

**Reducing the Prevalence of Overweight and Obesity in Children ages 10-13 in Charleston,
West Virginia through a School-Based Nutrition Education and Physical Activity Program**

\$478,000

21 months (August 19, 2024-May 29, 2026)

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Problem Statement

Childhood obesity among children ages 10-13 in Charleston, West Virginia is an increasingly critical issue. The prevalence of 41% of children classified as overweight or obese is the 2nd worst in the United States which is caused by a lack of physical activity, limited access to healthy foods (food deserts), little to no intervention, low education rates, and low income.

Background Information

Childhood overweight and obesity, the excessive or abnormal accumulation of fat causing a health risk, is primarily caused by lifestyle issues including inadequate physical activity and too many calories from food and drinks (WHO, 2020; Mayo Clinic, n.d). Key determinants of health for childhood obesity include physical environment, socioeconomic status or occupation, education level, and school environments. Children with parents who have low socioeconomic status, live in a food desert, (a neighborhood with limited access to fresh fruits, vegetables, and whole grains), or a food swamp, (a neighborhood with a saturation of fast-food outlets, convenience stores, and corner stores), or are in a state of food insecurity are more likely to lack access to nutrient-dense, healthy food. Thus, having to resort to cheap, unhealthy options, increasing obesity risks (Tester et al., 2020). Childhood obesity can lead to several health consequences. These risks, including asthma, diabetes, heart disease, cancer, and depression, among others, are more likely if childhood obesity is untreated and obesity continues throughout life (Ebbeling & Ludwig, n.d).

West Virginia has an obesity rate (BMI 85th percentile and above) of 41% for children aged 10-17 which is the second worst in the country. This is significant because obesity rates for children the same age are as low as 24% in other states (America's Health Rankings, 2023). Children ages 10-13 have a higher prevalence rate of being overweight or obese than those 14-17

(46.2% compared to 35.7%) (Data Resource Center for Child and Adolescent Health, 2019).

Children whose families are below 200% of the Federal Poverty Level (FPL) experience obesity at a disproportionate rate compared to those of higher incomes. 42.7% of West Virginia children who are 200% below the FPL are overweight compared to the national average of 33.7% of children whose families are 200% below the FPL (Data Resource Center for Child and Adolescent Health, 2019). West Virginia children face an obesity rate of 43.9% when adults in the household have less than a high school diploma and 43.6% with a high school diploma or GED. This is significant because children in a household with an adult who has a college degree or higher have just a 25.1% obesity rate (Data Resource Center for Child and Adolescent Health, 2019).

Population Description

Charleston, West Virginia's capital and largest city, is home to over 47,000 people (Britannica, n.d; United States Census Bureau, 2022). Focusing efforts in Charleston will set a precedent for surrounding cities in West Virginia which can then adopt and continue interventions. Charleston has a higher poverty rate compared to the national poverty rate (17.5% compared to 11.5%) and most Charleston residents earn less than the national median household income (\$54,101 compared to \$74,580) (Data USA, n.d; Shrider and Creamer, 2023; Guzman and Kollar, 2023). Residents of Charleston are predominantly White as 77% of residents classify as White (Non-Hispanic) and in 2021, there were 5.41 times more (37.8k) White (Non-Hispanic) residents than any other ethnicity or race (6.91k Black and 28.1k Multi-racial) (Data USA, n.d).

The target population for this project are children ages 10-13 in Charleston, West Virginia who attend East Bank, South Charleston, or West Side Middle School. Ages 10-13 are prime years for growth, development, and the formation of healthy habits. Among all children ages

10-17 in Charleston, West Virginia, children ages 10-13 have the highest prevalence of obesity (Data Resource Center for Child and Adolescent Health, 2019). Addressing obesity and overweight in early adolescence can prevent future complications, such as diabetes or heart disease, and allow children to form long-lasting healthy habits. Children whose families are under the poverty level or lack an education higher than a high school diploma, and Non-Hispanic Black and Hispanic youth face obesity at a much higher rate than White, Asian, and Non-Hispanic youth (Data Resource Center for Child and Adolescent Health, 2019). Each middle school is located in or surrounded by lower socioeconomic areas of Charleston, West Virginia, classified as “low-income” neighborhoods (Best Neighborhood, n.d). Within these neighborhoods, the median household income does not exceed \$54,954, which is just short of \$20,000 less than the national median household income (Niche, n.d). In each of these middle schools, 60-79% of all students receive free or reduced lunch (Niche, n.d). 2.9-36.4% of students across these schools are African American, 1.9-9.9% are Multi-racial, and 51.1-94.5% are White (Niche, n.d).

Existing programs with gaps that remain to be addressed

While there are several initiatives throughout West Virginia aiming to prevent or reduce childhood obesity and promote physical activity and healthy eating, these programs do not adequately combat the problem due to gaps within their implementation. The West Virginia Cardiac Project and Team Nutrition are both United States Department of Agriculture (USDA) initiatives promoting physical activity and healthy eating within West Virginia schools (West Virginia Department of Education, n.d; The CARDIAC Project, n.d). However, these programs lack consistency which is needed for meaningful dietary and physical activity changes to be sustained. Team Nutrition requires schools to voluntarily sign-up to be “Team Nutrition Schools”

and lacks information in terms of the length of the program which is not only crucial for success, but needed to motivate schools to sign-up.

Similarly, The WV Cardiac Project as well as the West Virginia Extension Family Nutrition Program (WV FNP), a program designed to implement nutrition and physical activity intervention to low-resourced populations in West Virginia, contain important lessons taught by nutrition educators. These include food demonstrations, improving access to community resources, reading food labels, planning meals, and helping participants stretch their food dollars. However, these are not long-lasting or consistent programs as the majority of lessons last only 5-10 weeks. Additionally, the WV FNP lacks curriculums that are aimed toward middle school students or taught in middle schools compared to other USDA-funded programs in other states, such as the Rutgers Cooperative Extension Family Nutrition Program in New Jersey (Rutgers). For instance, WV FNP has a program, Nutrition Education Aimed at Toddlers, and Show Me Nutrition, a nutrition curriculum for preschool through 5th-grade students but only features one program for middle schoolers, Teen Cuisine, a six week long course that teaches students how to make healthy meals.

Several existing programs are also limited to elementary school children only, such as The Fresh Fruits and Vegetables Program which provides students with fresh fruits and vegetables as a snack throughout the school day (West Virginia Department of Education, n.d). In addition, The WV Cardiac Project's Body Mass Index (BMI) screenings, Acanthosis (AN) screenings, and screenings for diabetes and cardiovascular risks are only offered to kindergarten, second-grade, and fifth-grade students. Further, only a very small proportion of students who have the opportunity to be screened are opting in, with no explanation given by the program for

the lack of compliance; in Kanawha county for the 2021-22 school year, out of 1667 fifth-grade students, only 252 (15%) participated in BMI screenings.

Other initiatives, including The Fun Fitness Foundation and Keys for HealthyKids nonprofit, which both aim to reduce child obesity rates through physical activity, have shifted their focus away from the targeted population of children 10-13 years old (The Fun Fitness Foundation, n.d; Keys for HealthyKids, n.d.). The Fun Fitness Foundation, also a business for renting fun fitness equipment, such as bouncy houses and blow-up obstacle courses, has not published anything about its efforts specific to reducing obesity since 2020, focusing recently on solely birthday rentals (The Fun Fitness Foundation, n.d). Keys for HealthyKids has been focusing on interventions for young children as a majority take place within childcare settings for children six months to five years old (Keys for HealthyKids, n.d.).

Program Description

The School-Based Nutrition Education and Physical Activity Program intends to provide consistent, ongoing nutrition education and physical activity opportunities for children ages 10-13 at East Bank, South Charleston, and West Side middle schools and their families to promote healthy, sustainable life changes. Ultimately, this program beginning August 19, 2024, and ending May 29, 2026, will result in reduced rates of overweight and obesity for children ages 10-13 in Charleston, West Virginia.

Goals and Objectives

Goal 1: Increase knowledge of the components of a nutritious diet among all children ages 10-13, at East Bank, South Charleston, and West Side middle schools, and their families in Charleston, West Virginia.

- Objective 1: 60% of children (681) within three middle schools will learn the daily

nutrient requirements through lessons during school, introducing them to healthy food options by May 2026.

- Objective 2: 250 family members of school children will attend evening lessons at one of the three middle schools on daily nutrient requirements, explaining what students learned in school so lessons will be reinforced at home by May 2026.
- Objective 3: The Fresh Fruits and Vegetable Program will be extended to middle schools resulting in 30% of students (340) changing their in-school snacking behavior from pre-intervention, selecting to eat a healthy snack when offered at least one out of two times a month by November 2025.

Goal 2: Increase access to programs aimed to improve health and lower the risk of obesity for children ages 10-13 at East Bank, South Charleston, and West Side middle schools and their families in Charleston, West Virginia.

- Objective 1: 40% of students (454) and their families will have increased access to healthy foods by attending monthly “farmer’s markets,” inviting vendors to come to each of the 3 middle schools during the evening lessons for parents by January 2025.
- Objective 2: 30% of students (340) will attend monthly, hour-long “kids cooking class” lessons, hosted at each of the 3 middle schools, which will also offer a free-healthy meal for participants and families, aimed to increase knowledge of preparing nutritious foods and eating healthy on a budget by March 2025.
- Objective 3: 250 family members of school children will learn how to grocery shop on a budget by attending monthly, hour-long lessons, which will offer incentives for attendance, hosted at each middle school by May 2026.
- Objective 4: 20% of children classified as overweight and obese will show a reduction in

BMI from pre-intervention by May 2026.

Goal 3: Increase the number of opportunities to engage in physical activity for students ages 10-13 at East Bank, South Charleston, and West Side middle schools, reducing their risk of obesity.

- Objective 1: Each month, 75% of students (851) will participate in a monthly physical activity challenge during gym class (such as a jump rope contest, obstacle course race, etc.) where each middle school is competing against each other, aimed to get students excited about being active, by September 2024.
- Objective 2: Each of the three middle schools will host at least one monthly community fitness challenge for students, families, and faculty members (5ks, relay races, obstacle courses, field day, strength training, etc.) taking suggestions / using the input of community members to make physical activity a fun daily routine by October 2024.
- Objective 3: 60% of all students (681) and 80% of students enrolled in a guided after-school fitness program will report an increase in their daily physical activity by May 2026.

Intervention Strategies

Nutrition Education Intervention

The first intervention will be in partnership with the WV FNP; through this partnership, consistent, direct, and ongoing nutrition education will be provided across East Bank, South Charleston, and West Side Middle School once a week during school-hours and once a month after school-hours beginning in August 2024 at the start of the school year and ending in May 2026 at the end of the school year. In-school lessons will be integrated into the school curriculum so that there are forty-five minutes of availability once a week for direct nutrition

education to occur weekly without disruption. The nutrition education curriculum will be adapted from the West Virginia Extension Family Nutrition Program (WV FNP) as well as existing USDA nutrition programs and taught by nutrition educators trained by WV FNP nutrition educators. Because the only program the WV FNP currently offers for middle school students is Teen Cuisine, our project will use other already established USDA curriculums aimed at middle schoolers and hire a nutrition educator to teach these lessons. Several successful existing USDA nutrition education programs feature MyPlate and dietary guidelines. These include Food Smarts for Kids, which teaches the importance of food safety and food groups, Cooking Matters for Kids, which teaches kids how to cook healthy recipes featuring a live and inclusive cooking demonstration, and finally, Eat Smart Be Active, which teaches daily physical activity recommendations and how to live a balanced lifestyle (SNAP-Ed Took Kit, n.d.). These lessons and booklets will be purchased for use (Leah's Pantry, n.d.).

To slowly introduce nutrition education, only 8th graders will be taught lessons within the first year of the intervention. Across the three middle schools, the expected number of eighth graders reached is around 400, with 120 8th-grade students (30%) having successfully learned the daily nutrition requirements. In the 2nd year of the intervention, starting August 2025, 6th and 7th graders will be taught lessons along with 8th graders. The expected number of in-school participants for the second year of the intervention is 1,135, with 681 (60% of all middle school students) having learned the basic nutrient requirements.

In the first year of the intervention, 8th graders will be taught the Food Smarts for Kids program for half the year. Once this program is completed, they will move on to Teen Cuisine. However, this program will need to be adjusted from teaching lessons in 90 minutes to teaching lessons in just 45 minutes. To do this, only the lesson material will be taught instead of a live

demonstration. Students will receive new recipes each week, having the option to make them at home. Students will also be encouraged to attend the Cooking Matters for Kids, which will be after school and include hands-on cooking for the students. This model will be replicated for the second year of the intervention for 6th and 7th graders.

The Nutrition Educator will visit each school providing the in-school and after-school in-person lessons that will cohesively teach the daily nutrient requirements and daily physical activity recommendations, how to grocery shop on a budget, how to read food labels, how to read recipes, and how to safely prepare nutritious meals and snacks. The Nutrition Educator will also teach after-school lessons for kids and will include Cooking Matters for Kids, which will allow students to vote on healthy recipes they want to create to keep them interested and engaged. These lessons will also offer incentives such as cooking aprons, children's recipe books, pencil cases, and reusable drawstring bags paid for through donations from local stores and organizations. In the first year of the intervention, we expect 170 students (30% of all 8th-grade students) across each middle school to have attended at least one Cooking Matters for Kids lesson while in the second year, we expect 340 (30%) of all students to have attended at least one lesson. It is estimated that 15-30 students in each middle school will attend a lesson at one time. In each school, attendance will be taken during the week of each lesson to generate an expected number of students attending each lesson. While in-school lessons will be 30-45 minutes, Cooking Matters for Kids will be one hour long.

For adults/ families of students, 30-45 minute lessons will be focused on summarizing what the students are learning in school to reinforce the lessons at home as well as Smart Shopping, a USDA program teaching grocery store tips and budgeting when meal planning, featuring the "farmer's market". There will also be a lesson for adults on SNAP, who qualifies

for it, and how to receive those benefits. This lesson will involve step-by-step guidance, walking parents through the sign-up process if they are eligible to receive SNAP benefits. After each lesson, incentives also paid for through donations, such as grocery store gift cards, communal dinners, nutrient-dense grocery items, or cooking utensils will be offered to encourage parents to continue attendance in future lessons. In the first year of the intervention, it is expected that 125 out of about 1,000 families will attend evening lessons on daily nutrient requirements, “Smart Shopping,” and learn about potential SNAP or food assistance opportunities, and 227 out of 1,135 students (20%) and 200 out of 1,000 families (20%) will have attended the monthly “farmers market” which increases access to healthy food. In the second year, it is expected that 250 families will attend evening lessons on daily nutrient requirements, “Smart Shopping,” and learn about potential SNAP or food assistance opportunities and 454 out of 1,135 students (40%) and 400 out of 1,000 families (40%) will have attended the monthly “farmers market” which will increase access to healthy food.

In addition to nutrition education, BMI screenings & the Fresh Fruits and Vegetables Program will be extended to all middle schoolers, offering a free fresh fruit or vegetable to all students twice a month (every other Friday), for further obesity and overweight treatment and prevention. In one year, it is expected that 378 of the 1,135 students will improve their in-school snacking behavior and 10% of children classified as overweight or obese will show a reduction in BMI from the start of intervention. In two years, it is expected that 681 out of 1,135 students will improve their in-school snacking behavior and 20% of children classified as overweight or obese will show a reduction in BMI from the start of intervention.

Physical Activity Interventions

The second intervention will be increasing opportunities for middle school students and

families to be active. Beginning in August 2024 and ending in May 2026, East Bank, South Charleston, and West Side Middle School will implement a fitness program that incentivizes students to not only engage in physical activity, but to educate themselves on the importance of fitness. Students in each grade (6th, 7th, and 8th) will participate in the monthly competitions at school. A monthly fitness competition (jump rope contest, races, obstacle courses, physical strength tests, etc.) will be hosted during scheduled gym classes to compete against the other middle schools; each month will consist of a new challenge, appealing to the interests of all students. In the first year, it is anticipated that 851 students out of 1,135 students (75%) will participate in a monthly physical activity challenge during gym class while in the second year, it is expected that 80% of students will participate.

In addition to gym class competitions, monthly community fitness challenges, which will be created based on the interests and ideas of the community, will be held by all three middle schools to promote exercise to all community members and families. Outreach and ideas will be collected by promoting the free challenges across the community through posters in common stores and organizations which will include an email link to offer suggestions of ideas as well as a poll for voting on the next challenge idea based on the suggestions. These challenges will take place either in the gymnasium of each school or outside on their sports fields/ facilities depending on the challenge type. Middle school administrators will host the monthly community fitness challenges with staff volunteering their time, if able to help. Examples of activities include a 5k run or walk, volleyball tournaments, pickleball tournaments, and yoga. To encourage attendance, incentives through donations such as reusable water bottles, t-shirts, jump-ropes, and pedometers will be given to winners/participants. 10 community fitness challenges hosted at the three middle schools each year of the intervention are anticipated.

Finally, an optional after-school fitness program, held at each middle school directly after school, will be introduced and will provide intramural sports such as soccer, basketball, yoga, and capture the flag, and educational fitness opportunities for all middle schoolers. Gym teachers and sports coaches will also run this program as they are trained in different sports and activities. The after-school program will be held once a week after school in the first year, and in the second year, it will be held twice a week. In the first year, it is anticipated that 40% of students enrolled in the after-school fitness program will report an increase in their daily physical activity while 340 students out of 1,135 (30% of all students) will report an increase in their daily physical activity. In the second year, it is anticipated that 60% of students enrolled in the after-school fitness program will report an increase in their daily physical activity and 60% of all students will report an increase in their daily physical activity.

There will be several measures taken to ensure that intervention implementation is successful. Newsletters, emails, and flyers will be sent to families explaining the purpose of the interventions, why they are necessary, and the importance of children and family participation. Short surveys will be collected sequentially to incorporate feedback, interests, and improvements or alterations. For all after-school nutrition lessons, incentives will be provided and emails inquiring about attendance and which evening time works best will be sent to families. Lessons will be held at the time that works best for the majority of families and for those unable to attend, lessons will be recorded and emailed on the email chain. For physical activity interventions, a wide variety of games will be introduced, and for nutrition lessons, recipes will be voted on and contain an interactive component such as a game, to be inclusive and engaging for all students. Finally, collaboration with community members and funding from local businesses will foster new ideas and provide tools essential for successful implementation.

Logic Model

Program Title: Reducing the Prevalence of Overweight and Obesity in Charleston, WV: A School-Based Nutrition Education and Physical Activity Program

Inputs (What we invest)	Outputs (What we do and what we get from doing them)		Impacts & Outcomes (The incremental events/changes that occur as a result of the outputs)		
	Activities	Output	Short-term	Intermediate-term	Long-term
<ul style="list-style-type: none"> WV Extension Nutrition educators, school boards / principal, health teachers / school nurses, cafeteria workers, gym teachers / staff volunteers Fresh fruits and vegetables, food demo Incentives: grocery store gift cards, kitchen tools, etc. 	<ul style="list-style-type: none"> In school/after school for students and parents Cooking class Shopping on a budget BMI screenings Fresh Fruits and Veggies program Offered to students Monthly competitions in school Monthly competitions in community After school programs 	<ul style="list-style-type: none"> 60% of students will increase knowledge on daily nutrient requirements 250 families will learn shopping and budgeting techniques Up to 50% of students will participate in after-school fitness program 	<ul style="list-style-type: none"> 20% of students & families will have access to healthy foods 10% of students classified as obese will see a reduction in BMI 30% of 8th graders will participate in after-school cooking classes 75% of students will participate in monthly physical activity challenges 30% of all students will increase in daily physical activity 	<ul style="list-style-type: none"> 40% of students & families will have access to healthy foods 20% of students classified as obese will see a reduction in BMI 30% of all students will participate in after-school cooking classes 80% of students will participate in monthly physical activity challenges 60% of students will increase in daily physical activity 	<ul style="list-style-type: none"> A continued decrease in overweight & obesity rates in children aged 10-13 Permanent adoption of School-Based Nutrition Education and Physical Activity Program within the 3 schools 40% of children classified as overweight or obese will see a reduction in BMI
Assumptions			External Factors		
Children, families, and schools will be willing to participate and engage in the project and implementation will promote health behavior changes			Factors include unsuccessful acquiring of funds, schools being unable to host activities, and the number of fast food establishments in the area		

Personnel Plan

Personnel needed to implement the proposed project successfully include the Program Manager overseeing the entire project, the Nutrition Educator hired to work for the project, the three middle school's superintendents, principals, and faculty- primarily health and physical education teachers, school nurses, sports coaches or volunteer teachers- and 6th, 7th, and 8th-grade teachers. These personnel must be engaged throughout the program to guarantee that interventions take place when and where they are supposed to.

Superintendents and principals must approve the implementation and be aware of any updates. Health and physical education teachers are key in introducing students to new ways to be physically active, organizing the monthly competitions taking place during gym class, and further enforcing the importance of an active lifestyle. School nurses are responsible for recording student's BMI biannually during the school year. Sports coaches/volunteer teachers have the role of running the after-school fitness program and organizing the monthly community fitness challenges. 6th, 7th, and 8th-grade teachers must reorganize their lesson plans to block out 45 minutes one day each week for nutrition education to occur and the nutrition educator is responsible for teaching the USDA nutrition education curricula. The program manager will approve and oversee the nutrition educator to ensure that they are meeting all requirements based on USDA regulations for the nutritional lesson plans created by the USDA. The nutrition educator and coaches will be paid through the program funding, while the rest of the personnel will earn their standard salary through the schools they are employed.

Timeline (Appendix A)

In the first year of the intervention, August 2024- August 2025 (May 2025 is the end of

the school year), only 8th graders will be taught nutrition education lessons in school and have the option of attending the after-school Cooking Matters for Kids classes. Likewise, only families of 8th graders will be invited to attend the after-school lessons for parents which will include information on SNAP, overviews of students in school lessons, and tips on grocery shopping on a budget featuring a “farmer’s market”. By the start of the second year, in August 2025, 6th and 7th graders, as well as their parents, will be provided with nutrition education lessons. For all students in the 6th-8th grade, starting in the first year of the intervention, optional BMI screenings, access to a free healthy snack during the school day through the FFVP, and all of the physical activity interventions will take place. In the second year of the intervention, August 2025-May 2026, the after-school fitness program will be expanded to 2 days a week and increased donations from local businesses will provide a variety of incentives for all after-school programming.

Stakeholder Engagement Plan (Appendix B)

All stakeholders will be aware of the purpose of the program, its objectives and goals, and how and when it is going to take place. The program implementers will be given monthly reports of progress during the first year of the project, including attendance at in-school lessons and after-school lessons, FFVP usage, gym class participants, and the number of after-school fitness program participants, program partners, participants, decision-makers. After the first year, program implementers will receive reports each quarter (every 3 months). Funders will also follow this trend of reports monthly for the first year, then quarterly. Because many aspects of the program are consistent each week, those who implement the program need to be aware as soon as possible of any changes that need to be made or any concerns so that they can make a plan and address any issues as soon as possible. All other stakeholders are still going to be given

the same information, however they will receive reports only quarterly from the beginning of the project. This way, these reports can be summarized and contain more depth and detail on steps taken, to address any concerns or setbacks, while also not overwhelming recipients with information and increasing the likelihood that it will be left unread or ignored.

Evaluation Plan

Definition of Program Success:

The program will be deemed successful if all goals and objectives as well as all expected statistics for the first and second year of the intervention (including the number of participants reached and percentages of interventions accessed), listed in the program description, are reached. The overall goal of the project is to motivate children and families to change daily habits and overall lifestyles to live more balanced lives, understanding the importance of nutrition and physical activity and their impact on overall health and well-being; through this understanding and increased access to nutritional and physical activity opportunities, a priority long-term goal is reducing the prevalence of overweight and obesity among middle school children across East Bank, South Charleston, and West Side middle schools. Further, it is hoped that the success of this program in these schools will motivate other schools in Charleston to adopt interventions to make these improvements more widespread throughout Charleston, West Virginia. In terms of the short-term success of reducing this prevalence, at the end of the first year of the intervention, 10% of children classified as overweight or obese will show a reduction in BMI from pre-intervention while in the second year, 20% of these children will show a reduction in BMI.

Overarching / Key Evaluation Questions:

The process evaluation question to assess the day-to-day and month-to-month

effectiveness of the program implementation asks, “Are participants engaged in and actively participating in the program implementation?”. The summative evaluation question assessing overall change asks, “Are participants changing daily behaviors to improve their health, shown by a reduction of BMIs indicating overweight and obesity, and forming long-lasting, sustainable healthy lifestyle habits both at school and at home?”.

Evaluation Methods:

The evaluation design of the project will be pre-post test measures along with measures collected during the entirety of the intervention at monthly and biannual intervals. Both qualitative and quantitative data will be collected to determine if daily health behaviors are changing but to also gain more insight into why and how they are or are not through verbal feedback. Quantitative data will include BMI, FFVP usage, attendance at optional after-school lessons (for families and students), and physical activity opportunities (monthly community challenges and the after-school program), and through surveys given during in-school nutrition education lessons. Qualitative data will also include the in-school surveys as some questions will be open-ended, and surveys for families provided at lessons and emailed to families, as well as emails sent to families asking for their feedback, recommendations, and potential questions or concerns.

Students’ BMI will be collected pre-intervention and again post-intervention, after two years. BMI will also be recorded biannually. The number of students using the FFVP to be provided with a healthy snack in school will be recorded daily and analyzed monthly. Attendance at each after-school lesson will be taken and analyzed monthly to track if attendance is increasing, decreasing, or remaining consistent. Surveys during in-school nutrition education lessons will be taken before the curriculum is taught, halfway through the series, and after the

series is completed. As there will be two series taught in one year, surveys will be given six times in one year and will ask questions such as, “How many times did you eat fruit yesterday?, How many times did you eat vegetables yesterday?, How many minutes were you physically active yesterday?”, etc. as well as open-ended questions asking, “What does a typical meal look like at home?”, to see if meals are incorporating the five food groups, “What are your goals to be healthy?”, “How can lessons be improved?”, and “What would you like to learn more about?”. Emails and surveys will be sent monthly to parents of students after optional after-school lessons asking for any feedback on the lesson, what they would like to learn more about, and any concerns or questions.

Evaluation Considerations:

Ethical considerations relating to project evaluation and data collection include assuring that survey responses, BMI measurements, and any written or verbal feedback given are confidential and private. There is also the concern that students will be absent on the day surveys are given or BMI is recorded. To account for this, the names of students absent will be recorded so that they can complete the surveys and BMI screenings once they are present. Collecting data frequently, and observing student’s attention, engagement, and body language during in-school lessons will give insight into whether or not they are engaged in the program implementation and allow for needed adjustments to be made to increase interest and attention. Rather than collecting only pre and post-data, collecting data incrementally will allow for a better understanding of how lifestyle changes and daily habits are improving and why.

Dissemination Plan (per stakeholder engagement plan)

Program Participants & Implementers:

In the form of emails and progress reports, parents and families of students at each

middle school will be given thorough and detailed information, primarily on how children at each school are responding to the interventions, explaining their importance, how they can help expand their knowledge and learning at home, as well as attendance on family after-school lessons, to stay updated on the success of the program. In schools, children will be informed of how nutrition educators and other personnel are incorporating their feedback and recommendations as well as how FFVP usage has increased to keep them excited and motivated to increase efforts to be healthy. School faculty, including middle school teachers, volunteers and staff running the after-school fitness program, cafeteria workers, and school nurses at each middle school will also receive emails and hold meetings to discuss responsibilities and any changes needed within their roles as well as progress made in response to the program. Physical education teachers and staff running the afterschool program will be encouraged to ask students if they want to try any games or activities they haven't played yet or to have students write down their favorite game to ensure that all students are being heard and enjoying being physically active. Nutrition educators and the program manager will communicate directly with each other and with middle school staff when visiting schools and via email to discuss any changes or needs. The program manager will supervise the nutrition educator by being present at a lesson bimonthly to ensure direct education is occurring productively and effectively. Nutrition educators will also be notified in the form of emails as well as have access to survey and email responses to incorporate feedback and suggestions from participants into their lessons.

Program Partners & Decision Makers:

Workers for the WV FNP will receive quarterly emails explaining participant involvement and engagement with the nutrition education lessons and be invited to join meetings to discuss the annual results of the project to see how their curriculum has contributed to its

success. Local businesses and local healthy food distributors and grocery stores will receive flyers for the monthly community fitness challenges that they can help sponsor and donate incentives to. They will also receive more information about the project, its importance and purpose, and what their organization can do to contribute to its goals and objectives, such as posting flyers explaining the project in their business or on their websites and social media, to further unite the community and strengthen the project. Community members will be informed about the project through physical flyers hung around the Charleston, West Virginia community, information on the project posted on the middle school's websites, as well as in local business and on their websites and social media. School boards and superintendents and principals at each middle school will be informed on the project's results, changes, and needs through quarterly meetings held at each school with staff, nutrition educators, and program implementers. Families of students will also be invited to join these meetings through Zoom or watch the recording.

Funders:

Local businesses, food distributors, and grocery stores that financially support the project will receive emails detailing what their funds will be used for and how they are contributing to the project's success and participant satisfaction and engagement. They will also receive updated flyers to be posted within their locations not only outlining what the project is, but how their contributions are helping and what community members who support their business can help. USDA SNAP-Ed will receive expense reports, time trackers, and quarterly reports outlining what their funds have been used for, time spent per month teaching and using USDA curricula and lesson plans, and how the lessons and physical activity opportunities have changed participants' healthy lifestyle habits and contributed to reducing the prevalence of overweight and obesity among children ages 10-13 in Charleston, West Virginia.

Budget Justification (Appendix C)

The organization funding this project is the Supplemental Nutrition Assistance Program - Education (SNAP-Ed). A part of the Food and Nutrition Service of the U.S. Department of Agriculture, SNAP-Ed is a federally-funded grant program that supports evidence-based nutrition education and obesity prevention projects for those eligible for the Supplemental Nutrition Assistance Program (SNAP). This is completed through education, interventions, and public health community approaches aimed at improving nutrition. SNAP-Ed aims to improve nutrition security through nutrition education to low-income populations as well as increase the likelihood that those eligible for SNAP will make healthy food choices and maintain active lifestyles consistent with USDA guidelines. The implementing agency that administers SNAP in West Virginia is the West Virginia Extension, a key partner for this project. This project's interventions align seamlessly with SNAP-Ed efforts by reducing childhood obesity for children across three middle schools where up to 79% of students are eligible for free or reduced lunch and promoting applying for SNAP benefits. Therefore this grant is the most fit in allowing the project to succeed. The total ask for the project over the 2-year course is \$500,000; see Appendix C.

Using the budget funds, the full-time nutrition educator will be in charge of both in-school lessons and after-school Cooking Matters classes. Their salary is based on the average salary of nutritionists and nutrition educators within the Charleston area based on a 40-hour work week. The volunteer coach/ teacher will be a paid faculty member who is already employed by the school and will serve four, one-hour after-school gym/ physical fitness sessions a month in the first year, this will then increase to eight, one-hour gym/ physical fitness sessions a month in the second year. Each volunteer will earn \$50 an hour which will be received in one lump sum at

the end of the month on top of their normal salary. There will respectively be a new volunteer each month, however, there is no limit on the number of times a faculty member can participate. Up to 70 miles of gas reimbursement will be provided per week as the three middle schools are 47 miles apart round trip. A 23-mile cushion has been implemented for any additional travel for additional materials or food shopping. We will be providing \$0.70 per mile based on the 2023 IRS standard mileage rates which are currently \$0.65 per mile. Cooking supplies will need to be bought once and taken care of, there is an estimated max of 30 students in attendance per cooking class which results in 30 units of most materials which will be bought at discounted prices in bulk from a restaurant supply store. The weekly food budget is broken down per student, per serving, which comes down to 30 servings at \$7.5 a student per week. All food costs have been calculated based on an average taken from the current market price of bulk protein, starches, and produce with additional room for extra ingredients. Finally, the FFVP is budgeted roughly under \$14,000 a year which will cover apples and cantaloupe to be distributed once every other week for students to take a complementary fruit of their choice. This amount was projected based on current market rates of price per fruit bought in bulk from a restaurant and food distribution company.

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Appendices

Appendix A: Project Timeline

Reducing the Prevalence of Overweight and Obesity in Children ages 10-13 in Charleston, West Virginia through a School-Based Nutrition Education and Physical Activity Program

Activity	2024	2025	2026
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[illegible]

	both the nutrition education program and the physical activity program within the 3 middle schools in Charleston, WV.	Nutrition educators Cafeteria workers Volunteers/staff (to run after-school fitness program) Program Manager	goals and objectives, the timeline of the project, and weekly reports of progress including information such as meeting attendance, record of students participating in FFVP, and survey results / feedback to keep track of the success of the project.
Decision makers	Those responsible for making decisions about the project such as when, what, where, and how it is implemented, funding, budget, adaptations, and needs.	Superintendents/principals School boards Family/students of the three selected middle schools	The decision-makers will be given the goals and objectives, background and project purpose / need information, timeline of the project, and monthly reports of progress and satisfaction of participants.
Participants	Those projects are tailored to and to whom we will be implementing our program.	Community members Students/family of the three selected middle schools	The participants will be given the goals and objectives, the purpose of and need for the program, USDA daily nutrient requirements and physical activity recommendations, the timeline of the project, and monthly reports of progress and adaptations/changes to the program.
Program Partners	Those who will be helping to carry out the nutrition education and physical activity	WV FNP Local Businesses Local healthy food distributors/grocery	The program partners will be given the goals and objectives, the project timeline, and monthly reports

	programs by providing nutrition education curriculums, physical activity equipment and ideas, and nutrient-dense foods and resources.	stores Community members Family/students School Boards	of progress, participant satisfaction, and adaptations/changes needed to be made.
Funders	The organization who will be funding the nutrition education and physical activity programs.	SNAP-Ed Grant (USDA) Local businesses (to provide donations for incentives)	The funders will be given the goals and objectives, the timeline of the project, the need for and purpose of the project, and monthly results of progress and participant satisfaction.

Appendix C. Budget Sheet

