
**A MONITORING AND EVALUATION PLAN:
THE CONETOE FAMILY LIFE CENTER**

By

Natalie Bent Kitaif

A paper presented to the faculty of The University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of (Master of Science in) Public Health in the Department of Maternal and Child Health.

Chapel Hill, N.C.

April 7, 2016

Approved by:

Tamas Rószk Kulk 4/6/2016

First Reader

Barden Fuller 4/7/2016

Second Reader



CONETOE
FAMILY LIFE CENTER

Conetoe Family Life Center

“Change the children by education and opportunity = Change for the family.”

Monitoring and Evaluation Plan

April 7, 2016

Natalie Bent Kitaif
Master’s Candidate, Maternal and Child Health

Contents

1. Introduction	2
2. Program Overview	2
2.1. Background	2
2.2. Description of Setting	4
2.3. Description of Program	5
2.4. Problem Statement	6
2.5. Goals and Objectives	8
2.6. Conceptual Framework	9
2.7. Logic Model	10
3. Indicators	11
3.1. Indicators Matrix	11
3.2. Indicator Reference Sheets	15
3.3. Information Sources	16
4. Stakeholder Engagement Plan	17
5. Outcome Monitoring	18
6. Feasibility of Cost-Effectiveness Analysis	18
7. Program Expansion	19
8. Dissemination and Use of Information	20
9. References	21
10. Appendix A	23

1. Introduction

Monitoring and Evaluation (M&E) plans are an essential, though often neglected, tool for public health interventions. M&E plans provide a clear and structured outline of the goals and objectives of a particular program. Additionally, they clarify the types of data and method of collection that will be necessary to analyze the program's success. Assessment of a program's progress and the extent to which its goals are being achieved is valuable to both internal and external stakeholders alike. For programs that rely on external funding, having data to demonstrate their success can be critical for securing such funds.

This document outlines an M&E plan for the Conetoe Family Life Center, whose mission is to break the cycle of poverty and disease in their community through a unique intervention which utilizes community gardening and youth empowerment.

2. Program Overview

2.1 Background

Childhood obesity is one of the greatest public health concerns in the United States: prevalence of childhood overweight tripled between 1980 and 2000 (1). This increase has resulted in the classification of 12.7 million children and adolescents aged 2-19 (17.5% of this population) as obese, defined as having a body mass index at or above the 95th percentile of the sex –specific BMI-for-age growth charts (2). The adverse health outcomes associated with childhood obesity are numerous, including Type 2 diabetes, hypertension and other cardiovascular abnormalities, nonalcoholic fatty liver disease, and more (1). Further, while childhood obesity is mildly predictive of adult obesity, adolescent obesity is highly predictive; indicating the importance of developing and implementing initiatives to combat obesity before youth transition to adulthood (3). In fact, this transitional period has been demonstrated to be a period of increased risk for development of obesity in both males and females and across all ethnic groups, though the trend was especially pronounced in non-Hispanic blacks and older youth (3). As evidenced by a growing body of literature, race, as well as poverty, education, and rurality are all associated with increased risk for obesity (2,4,5,6).

Health disparities between white and non-white Americans are a great area of concern for public health practitioners. A vast body of literature demonstrates that the prevalence of obesity among non-white children and adolescents greatly exceeds that among white children and adolescents: in a systemic review, combined prevalence among both genders aged 6-19 was 28.2% among whites, 35.4% among blacks, and 39.9% among Mexican-Americans (4,7). This translates to a prevalence of obesity that is 25% and 41% higher among non-Hispanic black and Mexican-American youth, respectively, than among non-Hispanic white youth (7). Additionally, emergence of type 2 diabetes, a known comorbidity of obesity, is observed at disproportionately higher rates among black, Latino, and Native American youth, with incidence rates (per 100,000 person-year) of 5.6, 19.4, and 17 among non-Hispanic white, non-Hispanic black, and Hispanic youth, respectively (4,8). These disparities indicate a need for targeted interventions that consider the social and historical context unique to populations of color.

In addition to race, poverty is a reliable indicator for obesity. Low-income households are often identified as food insecure, defined as having: “reduced access to affordable, nutritious, culturally appropriate food caused by structural inequities.” (9, p.79,10) Food insecurity impacts 19.5% of households with children nationwide (10). Contrary to earlier generations’ perception of poverty as being associated with underweight and malnutrition, the rise in availability of low-cost, highly processed foods has resulted in low-income children and families having greater access to low-quality, nutritionally deficient foods rather than high-quality, nutritionally dense foods (9,10).

Rurality is another predictor for obesity – studies have demonstrated that there is a higher prevalence of childhood obesity in rural areas compared to urban areas, and that children living in rural areas have greater odds of being obese than their urban counterparts (11). Indeed, one systematic review found that pooled odds ratios indicated that rural children have 26% greater odds of being obese than children living in urban areas, despite evidence that children living in rural areas are more physically active than children living in urban areas (11). This conflict between physical activity

levels and prevalence of childhood obesity in rural areas indicates that there are myriad factors contributing to an individual’s risk for obesity.

The problem of childhood obesity is much more complex than a simple physiological issue of an excess of caloric intake. A substantial body of literature demonstrates that the factors of race, poverty, and rurality have a direct and compounding effect on a child’s likelihood of developing obesity. In light of this, programs that cater specifically to at-risk populations, such as rural, low-income, black youth, are critical to curbing the upward trend of obesity and preventing future negative health outcomes.

2.2 Description of Setting

Conetoe, North Carolina, population 300, is a small rural community located in the Eastern part of the state (12). Situated in Edgecombe County, Conetoe has an agricultural history, though much of the land previously used to grow cotton is now un- or under-utilized (13). Like many rural communities in the United States, Conetoe faces challenges of poverty, access to healthcare, chronic disease, and food access (14) This chart, based on data from the 2015 North Carolina County Health Rankings and Roadmaps, highlights a sample of the challenges facing Edgecombe county in relation to the rest of North Carolina.

<i>Measure</i>	<i>Edgecombe</i>	<i>NC Average</i>	<i>Difference</i>
<i>Median household income</i>	\$33,080	\$45,946	28% ↓
<i>Children eligible for free lunch</i>	86%	44%	95% ↑
<i>Children in poverty</i>	46%	25%	84% ↑
<i>Food insecurity</i>	26%	19%	37% ↑
<i>Diabetes</i>	15%	11%	37% ↑
<i>High school graduation</i>	80%	81%	1.25% ↓
<i>Some College</i>	49.3%	63.8%	23% ↓
<i>Unemployment</i>	13.4%	8%	67.5% ↑

Of North Carolina’s 100 counties, Edgecombe ranks 86th in overall health outcomes, 94th in health behaviors and 99th in social and economic factors (14). There is not a single primary care clinic in Conetoe, and Edgecombe county has a ratio of population to primary care physicians of 3,109:1, well over twice the overall state ratio of 1,448:1 (14). There is no grocery store in Conetoe, and it has been identified as a food

desert, lacking adequate access to fresh, affordable food (15). The lack of food access, as well as food insecurity as a result of high levels of poverty and unemployment, have resulted in a community that is experiencing rates of obesity, chronic illness, and death at alarmingly high rates.

2.3 Description of Program

The Conetoe Family Life Center is a nonprofit, faith-based organization located in Conetoe, NC. The CFLC was founded in 2007 by Reverend Richard Joyner, of the Conetoe Missionary Baptist Church, where the CFLC is housed. The CFLC was inspired by the problems of obesity, chronic disease, and poverty facing the congregation and the town of Conetoe. Reverend Joyner had observed a distressing mortality rate upon his arrival to the community: in one year, 30 congregants younger than 32 had died, mostly from complications related to hypertension, diabetes, and other chronic diseases (13,16). The CFLC's stated mission is:

“to improve the health of the youth and community by increasing access to healthy foods, increasing physical activities and providing access to health services. The goal is to change the poverty cycle in families through improving the resources available to families, specifically children. ‘Change the children by education and opportunity = Change for the family.’” (17)

In an attempt to break the cycle of disease, poverty, and premature death, the CFLC's program focuses on youth empowerment and agricultural components, including vegetable production and beekeeping. What began in 2007 as a small community garden has now expanded to fifteen plots of land, including four fields, two greenhouses, and 150 beehives.

The youth, aged 4-16, enrolled in the program attend after-school sessions four days per week, and often attend community gardening sessions on weekends. Additionally, there is a summer program intended to keep enrollees engaged with the program and out of trouble during the summer months. Though guided by adult leaders with expertise in farming and beekeeping, youth are responsible for planning, planting, and harvesting produce. Through their agricultural activities, they learn and practice science, math, food production, marketing, and entrepreneurial skills. They learn

cooking techniques to help encourage their families and others in the community to reduce salt, sugar, and fat intake – for example, learning to season collards using garlic and other herbs rather than the traditional lard or fatback. The beekeeping aspect of the program, as well as their unique “Bee Bus” (an old school bus upcycled into a mobile beehive) was conceived of and executed by the youth, many of whom have gone on to earn their Master Beekeeper certification. In addition to their agricultural duties, youth are provided with help and guidance on their schoolwork, and time is reserved to ensure that youth are succeeding academically so they have the opportunity to seek higher education.

The nearly 50,000 pounds of produce harvested annually from the program is mostly donated - to community families, assisted living facilities, and hospitals. The portion that is not donated is sold from a mobile farm stand and through Community Supported Agriculture (CSA) subscriptions. The proceeds from these sales are invested in a scholarship fund for the program’s participants. Additionally, the honey produced and marketed by the participants is sold in grocery stores as far away as Raleigh, with profits from that endeavor also invested in the scholarship fund.

2.4 Problem Statement

The Conetoe Family Life Center is a unique, grassroots program with the potential to break the cycle of poverty and poor health for its participants. Many previous efforts to combat childhood obesity have involved a “top-down” approach, in which an expert (generally a public health practitioner or other health care professional) enters a community and designs an intervention before seeking input from community stakeholders (9). However, research has demonstrated that health interventions which utilize community organizing can have more effective long-term health outcomes (9,18). In this context, community organizing is defined as,

“grassroots movements that empower and mobilize individuals to act in their own collective self-interest to address community health problems by altering the balance of power, resource distribution, and policy decision-making in their environments. Thus, community groups are united to identify, nurture, and realize their shared health-related values, interests, and goals” (9, p80).

Additionally, there has been growing evidence that health interventions specifically targeted at childhood obesity fare better when they engage children in exercising their limited autonomy to make their own food and physical activity choices (18). Conetoe has already embraced this cutting edge model, and the growth and success experienced by the program thus far has been fueled by investments of time and labor from community stakeholders. Monitoring and evaluation of this program will provide data to represent their progress, and to identify their areas of strength and weakness in order to continue their expansion and improve Conetoe's long-term population health.

2.5 Goals and Objectives

1. To reduce the burden of childhood obesity and its related comorbidities on the population of Conetoe, NC.

To	Reduce the rate of childhood obesity among CFLC members
The	Number of program participants classified as overweight/obese will decrease
From	from 60% to 15%
By	2020

To	Increase exposure to health benefits inherent in program participation (access to nutritious foods, physical activities)
The	Percentage of participants attending at least 3 weekday sessions and 1 weekend session will increase
From	70% to 100%
By	2020

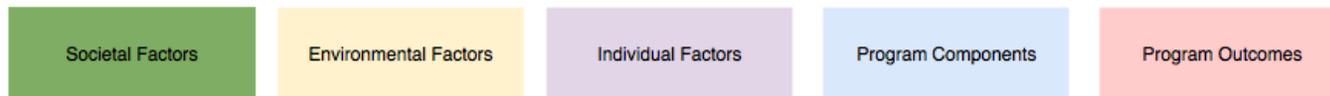
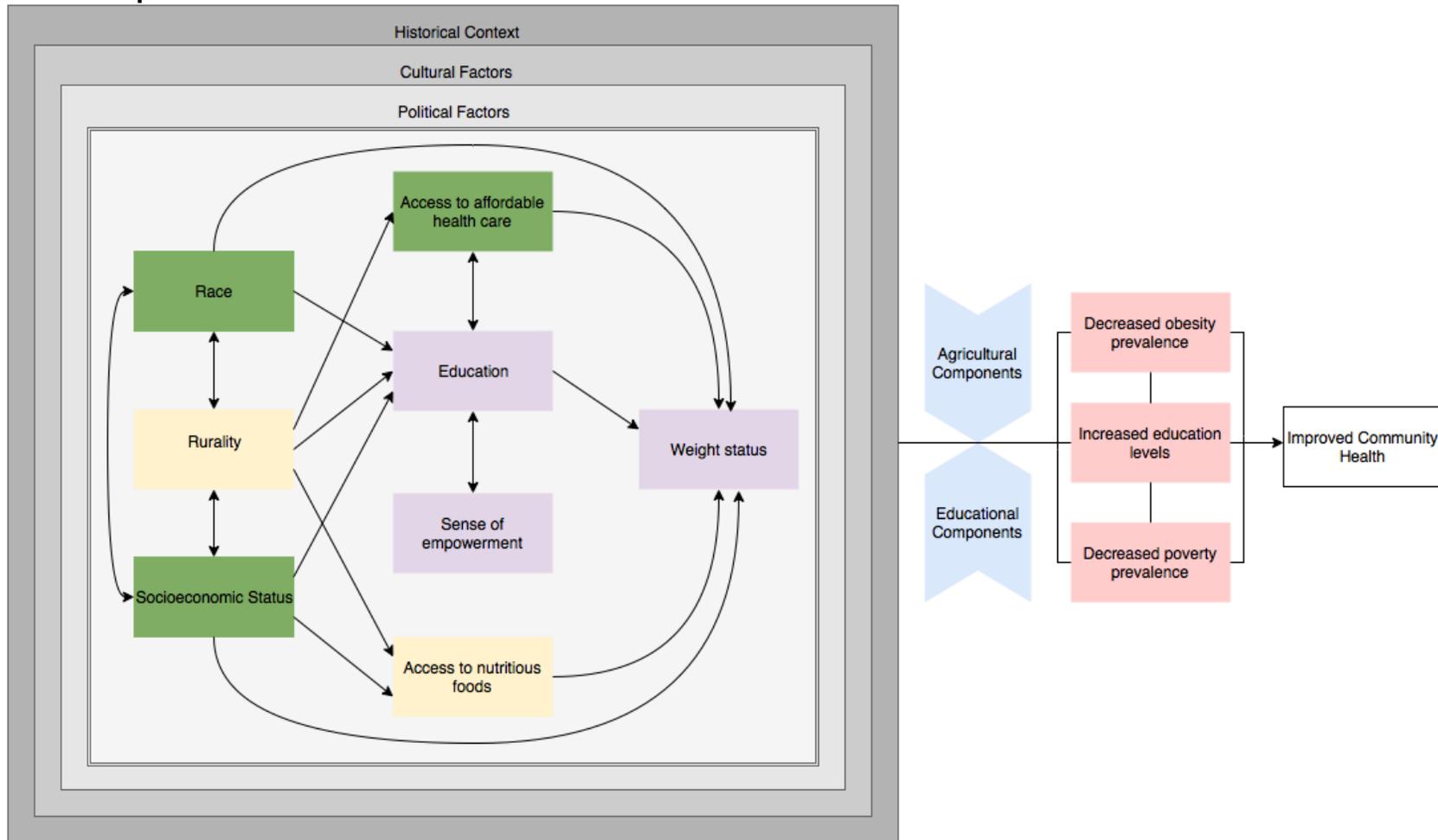
2. To empower youth to seek academic and economic opportunities.

To	Increase opportunities for academic advancement
The	Percentage of program participants who make the honor roll will increase
From	from 45% to 85%
By	2020

To	Improve opportunities for academic and economic advancement
The	Percentage of program participants who graduate high school or equivalent will increase from
From	80% to 100%
By	2020

To	Improve opportunities for academic and economic advancement
The	Number of program participants that seek higher education <ul style="list-style-type: none"> • Bachelor's degree • Technical degree • Technical certificate
From	70% to 90%
By	2020

2.6 Conceptual Framework



2.7 Logic Model

Input	Activities	Outputs (short term)	Outcomes (intermediate)	Impacts (long term)
<ul style="list-style-type: none"> • Community members • Community partnerships • Youth Development leaders • Time/Scheduling • Funding • Physical Space <ul style="list-style-type: none"> ○ Classroom space ○ Kitchen space ○ Agricultural space • Agricultural resources <ul style="list-style-type: none"> ○ Seeds ○ Soil ○ Equipment • Groceries for meals, snacks, and cooking lessons 	<ul style="list-style-type: none"> • Agricultural activities & lessons <ul style="list-style-type: none"> ○ Planning ○ Planting ○ Tending ○ Harvesting ○ Beekeeping ○ Distribution ○ Marketing ○ Accounting • Food Preparation & Education <ul style="list-style-type: none"> ○ Cooking ○ Eating nutritious meals and snacks • Homework, homework assistance, and tutoring. 	<ul style="list-style-type: none"> • Youth have access to nutritious food • Youth are trained in agriculture • Youth have assistance with school work • Community partnerships established 	<ul style="list-style-type: none"> • Reduced obesity in CFLC youth • Improved academic performance in youth • Increased application & acceptance to higher education by youth 	<ul style="list-style-type: none"> • Reduced obesity in Edgecombe County • Reduced poverty among former participants

3. Indicators

3.1 Indicators Matrix

Please see Appendix A for indicator reference sheets for specific indicators*

		Data Source(s)	Frequency	Comments	
	Outputs	Indicators			
Youth Participants		# of youth in program	CFLC records	Quarterly	Because this program operates in a small community, frequent assessment of enrollment will be necessary to ensure program success. Additionally, all data collected quarterly will be aggregated annually for analytical purposes.
		# of days per week participants are present	CFLC time logs	Quarterly	
		Duration of participation in months	CFLC records	Annually	This information can eventually be used to determine the impact duration of participation has on participants.
Youth have access to nutritious food*		# of enrolled youth attending at least 4 days/week*	CFLC time logs	Quarterly	Because youth prepare and eat nutritious meals and snacks on the days they attend the program, this will serve as a cost-effective proxy for nutritional intake. It can be inferred that on the days they attend, they consume at least one nutritious meal.
		# of hours spent on food preparation per participant	CFLC time logs	Quarterly	Youth will log hours in the program spent on different components. By assessing quarterly, Program

					Leaders can ensure that youth are benefiting from all program aspects.
Youth are trained in agriculture	Average hours worked on agricultural activities per participant	CFLC time logs	Quarterly		
	# of youth who obtain Master Beekeeper certification	CFLC records	Annually		
	Average pounds of produce harvested	CFLC records	Annually		
	Dollar sales of harvest	CFLC records	Quarterly	Tracking sales will allow the program to assess the potential funds for scholarships.	
	Dollar sales of honey	CFLC records	Quarterly		
Youth have assistance with schoolwork	# of hours spent on schoolwork per participant	CFLC time sheets	Quarterly		
Community partnerships established	# of community partners	CFLC records	Annually	Community partners are essential for grassroots programs like this to secure funding, equipment, and more.	

		Level of satisfaction with program among community partners	Evaluation forms, Interviews	Bi-annually	Ensuring partner satisfaction is essential for their continued support.
	Outcomes	Indicator			
Short Term	Reduced obesity in CFLC youth*	# of youth with healthy BMI for age*	CFLC medical assessments	Bi-annually	The Tar River Mission Clinic partners with the CFLC to provide health care services to those in need in the community. Assessing bi-annually will allow for monitoring.
	Improved academic performance in youth	# of enrolled youth achieving honor roll	School records	Bi-annually, at the end of Fall and Spring semesters	
		# of enrolled youth scoring at or above grade level on standardized tests	School records	Annually	
		Perception of academic success by participant's teachers	Evaluation forms, Interviews	Bi-annually, at the end of Fall and Spring semesters	Because of the extreme lack of resources in this community it will be important to evaluate not only academic performance based on the state's standardized testing, but also through a more qualitative lens – for example, if a 12-year-old participant enters the program reading at a third grade level, but make significant progress while

					participating, it will be important to distinguish their progress even if it does not reach their specific grade level goals.
	Increased access to higher education	# of enrolled youth that take SAT/ACT	CFLC records	Annually	Self-reporting will be a cost-effective way to obtain this information, and due to the small size of the community, validity in reporting is highly likely.
		# of enrolled youth that apply to higher education	CFLC records	Annually	
		# of youth accepted to higher education institutions	CFLC records	Annually	
		# of scholarships distributed	CFLC records	Annually	
Intermediate	Reduced obesity in Edgecombe county	Adult obesity prevalence in Edgecombe county	NC County Health Ranking and Roadmaps	Annually	
	Reduced poverty among former participants*	# of scholarship recipients with a degree within 5 years*	Participant follow-up surveys	Annually	This will allow the program to assess the impact the scholarships have on participants
		# of former participants with full time employment	Participant follow-up surveys	Annually	

		# of former participants not using public assistance	Participant follow-up surveys	Annually	A major problem in the community is dependence on public assistance, tracking the utilization of public assistance among program graduates will
		# of former participants employed in fields related to program components (i.e., agriculture, food service, public service)	Participant follow-up surveys	Annually	
		Perception of impact of program	Participant follow-up surveys	Annually	

3.2. See Appendix A for Indicator Reference Sheets

3.3. Information Sources for Program Monitoring

Data Source	Type of data being collected	Description
CFLC Records	Quantitative	Provides routine enrollment data, information on participants progress, and data on agricultural production
CFLC Time logs	Quantitative	Determine level of participation of individual participants, specific areas of participations, and serves as a proxy for food intake.
Community Partner Evaluation forms	Quantitative	Determines quantity of partners and their level of satisfaction
Community Partner Interviews	Qualitative	Provides a more comprehensive assessment of community partners
CFLC medical assessments	Quantitative	Determines weight status of participants
School records	Quantitative	Determines educational achievements of participants
Teacher Evaluation forms	Quantitative	Provides a more comprehensive assessment of participants' academic situation
Teacher Interviews	Qualitative	Provides a more comprehensive assessment of participants' academic situation
NC County Health Ranking and Roadmaps	Quantitative	Determines prevalence of obesity in Edgecombe County
Participant follow-up surveys	Quantitative and Qualitative	Determines how many program participants achieve program objectives

4. Stakeholder Engagement Plan

Stakeholder	Potential Roles	Engagement Strategy	Follow-up Strategy
<u>Government/Political sector</u> <ul style="list-style-type: none"> NC State government Edgecombe County Board of Commissioners Edgecombe County School Board NC Public Universities 	<ul style="list-style-type: none"> Funding Reporting to public Create public awareness Leads to change in policies Donation of technical expertise 	<ul style="list-style-type: none"> Meetings Annual reports Send jars of honey Invite to observe programs 	<ul style="list-style-type: none"> Annual reports Social media Mainstream media
<u>Corporate</u> <ul style="list-style-type: none"> BlueCross BlueShield Tobacco 	<ul style="list-style-type: none"> Funding Create public awareness 	<ul style="list-style-type: none"> Meetings Annual reports Send jars of honey Invite to observe programs 	<ul style="list-style-type: none"> Annual reports Social media Mainstream media
<u>Commercial Sector</u> <ul style="list-style-type: none"> Media & Major news outlets Grocery stores and restaurants Agriculture 	<ul style="list-style-type: none"> Publicity for program Donation of equipment and technical expertise Input for program policies Speakers for clubs Customers for produce & honey 	<ul style="list-style-type: none"> Meetings Send jars of honey Include representatives on advisory board Invite to observe program Marketing opportunities on products (E.g., on Bee jars labels) . 	<ul style="list-style-type: none"> Annual Reports Social media Meetings
<u>Community Members</u>	<ul style="list-style-type: none"> Program participants Future mentors for other students Potential spokespeople for CFLC CSA customers 	<ul style="list-style-type: none"> Presentations in schools and churches Recruit through existing partners Speakers/Conferences Low cost advertising (flyers, posters) 	<ul style="list-style-type: none"> Presentations in schools and churches Social media Mainstream media

5. Outcome Monitoring

Due to the small size of this program and the Conetoe community, it will be a more effective use of their limited resources to monitor outcomes rather than attempt to carry out an outcome or impact evaluation. Some baseline data has already been collected for current participants, and moving forward, a standard evaluation will be developed to track indicators among participants over time. This evaluation will be developed in order to be implemented at the beginning of the Summer 2016 program. Data will be collected annually among current participants, and follow-up data will be collected from former participants every five years. This data will make it possible to determine if and to what extent program participants are achieving the program's objectives. Analysis will be through an assessment of changes in outcomes from baseline to endline, or by following the trend over time. Multivariate analysis will allow program leaders to identify which program and participant factors (such as gender, age of program entry, duration of program participation, etc.) are associated with specific outcomes or change in outcomes. Although this type of analysis does not provide sufficient evidence to attribute any achieved outcomes solely to the program's activities, it will show associations between individual and program characteristics and outcomes of interest. With a program of this size, it will be critical to ensure that there is a change in outcomes so that they may either alter specific program components or expand the program.

Among participants, parental consent for data collection will be necessary, and consent must be obtained in a culturally competent manner. That is to say, explanation of how, when, and why data will be collected must be presented in a way that is clear and understandable to parents and guardians of participants; this may require a Spanish translator. Any and all youth in Edgecombe County will be eligible to participate in the program, regardless of religious affiliation. All data collected will be secure and confidential.

6. Feasibility of Cost-Effectiveness Analysis

The CFLC will conduct an assessment of the program costs in order to determine where and how their budget is being spent. Assessment of the costs of labor, equipment, supplies and materials, food donations, and scholarships will be evaluated. Currently, the program is not financially independent and relies on grants, and donations of money, skills, labor, and equipment to function. A cost-effectiveness analysis will allow the program to identify the steps it will need to take in order to increase their revenue so that they can operate more independently, and serve more community members. It will also help to identify any areas of waste, or potential for cost savings. Analysis can be conducted on the financial records that currently exist, and costs will be tracked over the next year to truly determine the full range of expenses associated with program delivery.

7. Program Expansion

Vertical expansion of this program, carried out correctly, could result in major benefits for both program participants and the Conetoe community at large. If the CFLC is able to increase their produce and honey production, there is great potential for increased revenue. Although the majority of the produce grown currently is donated to food insecure members of the community, there is a cap on the quantity of food that a small community can consume. Therefore, increased production could allow for increased CSA membership and increased sales at local grocery stores or farmer's markets. The CFLC has existing relationships with the NC State Farmer's Market, as well as several local grocery stores, and could recruit more venues to sell their produce and honey based on demonstrated sales. Additionally, utilizing non-profit organizations in North Carolina, such as Farmer Foodshare, that support small-scale farming could help expand their sales.

There is great potential for horizontal expansion of this program, as multiple other faith-based organizations have contacted the CFLC in hopes of recreating their model. It must be noted, however, that an essential component of grassroots programs is that they are created by and for the communities they serve, so while the CFLC may serve

as an excellent model, exact replication in another community would be both impossible and counter-productive (9).

8. Dissemination and Use of Information

The information gained through this data collection and analysis has the potential to be extremely useful in furthering the program's goals. Identifying program aspects that are more effective than others can help guide decisions about program activities. The aspects that are working well can be expanded, and those that are not can be altered. Additionally, the production of an annual or summary report will be an extremely useful tool for the CFLC. This report would contain any quantitative indications that the program is achieving its outcomes, as well as quotes and testimonials from qualitative data. The data collected in Conetoe can be juxtaposed with both the community itself, pre-intervention, as well as with similar communities and programs in order to demonstrate effectiveness and need for expansion. Qualitative data may be extremely useful for this purpose, as the grassroots nature of the program and the extent to which youth are involved in program activities could be motivating for donors, volunteers, business partners, and parents of potential future program participants.

9. References

1. Daniels SR, Arnett DK, Eckel RH, Gidding SS, Hayman LL, Kumanyika S, et al. Overweight in children and adolescents: Pathophysiology, consequences, prevention, and treatment. *Circulation*. 2005;111(15):1999–2012.
2. Centers for Disease Control and Prevention. Childhood Obesity Facts [Internet]. 2015. Available from:<http://www.cdc.gov/obesity/data/childhood.html>
3. Gordon-Larsen P, Adair L, Nelson M, Popkin B. Five-year obesity incidence in the transition period between adolescence and adulthood: the National Longitudinal Study of Adolescent Health. *Am J Clin Nutr*. 2004;80:569–75.
4. Caprio S, Daniels SR, Drewnowski A, Kaufman FR, Palinkas LA, Rosenbloom AL, et al. Influence of race, ethnicity, and culture on childhood obesity: implications for prevention and treatment. *Obesity*. 2008;16(12):2566–77.
5. Finney Rutten LJ, Yaroch AL, Colón-Ramos U, Johnson-Askew W, Story M. Poverty, Food Insecurity, and Obesity: A Conceptual Framework for Research, Practice, and Policy. *J Hunger Environ Nutr*. 2010;5(4):403–15.
6. Yousefian A, Ziller E, Swartz J, Hartley D. Active living for rural youth: addressing physical inactivity in rural communities. *J Public Health Manag Pract*. 2009;15(3):223–31.
7. Wang Y, Beydoun MA. The obesity epidemic in the United States - Gender, age, socioeconomic, racial/ethnic, and geographic characteristics: A systematic review and meta-regression analysis. *Epidemiol Rev*. 2007;29(1):6–28.
8. D’Adamo E, Caprio S. Type 2 Diabetes in Youth: Epidemiology and Pathophysiology. *Diabetes Care*. 2011;34(Supplement_2):S161–5.
9. Subica AM, Grills CT, Douglas JA, Villanueva S. Communities of color creating healthy environments to combat childhood obesity. *Am J Public Health*. 2016;106(1):79–86.
10. Holben DH, Taylor CA. Food Insecurity and Its Association With Central Obesity and Other Markers of Metabolic Syndrome Among Persons Aged 12 to 18 Years in the United States. *J Am Osteopath Assoc*. 2015;115(9):536–43.
11. Johnson JA 3rd, Johnson AM. Urban-rural differences in childhood and adolescent obesity in the United States: a systematic review and meta-analysis. *Child Obes*. 2015;11(3):233–41.
12. Toner K. By nourishing plants, you’re nourishing community [Internet]. CNN. 2016. Available from: <http://www.cnn.com/2015/09/24/us/cnn-heroes-joyner/>
13. Rev. Richard Joyner [Internet]. Encore.org. Available from: <https://encore.org/purpose-prize/richard-joyner/>
14. North Carolina County Health Rankings & Roadmaps [Internet]. 2015. Available from: <http://www.countyhealthrankings.org/app/north-carolina/2015/rankings/edgecombe/county/outcomes/overall/snapshot>
15. Tucker J. Conetoe Family Life Center Farm Grows, Inspires. *Our State*. 2015;
16. Capacetti K. Cultivating A Culture of Health—and Life—in Conetoe, NC. *Farmer Foodshare*. 2015.

17. Conetoe Family Life Center [Internet]. Available from:
<http://www.conetoelife.org/>
18. Chomitz VR, McGowan RJ, Wendel JM, Williams S a, Cabral HJ, King SE, et al. Healthy Living Cambridge Kids: a community-based participatory effort to promote healthy weight and fitness. *Obesity (Silver Spring)* [Internet]. Nature Publishing Group; 2010;18 Suppl 1(n1s):S45–53. Available from:
<http://dx.doi.org/10.1038/oby.2009.431>

10. Appendix A

Indicator Reference Sheets

Indicator Reference Sheet	
Strategic Objective: Reduce the rate of childhood obesity among CFLC members	
Intermediate Result: Youth have access to nutritious food	
Indicator: # of enrolled youth attending at least 4 days/week	
Date Established: 4/7/2016	Date Last Reviewed: n/a
a. Description	
Precise Definition(s): The number of enrolled participants who attend a session, either after-school, on weekends, or during the summer, at least 4 days per week.	
Unit of Measure: Individual program participant	
Method of Calculation: Count	
Justification/Management Utility: Because youth prepare and eat nutritious meals and snacks on the days they attend the program, this will serve as a cost-effective proxy for nutritional intake. It can be inferred that on the days they attend, they consume at least one nutritious meal.	
b. Plan for Data Collection	
Data Collection Method: Program participants will have time sheets where they will be expected to record their attendance as well as the activities they participate in. Participants in middle school and older will be expected to do this independently, younger participants will receive assistance.	
Data Source(s): CFLC time sheets, or digital times sheets depending on feasibility	
Timing / Frequency of Data Collection: Program leaders will collect time sheets bi-weekly, as in a traditional workplace. This will allow for correction of any errors.	
Estimated Cost of Collection: Minimal, additional cost to the program will only involve printing timesheets. If possible digital timesheets could be used as well.	
Responsible Organization/Individual(s): Participants aged Grade 6 and up will be responsible for logging their own times, Program leaders will be responsible for logging times for younger participants and for collecting time sheets every two weeks.	
Location of Data Storage: CFLC office	
c. Plan for Data Analysis, Reporting, and Review (schedule, methodology, responsibility)	
Data Analysis: Volunteer (program will recruit public health students to conduct analysis)	
Presentation of Data: Data will be presented by CFLC stakeholders in general program information on website, in annual reports, media coverage, etc.	
Review of Data: Data will be reviewed by Program Leaders quarterly to ensure that participants are attending program. However, data will be aggregated annually, this aggregated data will be used for analysis.	
Reporting of Data: Annual	
d. Data Quality Issues	
Initial Data Quality Assessment: Data ought to be of high quality as this is a simple and straightforward indicator.	

Known Data Limitations and Significance (if any): Although this data should have high reliability, the validity is not perfect, as this measure is being used as a proxy to estimate access to nutritious food.			
Actions Taken or Planned to Address Data Limitations: Since there is no cost-effective way to collect nutrition intake data for participants, this is a reasonable proxy measure. If the opportunity to collect nutrition intake arises, the program will develop alternative indicators using that data.			
e. 1 Performance Data Table			
Key to Table: n/a			
Rationale for Selection of Baselines and Targets: Targets will be established upon collection of baseline data.			
	TARGET/PLANNED	ACTUAL	COMMENTS
Spring 2017	TBD		
Spring 2018	TBD		
Spring 2019	TBD		
Spring 2020	TBD		

Indicator Reference Sheet	
Strategic Objective: Reduce the rate of childhood obesity among CFLC members	
Intermediate Result: Reduced obesity in CFLC youth	
Indicator: # of youth with healthy BMI for age	
Date Established: 4/7/2016	Date Last Reviewed: n/a
a. Description	
Precise Definition(s): Healthy BMI for age is defined as a BMI below the 95 th percentile of the sex-specific BMI-for-age growth charts	
Unit of Measure: Individual program participant	
Method of Calculation: Count	
Justification/Management Utility: This is a clinical measure for obesity which directly ties to the programs goal of reducing obesity.	
b. Plan for Data Collection	
Data Collection Method: Program participants will have their BMI assessed by volunteers from the Tar River Mission Clinic. Parents will sign a consent to have their child's BMI data released from Tar River to CFLC.	
Data Source(s): Medical records	
Timing / Frequency of Data Collection: Participants will receive a bi-annual physical where BMI will be recorded.	
Estimated Cost of Collection: No additional cost to the program.	

Responsible Organization/Individual(s): Tar River Mission Clinic healthcare providers, CFLC leaders			
Location of Data Storage: CFLC office			
c. Plan for Data Analysis, Reporting, and Review (schedule, methodology, responsibility)			
Data Analysis: Volunteer (program will recruit public health students to conduct analysis)			
Presentation of Data: Data will be presented by CFLC stakeholders in general program information on website, in annual reports, media coverage, etc.			
Review of Data: Bi-annual			
Reporting of Data: Annual			
d. Data Quality Issues			
Initial Data Quality Assessment: Data ought to be of high quality as this is a simple and straightforward indicator.			
Known Data Limitations and Significance (if any): BMI has been criticized as an indicator of obesity as it does not account for the difference between muscle mass and adipose mass, however, it is an extremely cost effective way to measure obesity, and is the currently accepted measure for obesity.			
Actions Taken or Planned to Address Data Limitations:. n/a			
e. 1 Performance Data Table			
Key to Table: n/a			
Rationale for Selection of Baselines and Targets: Targets will be established upon collection of baseline data.			
	TARGET/PLANNED	ACTUAL	COMMENTS
Spring 2017	TBD		
Spring 2018	TBD		
Spring 2019	TBD		
Spring 2020	TBD		

Indicator Reference Sheet	
Strategic Objective: To empower youth to seek academic and economic opportunities.	
Intermediate Result: Reduced poverty among former participants	
Indicator: # of scholarship recipients with a degree within 5 years	
Date Established: 4/7/2016	Date Last Reviewed:
a. Description	

Precise Definition(s): Individuals who receive CFLC scholarships to attend a 4-year college or university and have obtained a Bachelor's degree or an equivalently valuable associates degree (e.g, in healthcare, engineering, etc) within 5 years of receiving scholarship. Equivalently valuable will be defined as a degree in an industry in which the average salary within that industry is above states average. For example, if the degree is in medical imaging, and the average salary for that industry is \$60,000 per year in NC, and the average individual income in NC is \$55,000, that degree would qualify as equivalently valuable.			
Unit of Measure: Individual program participant			
Method of Calculation: Count			
Justification/Management Utility: This will allow program to determine the impact scholarships have on participant's educational achievements.			
b. Plan for Data Collection			
Data Collection Method: Program graduates will receive follow-up surveys, either my mail or email.			
Data Source(s): CFLC follow-up surveys			
Timing / Frequency of Data Collection: Annually, to be aggregated every 5 years.			
Estimated Cost of Collection: Minimal, cost of printing and postage. Potential to save money through digital surveys sent through email.			
Responsible Organization/Individual(s): Former participants, CFLC program leaders			
Location of Data Storage: CFLC office			
c. Plan for Data Analysis, Reporting, and Review (schedule, methodology, responsibility)			
Data Analysis: Volunteer (program will recruit public health students to conduct analysis)			
Presentation of Data: Data will be presented by CFLC stakeholders in general program information on website, in annual reports, media coverage, etc.			
Review of Data: Data will be reviewed by Program Leaders annually to ensure that former participants are responding to surveys. However, data will be aggregated every 5 years, this aggregated data will be used for analysis.			
Reporting of Data: In 5 year increments			
d. Data Quality Issues			
Initial Data Quality Assessment: Data should be of high-quality, however, there is potential for participants lost to follow up. There is also potential for response bias, as with all self-reported data.			
Known Data Limitations and Significance (if any): This data is intended to help program assess poverty reduction among program participants, and although higher education is an excellent indicator for increased income, there is still potential for individuals who have achieved higher education to live in poverty.			
Actions Taken or Planned to Address Data Limitations: In order to create a more complete picture of poverty reduction, this is one of several indicators that will be combined to assess the extent to which the program achieves its' goals.			
e. 1 Performance Data Table			
Key to Table: n/a			
Rationale for Selection of Baselines and Targets: Targets will be established upon collection of baseline data.			
	TARGET/PLANNED	ACTUAL	COMMENTS

Spring 2017	TBD		
Spring 2018	TBD		
Spring 2019	TBD		
Spring 2020	TBD		