeld, J. S., & Ahn, H.-M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, 141(3), 470–475. <https://doi.org/10.3945/jn.110.130823>
- Cleveland County Nutrition Services. (n.d.). Community Eligibility Provision. Cleveland County Nutrition Services. Retrieved March 24, 2022, from <https://www.clevelandcountynutrition.org/index.php?page=ClevelandCommunityEligibilityInfoPage&sid=1528144148888>
- Dillard, P. A. (2018). Educational Leaders' Perceptions of the Implementation, Benefits, and Barriers to Breakfast in the Classroom. Auburn University. January 20, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/nutrition-and-healthy-eating/eliminate-very-low-food-security-children-nws-02>
- Ferris, D., Jabbari, J., Chun, Y., & Sandoval, J. S. O. (2022). Increased School Breakfast Participation from Policy and Program Innovation: The Community Eligibility Provision and Breakfast after the Bell. *Nutrients*, 14(3), 511. <https://doi.org/10.3390/nu14030511>
- No Kid Hungry NC. (2020). 2019- 20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools.
- Potamites, E., & Gordon, A. (2010). USDA ERS - Children's Food Security and Intakes from School Meals: Final Report. USDA Economic Research Service.
- School Breakfast Report Card | Eos Foundation. (n.d.). Retrieved March 24, 2022, from <http://eosfoundation.org/school-breakfast-report-card/>
- Smith, T. A. (2017). Do school food programs improve child dietary quality? *American Journal of Agricultural Economics*, 99(2), 339–356. <https://doi.org/10.1093/ajae/aaw091>

Jaycee Reilly

## **Problem Statement**

### ***Social Determinant of Health (SDoH)***

The SDoH addressed in this proposal is Social and Community Context with the objective of reducing very low food security in children (U.S. Department of Health and Human Services, n.d.). The interpersonal relationships that one has and the community in which they live greatly affect their health outcomes. This can be especially true in children who are dependent on their caregivers to provide for their needs, such as food and shelter (U.S. Department of Health and Human Services, n.d.). For example, a child cannot control the level of food security<sup>6</sup> within their household, but their health and development can be affected by experiencing food insecurity (Holben & Marshall, 2017).

Low and very low food security, also called food insecurity, contribute to a variety of negative health outcomes. Because those experiencing food insecurity often consume less expensive but lower-quality foods in terms of nutrient density, they are at risk for malnutrition due to the inadequate intake of important nutrients (Holben & Marshall, 2017). Furthermore, a diet that is high in calories but is low in nutrients may also increase one's risk for nutrition-related chronic conditions, such as type 2 diabetes, heart disease and obesity (Feeding America, n.d.).

Children are especially vulnerable to the negative impacts of food insecurity. For example, infants are more likely to be born at a low birthweight if their mother experienced food insecurity during pregnancy (Feeding America, 2018). Additionally, children who experience food insecurity have an increased risk of stunted development, dental caries, iron-deficient anemia and asthma (Feeding America, 2018; Holben & Marshall, 2017). Along with their physical health, a child's mental health and cognitive functioning can be negatively affected as well leading to increased aggression, hyperactivity, anxiety and decreased academic success (Feeding America, 2018; Holben & Marshall, 2017).

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<sup>6</sup> Food security is defined as the access to enough food at all times to sustain an active and healthy life and is categorized into different levels. Very low food security is defined as disrupted eating patterns and reduced food intake due to a lack of money to purchase food or other resources for food (USDA, 2021).

### ***Geographical and Historical Context***

Cleveland County is located in the western region of North Carolina (NC) in the foothills of the Blue Ridge Mountains between the metropolitan areas of Charlotte and Asheville (Cleveland County, North Carolina, n.d.). Although Cleveland County is located near these larger cities, it is considered a tier 1 economically disadvantaged county (The Cleveland County Public Health Center, n.d.). In the early 20<sup>th</sup> century, the county's economy was largely based on cotton production, but by the 1970s, cotton production had decreased greatly due to foreign competition (National Park Service, n.d.). The current economy is dependent on grain farming and general merchandising (National Park Service, n.d.). The population of Cleveland County is 97,645 people and Shelby, the largest city in the county and county seat, has a population of 20,325 residents (The Cleveland County Public Health Center, n.d.). About 75.8% of the population identifies as non-Hispanic White, while 20.8% identifies as non-Hispanic Black (United States Census Bureau, n.d.).

Cleveland County residents experience higher rates of poverty, lower median household incomes and higher rates of food insecurity compared with the rest of North Carolina. 19.9% of Cleveland County residents live in poverty compared to 14.1% of North Carolinians on average. The median household income in Cleveland County is \$42,700 compared to \$53,900 throughout the state (The Cleveland County Public Health Center, n.d.). Additionally, 17% of Cleveland County households are food insecure, while 15% of North Carolinian households experience food insecurity (The Cleveland County Public Health Center, n.d.). In order to combat food insecurity within the county, the Department of Social Services provided \$28,246,670 in 2017-2018 worth of food assistance to 18,281 families and elderly or disabled adults (The Cleveland County Public Health Center, n.d.).

### ***Priority Population***

Throughout the United States, households with children are more likely to be food insecure than those without. In 2016, it was estimated that 18% of American children lived in food insecure households (Feeding America, 2018). In Cleveland County, 22% of the population consists of children 18 years old or younger and in 2019, 23.2% of children in Cleveland County were food insecure which is higher than

the previously stated county average of 17% (The Cleveland County Public Health Center, n.d.; Feeding America, 2019).

### ***Measures of Problem Scope***

Those who live in poverty are more likely to experience food insecurity because they may need to make the difficult choice to pay for rent and other expenses rather than purchasing an adequate amount of food. Like the food insecurity rate, the poverty rate among households with children at 27.5% is higher than the average poverty rate of 19.9% (The Cleveland County Public Health Center, n.d.).

Additionally, many children who are food insecure rely on free and reduced price school meals for food that they may not be getting otherwise. During the 2018-2019 school year, 57.57% of all K-12 Cleveland County students participated in the free and reduced school lunch program and 31% of those eligible participated in the School Breakfast Program (The Cleveland County Public Health Center, n.d.; No Kid Hungry, n.d.).

### ***Rationale/Importance***

The disparate rate of food insecurity among children in Cleveland County is an urgent public health issue that needs to be addressed due to the potential negative impacts it has on their physical and mental health (Holben & Marshall, 2017). Although organizations, such as Feeding Kids in Cleveland County are working to reduce food insecurity among children, larger scale interventions are needed to have a greater impact (Feeding Kids in Cleveland County, n.d.).

Furthermore, the food insecurity rate among children has only been exacerbated by the ongoing COVID-19 pandemic. Although current county-level data is unavailable, it is estimated that during the summer of 2020, the rate of food insecurity was between 18 and 35% throughout the United States (Reimold et al., 2021). This means that it is likely that the food insecurity rate among children in Cleveland County is even greater than the 2019 rate of 23.2% (Feeding America, 2019).

### ***Disciplinary Critique***

Through their training, dietitians and nutrition professionals and public health professionals are equipped with the knowledge of the importance of proper nutrition, but it is imperative for them to also



understand and work to alleviate the barriers that their clients or patients face in accessing nutrient-dense foods. Nutrition education and counseling will not be effective in improving one's nutritional status if a person does not have regular access to foods that can promote positive health outcomes (Holben & Marshall, 2017). Therefore, dietitians, nutrition professionals and public health professionals play important roles in alleviating the disparate rates of food insecurity that children in Cleveland County face through working individually with patients/clients and developing population-level programs or interventions.

## REFERENCES

- Cleveland County, North Carolina (n.d.). *About Cleveland County*. Retrieved January 16, 2022, from [https://www.clevelandcounty.com/main/government/about\\_cleveland\\_county.php](https://www.clevelandcounty.com/main/government/about_cleveland_county.php)
- The Cleveland County Public Health Center. (n.d.). *2019 Cleveland County Community Health Assessment*. Retrieved January 16, 2022, from <https://schs.dph.ncdhhs.gov/units/ldas/cha2019/2019%20Cleveland%20County%20Community%20Health%20Assessment.pdf>
- Feeding America. (n.d.). *Causes and Consequences of Food Insecurity*. Hunger and Health- Understanding Food Insecurity. Retrieved January 16, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/>
- Feeding America. (2018). *Child Food Insecurity*. Feeding America. <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-child-food-insecurity.pdf>
- Feeding America. (2019). *Child Hunger & Poverty in Cleveland County, North Carolina*. Map the Meal Gap. <https://map.feedingamerica.org/county/2019/child/north-carolina/county/cleveland>
- Feeding Kids Cleveland County. (n.d.). *Feeding Kids Cleveland County*. Retrieved March 30, 2022, from <http://www.feedingkidscc.org/>
- Holben, D. H., & Marshall, M. B. (2017). Position of the academy of nutrition and dietetics: food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, 117(12), 1991–2002. <https://doi.org/10.1016/j.jand.2017.09.027>
- National Park Service. (n.d.). *History of Shelby*. Shelby, North Carolina: A National Register of Historic Places Travel Itinerary. Retrieved January 27, 2022, from <https://www.nps.gov/nr/travel/shelby/history.htm>
- No Kid Hungry. (n.d.). *End Child Hunger in America*. Retrieved February 12, 2022, from <https://www.nokidhungry.org/>
- Reimold, A. E., Grummon, A. H., Taillie, L. S., Brewer, N. T., Rimm, E. B., & Hall, M. G. (2021). Barriers and facilitators to achieving food security during the COVID-19 pandemic. *Preventive Medicine Reports*, 23, 101500. <https://doi.org/10.1016/j.pmedr.2021.101500>
- U.S. Census Bureau. (n.d.). *QuickFacts: Cleveland County, North Carolina*. Retrieved January 16, 2022, from <https://www.census.gov/quickfacts/clevelandcountynorthcarolina>
- USDA. (2021, September 8). *Food Security in the U.S.* Economic Research Service-USDA. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/>
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>

## **Implementation Plan**

### ***Background Information***

The Social Determinant of Health (SDoH) being addressed is Social and Community Context with the objective of eliminating very low food insecurity<sup>7</sup> in children (U.S. Department of Health and Human Services, n.d.). Children are dependent on their caregivers for support and to meet basic needs. When children lack social support, they may experience different SDoHs, such as food insecurity (U.S. Department of Health and Human Services, n.d.). People experiencing food insecurity often opt for low-cost, nutrient deficient food, putting them at increased risk for nutrition-related chronic conditions, such as type 2 diabetes and heart disease (Feeding America, n.d.). Additionally, food insecurity negatively impacts a child's development and physical and mental health outcomes leading to an increased risk of dental caries, iron-deficient anemia, asthma, aggression, hyperactivity, anxiety and decreased academic success (Feeding America, 2018; Holben & Marshall, 2017).

Cleveland County, North Carolina is categorized as a tier 1 economically disadvantaged county (The Cleveland County Public Health Center, n.d.). Compared to the North Carolina averages, residents of Cleveland County are more likely to earn lower median household incomes and experience poverty and food insecurity (The Cleveland County Public Health Center, n.d.). Furthermore, households with children generally experience food insecurity at higher rates than households without. In Cleveland County, 23.2% of children were food insecure in 2019, which is higher than the statewide average of 18.3% (Feeding America, 2019).

### ***Purpose***

Many school-aged children living in food insecure homes rely on free or reduced-price school meals for sustenance, but a number of children who could benefit from federally funded school nutrition programs, such as the School Breakfast Program (SBP) and the National School Lunch Program (NSLP), do not

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<sup>7</sup> Food security is defined as the access to enough food at all times to sustain an active and healthy life and is categorized into different levels. Very low food security is defined as disrupted eating patterns and reduced food intake due to a lack of money to purchase food or other resources for food (USDA, 2021).

participate due to a variety of barriers (No Kid Hungry, n.d.). Increasing the utilization of these programs has the potential to reduce food insecurity among children because children will have increased access to meals that they may not have had previously (Bartfield & Kim, 2010). During the 2018-2019 school year, 57.57% of all Kindergarten to 12th grade Cleveland County students participated in the free and reduced school lunch program and Cleveland County had a 31% participation rate in the SBP (The Cleveland County Public Health Center, n.d.; No Kid Hungry, n.d.). The SBP is underutilized because there is stigma associated with participating, and students face difficulties in arriving to school early to eat breakfast (No Kid Hungry, n.d.). Innovative SBP models, such as Breakfast after the Bell (BatB), alleviate the barriers that students experience by serving school breakfast during the regular school day instead of earlier in the day. Additionally, the programs reduce the stigma around free meals if all of the children in school have the opportunity to eat together (No Kid Hungry, n.d.). Different BatB models include Breakfast in the Classroom (BIC), Second-Chance Breakfast and Grab-and-Go. Compared to the other models, BIC may have the greatest impact on utilization as it has been shown to increase participation up to 88% while the other programs are associated with an increase in participation of up to 58% and 59%, respectively (No Kid Hungry, n.d.).

### ***Evidence Based Outcomes***

#### **Short-term outcome objectives.**

Due to the implementation of the BatB Program, participation in the SBP will increase from 31% in 2019 to 60% within two years, since similar programs have seen an increase up to 88% (No Kid Hungry, n.d.). Additionally, the children participating in the program will have improved micronutrient intake since regular breakfast consumption is associated with increased levels of Iron, Vitamin B and Vitamin D (Adolphus et al., 2013).

#### **Long-term impacts.**

In 5 to 10 years, participation in the SBP will increase to 80% and Cleveland County Public Schools will see an improvement in academic performance that is associated with regular breakfast consumption (Adolphus et al., 2013).

### ***Strategies and Activities***

In the BIC model, free breakfast will be distributed to eligible children in grades Kindergarten through 12 in all Cleveland County public schools. To implement the program, cafeteria staff would prepare the breakfasts as they did in the previous SBP model and they would deliver the meals to each classroom (FRAC, n.d.). The meals would be distributed at the start of the school day or during homeroom for middle and high school students. The teachers would be responsible for supervising students during breakfast time and children will discard waste in trash bins located in the classroom (FRAC, n.d.).

This program addresses the different levels of the Social Ecological Framework (SEF). Firstly, it addresses the individual level by directly providing the children with a nutritious meal each day. Secondly, it addresses the interpersonal connections level because children would receive social support from teachers and school staff through provision of meals. Thirdly, since it is a school-wide program, it influences a child's "working conditions" at school. Lastly, it would be an improvement to the federally funded SBP which would influence the regional and national level of the SEF.

### ***Stakeholders***

Important stakeholders involved in the planning and implementation process of this program include the families and children experiencing food insecurity, the Cleveland County Public School district, No Kid Hungry NC and the Cleveland County Public Health Department. Since children experiencing food insecurity are the priority population for this intervention, it is important that they are engaged throughout the implementation of the program and planning process. Within the school system, the School Board, Parent-Teacher Association (PTA), cafeteria staff and teachers will be involved in planning a Breakfast Before the Bell program that benefits participants and does not burden the schools. Furthermore, No Kid Hungry NC is an important stakeholder to engage since they already work to reduce food insecurity among children in Cleveland County. During the planning process, stakeholders from the various groups will meet to share their lived experiences and visions and ideas for the program.

### ***Budget***

The program will be funded through a grant from No Kid Hungry who provides grants to schools and community centers working to implement BatB and other school nutrition programs (No Kid Hungry, n.d.). Since Cleveland County Schools already have a SBP, the money will be utilized to cover any additional supplies, personnel or overhead needed for a BatB program. Additional supplies may include carts and ice needed to transport the meals to the classroom (No Kid Hungry, n.d.). Already employed cafeteria staff will deliver the meals. If additional help is needed, the grant will be used to pay additional personnel. The meals for the children will continue to be reimbursed through the United States Department of Agriculture (USDA) (No Kid Hungry, n.d.).

### ***Conclusion***

When considering different program options to reduce food insecurity among children in Cleveland County, equity was highly valued since households with children already experience disparate rates of food insecurity compared to households without children (Feeding America, 2019). The BIC model of the BatB program provides equitable access to the SBP and reduces barriers and stigma associated with participation. Although this program helps children access breakfast, it does not address food insecurity among students during the weekends, summer, or holiday breaks. Nevertheless, it is an opportunity to impact many school-aged children in Cleveland County.

## REFERENCES

- Adolphus, K., Lawton, C. L., & Dye, L. (2013). The effects of breakfast on behavior and academic performance in children and adolescents. *Frontiers in human neuroscience*, 7, 425. <https://doi.org/10.3389/fnhum.2013.00425>
- Bartfeld, J., & Kim, M. (2010). Participation in the School Breakfast Program: new evidence from the ECLS-K. *The Social Service Review*, 84(4), 541–562. <https://doi.org/10.1086/657109>
- The Cleveland County Public Health Center. (n.d.). *2019 Cleveland County Community Health Assessment*. Retrieved January 16, 2022, from <https://schs.dph.ncdhhs.gov/units/ldas/cha2019/2019%20Cleveland%20County%20Community%20Health%20Assessment.pdf>
- Feeding America. (n.d.). *Causes and Consequences of Food Insecurity*. Hunger and Health- Understanding Food Insecurity. Retrieved January 16, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/>
- Feeding America. (2018). *Child Food Insecurity*. Feeding America. <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-child-food-insecurity.pdf>
- Feeding America. (2019). *Child Hunger & Poverty in Cleveland County, North Carolina*. Map the Meal Gap. <https://map.feedingamerica.org/county/2019/child/north-carolina/county/cleveland>
- FRAC (n.d.). *How it Works: Making Breakfast Part of the School Day*. [https://frac.org/wp-content/uploads/how\\_it\\_works\\_bic\\_fact\\_sheet.pdf](https://frac.org/wp-content/uploads/how_it_works_bic_fact_sheet.pdf)
- Holben, D. H., & Marshall, M. B. (2017). Position of the academy of nutrition and dietetics: food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, 117(12), 1991–2002. <https://doi.org/10.1016/j.jand.2017.09.027>
- No Kid Hungry. (n.d.). *End Child Hunger in America*. Retrieved February 12, 2022, from <https://www.nokidhungry.org/>
- No Kid Hungry NC. (n.d.). *2019-20 North Carolina School Breakfast Program Fact Sheet Cleveland County Schools*. Retrieved February 12, 2022, from [http://nokidhungrync.org/wp-content/uploads/2020/07/October-2019-North-Carolina-School-Breakfast-Program-Fact-Sheet\\_Cleveland-County-Schools.pdf](http://nokidhungrync.org/wp-content/uploads/2020/07/October-2019-North-Carolina-School-Breakfast-Program-Fact-Sheet_Cleveland-County-Schools.pdf)
- Reimold, A. E., Grummon, A. H., Taillie, L. S., Brewer, N. T., Rimm, E. B., & Hall, M. G. (2021). Barriers and facilitators to achieving food security during the COVID-19 pandemic. *Preventive Medicine Reports*, 23, 101500. <https://doi.org/10.1016/j.pmedr.2021.101500>
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>

## **Evaluation Plan**

### ***Intervention Summary***

The Social Determinant of Health (SDoH) addressed is Social and Community Context with the objective of eliminating very low food security<sup>8</sup> in children (U.S. Department of Health and Human Services, n.d.). Residents of Cleveland County are more likely to earn lower median household incomes and experience poverty and food insecurity compared to those who reside in other parts of the state (The Cleveland County Public Health Center, n.d.). The median Cleveland County household income is \$42,700, while the median North Carolina household income is \$53,900 and the county poverty rate is 19.9%, while the statewide rate is 14.1%. (The Cleveland County Public Health Center, n.d.). In Cleveland County, 23.2% of children were food insecure in 2019, compared to 18.3% of children throughout the state (Feeding America, 2019).

Many children living in food insecure homes rely on federally funded school nutrition programs, such as the School Breakfast Program (SBP) to provide meals that they would otherwise not have access to, but these programs are greatly underutilized due to a variety of barriers (No Kid Hungry, n.d.). For example, many students are not able to participate in the SBP because they are unable to arrive at school early enough to receive this meal (No Kid Hungry, n.d.). Thus, implementing an alternate model of the SBP, such as Breakfast in the Classroom (BIC), where breakfast is served during the regular school day in the classroom may allow for greater utilization of the SBP, as it has been found to increase participation up to 88% in other schools around the United States (No Kid Hungry, n.d.).

### ***Study Design/Data Collection***

Before the implementation of the program, baseline measurements of perceived level of food security, current utilization of the SBP and demographic data of participants will be measured through a survey, which will be adapted from the USDA Six-Item Short Form Food Security Module (see appendix

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<sup>8</sup> Food security is defined as the access to enough food at all times to sustain an active and healthy life, while very low food security is defined as disrupted eating patterns and reduced food intake at times during the year due to a lack of money to purchase food or other resources for food (USDA, 2021).



for example), that program staff will distribute via mail to the households of all enrolled children in the Cleveland County Public School District. In addition to the six questions regarding perceived level of household food security, information collected will include age, sex, gender identity, race/ethnicity (of child), current utilization of SBP, and consumption of breakfast from the SBP. This survey This will provide quantitative data on the current utilization of the program. Two years after the implementation of the program, the same survey will be distributed again to all households for endline measurements. Additionally, during the six months before the start of the program, staff will measure the number of breakfasts distributed daily to children during the current SBP and then compute an average. During the implementation of the BIC model of the SBP, staff will measure the number of breakfasts distributed daily and calculate an average at the endline.

### ***Sampling Strategy***

The study sample will include all children enrolled in the Cleveland County Public School kindergarten through 12<sup>th</sup> grade who received school breakfast from the SBP.

### ***Specific Measures***

The outputs of the program measured will include the number of breakfasts served in the classroom, the number of surveys completed at baseline and at endline, and the number of children served in the Cleveland County Public Schools. The outcomes measured will include the change in overall participation in the SBP.

### ***Analysis Plan***

To analyze the data collected, a paired t-test can measure the difference in average breakfasts distributed before and after the implementation of the BIC program. The difference in perceived food security before and after the intervention will also be measured based on survey results and analyzed by using an odds difference to compare baseline and endline results.

### ***Timeline***

The program timeline is three years long. The first six months will be utilized to prepare for the implementation of the program such as hiring extra personnel or purchasing extra equipment.

Additionally, this preparation period is when baseline data will be collected and analyzed. The program will be implemented for two years. After two years of implementation, the final six months of the timeline will be utilized to analyze end line data that will be collected and to do the final analysis and program evaluation. Lastly, results of the program evaluation will be distributed or made available for key stakeholders.

### ***Sources of Funding***

To fund this program, a grant from No Kid Hungry would be used to cover the costs of extra supplies needed. Grants from No Kid Hungry tend to range from \$8,000-12,000 and this money would be used to purchase carts, ice, and containers to keep the breakfasts fresh during the distribution process (No Kid Hungry, n.d.). Those preparing and distributing the food would be already employed cafeteria workers and teachers would be responsible to monitor the children during the BIC. Additionally, these meals are already reimbursable through the USDA.

### ***Data Use and Dissemination***

After the data is analyzed, results of the surveys and changes in participation in the SBP will be made available to the stakeholders including the families of children participating in the SBP, the school and cafeteria faculty and staff, the Cleveland County Public Health Department and No Kid Hungry in a few different ways. First, results will be made public on the website for the Cleveland County Public School System. Additionally, data will be available on the No Kid Hungry North Carolina website as well. Lastly, the results showing the efficacy of the program will be presented to key stakeholders through social media posts and at a final Community Advisory Board (CAB) meeting.

### ***Strengths and Challenges***

This intervention presents a variety of both strengths and challenges in its implementation and evaluation. The main strength of this program is that it is an evidence-based intervention as it has been shown to increase participation rates of the SBP in other school districts to up to 88%. Additionally, an intervention targeting breakfast consumption is important as regular breakfast consumption has been shown to be associated with increased levels of Iron, Vitamin B and Vitamin D (Adolphus et al., 2013).

Conversely, one major challenge in this intervention is the ability to gauge the amount of breakfast consumed. It is possible that children may receive the breakfast and not consume all or enough of the meal. For this reason, we are asking in our survey of the households how much of the meal the child typically consumes if they participate in the SBP. Another option to gauge this would be to measure food waste, but this could add extra burden on personnel as specific waste bins would have to be used for the food not consumed during the BIC program.

**Appendix A: Six-Item Short Form Food Security Survey Module (USDA, 2012)**

**[Begin Six-Item Food Security Module]**

Transition into Module :

These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.

FILL INSTRUCTIONS: Select the appropriate fill from parenthetical choices depending on the number of persons and number of adults in the household.

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, “The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or Refused

HH4. “(I/we) couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?

Often true

Sometimes true

Never true

DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

Yes

No (Skip AD1a)

DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

Yes

No

DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

Yes

No

DK

**[End of Six-Item Food Security Module]**

## REFERENCES

- Adolphus, K., Lawton, C. L., & Dye, L. (2013). The effects of breakfast on behavior and academic performance in children and adolescents. *Frontiers in human neuroscience*, 7, 425. <https://doi.org/10.3389/fnhum.2013.00425>
- The Cleveland County Public Health Center. (n.d.). *2019 Cleveland County Community Health Assessment*. Retrieved January 16, 2022, from <https://schs.dph.ncdhhs.gov/units/ldas/cha2019/2019%20Cleveland%20County%20Community%20Health%20Assessment.pdf>
- Feeding America. (2019). *Child Hunger & Poverty in Cleveland County, North Carolina*. Map the Meal Gap. <https://map.feedingamerica.org/county/2019/child/north-carolina/county/cleveland>
- No Kid Hungry. (n.d.). *End Child Hunger in America*. Retrieved February 12, 2022, from <https://www.nokidhungry.org/>
- USDA. (2021, September 8). *Food Security in the U.S.* Economic Research Service-USDA. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/>
- USDA. (2012, September). *Six-Item Food Security Module*. <https://www.ers.usda.gov/media/8282/short2012.pdf>
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>

## Individual Presentation Slides

### Slide 2

# Social Determinant of Health (SDoH)

## Social and Community Context <sup>1</sup>



Objective: Eliminate **very low food security** among children

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### Slide 2 Script:

First, I wanted to introduce what Social Determinants of Health (SDoH) are and how they affect Cleveland County. Social Determinants of Health are non-medical factors that can impact one's health. This intervention that we are presenting today aims at targeting the SDoH of the Social and Community Context with the objective of decreasing very low food security among children.

### Slide 3

## Food Insecurity<sup>2, 3, 4</sup>

- Among **adults**, can increase the risk of:
  - Malnutrition,
  - Type 2 diabetes
  - Heart disease
  - Obesity
- Among **children**, can increase the risk of:
  - Stunted development,
  - Dental caries,
  - Anemia
  - Asthma
  - Increased aggression
  - Hyperactivity
  - Anxiety
  - Decreased academic success



### Slide 3 Script:

What is food security? Food security is defined as the access to enough food at all times to sustain an active and healthy life. Low or very low food security, also called food insecurity can increase the risk of negative health outcomes in adults and children. Among adults, it is associated with an increased risk of malnutrition, type 2 diabetes, heart disease, and obesity. Childhood exposure to food insecurity can increase the risk of stunted development, dental caries, anemia, asthma, increased aggression, hyperactivity, anxiety and decreased academic success.




## Slide 4

Image source: <https://go.unc.edu/Ex5j3>

# Cleveland County

- Located in Southwestern NC
- Population: 97,645 <sup>5</sup>
  - 75.8% non-Hispanic White
  - 20.8% non-Hispanic Black <sup>6</sup>
- Economy based in general merchandising and grain farming <sup>7</sup>
- 16.4% of residents are food insecure vs. 13.5% of NC residents
- 23.3% of children under 18 were food insecure vs. 18.3% of NC children <sup>8</sup>



### Slide 4 Script:

Cleveland County is located in the southwestern region of North Carolina between the cities of Charlotte and Asheville. Cleveland County's economy is largely based in general merchandising and grain farming. Cleveland County is considered a tier 1 economically disadvantaged county as residents of Cleveland County experience higher rates of poverty compared to their counterparts in the rest of the state. Furthermore, Cleveland county residents experience higher rates of food insecurity. In general, households with children experience higher rates of food insecurity and this is true for those in Cleveland county as you can see from the statistics presented on this slide.

## REFERENCES

- Cleveland County, North Carolina (n.d.). *About Cleveland County*. Retrieved January 16, 2022, from [https://www.clevelandcounty.com/main/government/about\\_cleveland\\_county.php](https://www.clevelandcounty.com/main/government/about_cleveland_county.php)
- The Cleveland County Public Health Center. (n.d.). *2019 Cleveland County Community Health Assessment*. Retrieved January 16, 2022, from <https://schs.dph.ncdhhs.gov/units/ldas/cha2019/2019%20Cleveland%20County%20Community%20Health%20Assessment.pdf>
- Feeding America. (n.d.). *Causes and Consequences of Food Insecurity*. Hunger and Health- Understanding Food Insecurity. Retrieved January 16, 2022, from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/>
- Feeding America. (2018). *Child Food Insecurity*. Feeding America. <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-child-food-insecurity.pdf>
- Feeding America. (2019). *Child Hunger & Poverty in Cleveland County, North Carolina*. Map the Meal Gap. <https://map.feedingamerica.org/county/2019/child/north-carolina/county/cleveland>
- Holben, D. H., & Marshall, M. B. (2017). Position of the academy of nutrition and dietetics: food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics*, 117(12), 1991–2002. <https://doi.org/10.1016/j.jand.2017.09.027>
- U.S. Census Bureau. (n.d.). *QuickFacts: Cleveland County, North Carolina*. Retrieved January 16, 2022, from <https://www.census.gov/quickfacts/clevelandcountynorthcarolina>
- U.S. Department of Health and Human Services. (n.d.). *Social and Community Context*. Healthy People 2030. Retrieved January 30, 2022, from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/social-and-community-context>