

# North Carolina SNAP-Ed Program Outcomes Evaluation Report FFY2023

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# Executive Summary

## Background

The Supplemental Nutrition Assistance Program Education ([SNAP-Ed](#)) is the nutrition education program of [SNAP](#) which equips eligible North Carolinians with the knowledge and skills to make healthier choices. To do this, the North Carolina Department of Health and Human Services, Division of Child and Family Wellbeing partners with nine implementing agencies (IAs) that administer direct nutrition education and implement policy, systems, and environmental (PSE) changes across North Carolina. In Federal Fiscal Year 2023 (FFY 2023), North Carolina SNAP-Ed measured indicators related to healthy eating and physical activity.

## Findings

### *Impact of Direct Education*

In FFY 2023, 2,428 participants, comprised of teens ages 12 to 17 years old ( $n = 1187$ , 49%), children ages 5 to 11 years old ( $n = 806$ , 33%), adults ages 18 to 59 years old ( $n = 130$ , 5%) and seniors ages 60 years old and above ( $n = 305$ , 13%). Overall, children and teen healthy eating behaviors remained consistent before and after participating in direct education, although children did show a significant increase in the percentage meeting dietary guidelines for drinking water. Adult and senior survey respondents significantly increased how often they ate more than one kind of vegetable, ate more than one kind of fruit, and increased the number of fruit & vegetable cups consumed. Additionally, adults reduced their consumption of sugar-sweetened beverages.

### *PSE Changes*

In FFY 2023, North Carolina SNAP-Ed implemented PSE interventions in 48 out of the 100 counties in North Carolina. There were 588 total changes comprising 32 (5%) policy changes, 280 (48%) systems changes, and 276 (47%) environmental changes. 518 (88%) of the PSE changes were nutrition-related, 66 (11%) were physical activity-related and four (1%) were both nutrition and physical activity-related.

## Recommendations

- Consider alternative approaches to improve healthy beverage intake among SNAP-Ed participants.
- Consider tailoring direct education approaches to teens to increase healthy food and beverage intake among these populations.
- Consider engaging with youth SNAP-Ed participants to identify barriers to healthy eating and drinking in North Carolina.
- Consider more sensitive evaluation measures to identify smaller changes.

## Program Overview

The Supplemental Nutrition Assistance Program Education (SNAP-Ed) is a federal nutrition education program of the United States Department of Agriculture (USDA) Food and Nutrition Service (FNS) Supplemental Nutrition Assistance Program (SNAP). The purpose of SNAP-Ed is to increase the likelihood that individuals with limited budgets will make healthy food choices and choose physically active lifestyles based on the current Dietary Guidelines for Americans, 2020-2025 (USDA & U.S. Department of Health and Human Services, 2020) as well as the implementation of public health approaches.

Nine Implementing Agencies (IAs) administer the SNAP-Ed program in communities across North Carolina to improve nutrition, physical activity, and food resource management among individuals and families with income at or below 185% of the federal poverty guidelines (U.S. Department of Health and Human Services, 2024). Direct education interventions equip participants with the knowledge, skills, and actionable steps necessary to make healthier food choices, stretch their food dollars, and live a physically active lifestyle (USDA-FNS, 2016). Direct education efforts are complemented by Policy, Systems, and Environmental (PSE) interventions that seek to make healthier choices easier and more accessible. PSE interventions facilitate the adoption of healthier choices by changing policies, systems, and the environment that influence nutrition and physical activity behaviors. The North Carolina Department of Health and Human Services, Division of Child and Family Well-Being oversees the implementation of the SNAP-Ed program through collaborative partnerships with the following IAs as shown in Figure 1 below.

**Figure 1. North Carolina Implementing Agencies for FFY 2023**

Alice Aycock Poe Center for Health Education	Down East Partnership for Children	Durham County Department of Health – Durham’s Innovative Nutrition Education
East Carolina University – Motivating Adolescents with Technology to Choose Health	North Carolina Agricultural and Technical State University – Try Healthy	North Carolina State University – Steps to Health
Second Harvest Food Bank of Northwest North Carolina	University of North Carolina at Chapel Hill – Center for Health Promotion and Disease Prevention	University of North Carolina at Greensboro – Recipe for Success

To ensure consistent and high-quality evaluation of SNAP-Ed interventions, FNS adopted the SNAP-Ed Evaluation Framework for its programs nationally in 2016 (USDA-FNS, 2016). This framework includes recommendations for assessing and reporting on indicators that evaluate outcomes related to direct education and PSE changes.

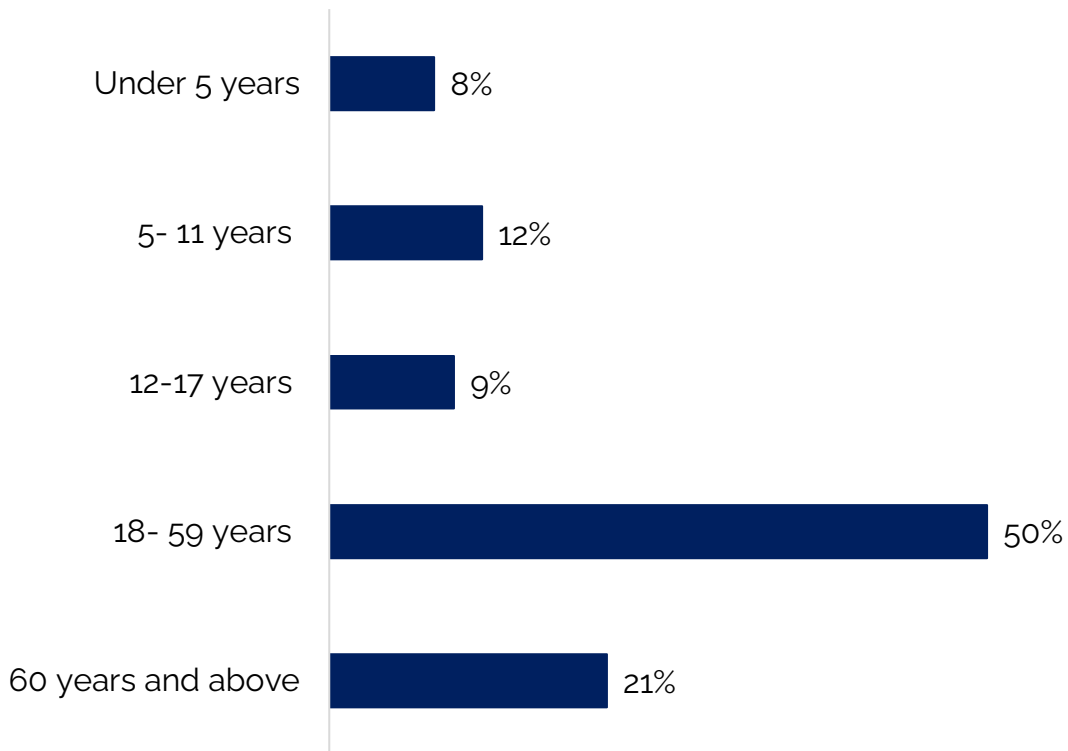
This report focuses on the evaluation of SNAP-Ed direct nutrition education, and PSE changes Interventions implemented by the nine North Carolina IAs listed above for the federal fiscal year (FFY) 2023. The evaluation covers medium-term (MT) and long-term (LT) indicators focused on healthy eating behavior changes (MT1), the organizational adoption and promotion of nutrition supports (MT5, LT5), and physical activity and reduced sedentary behavior supports (MT6, LT6) as defined by the SNAP-Ed Evaluation Framework and Interpretive Guide (USDA-FNS, 2016).

## Who we serve

North Carolina SNAP-Ed aims to serve the 2,957,685 SNAP-Ed-eligible individuals (household income at or below 185% of the federal poverty level) in the state. Interventions are implemented at approved sites where eligible individuals eat, learn, live, play, shop, and work. Figures 2, 3, and 4 describe SNAP-Ed-eligible North Carolinians by age, race, and ethnicity according to 2022 estimates from the US Census Bureau's American Community Survey (United States Census Bureau, 2022).

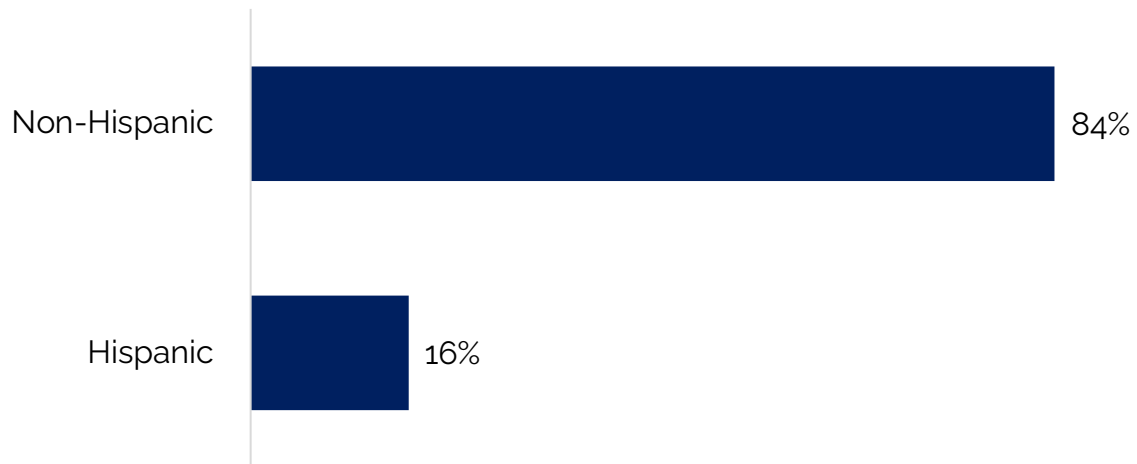


**Figure 2. Age Distribution of SNAP-Ed Eligible North Carolinians (2022)**



Source: American Community Survey (United States Census Bureau, 2022).

**Figure 3. Ethnicity Distribution of SNAP-Ed Eligible North Carolinians (2022)**



Source: American Community Survey (United States Census Bureau, 2022).

**Figure 4. Race Distribution of SNAP-Ed Eligible North Carolinians (2022)**

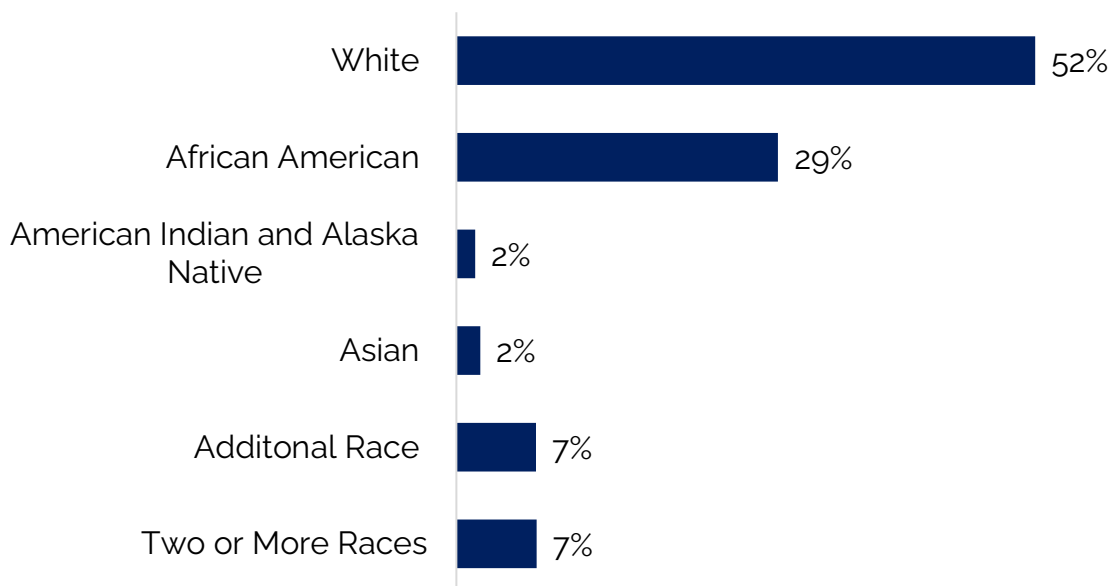


Figure 4 note: Less than 1% of SNAP-Ed eligible North Carolinians were Native Hawaiian and Pacific Islander.

Source: American Community Survey (United States Census Bureau, 2022).

## Methods

This section provides an overview of the methods used in the evaluation of the FFY 2023 direct education and PSE interventions implemented by the North Carolina IAs including data collection from eligible populations and the analyses of the data.

### Direct Education



Direct education was delivered by IAs at SNAP-Eligible sites to children, teens, adults, and seniors. For some programs, surveys were collected at the beginning of the series (pre-intervention) and near the end of the series (post-intervention) to assess pre- to post-intervention behavior change. Participants' demographic data were collected in addition to self-reported healthy eating behaviors using IA-specific surveys. The surveys varied across the IAs,

therefore, the Public Health Institute Center for Wellness and Nutrition (PHI CWN) developed guidelines with reference to the SNAP-Ed Evaluation Framework (USDA-FNS, 2016) for recoding survey responses. PHI CWN established standards and cutoff criteria in consultation with nutrition evaluation experts and an expert committee for recoding responses for healthy eating behavior (MT1) changes. The recodes indicated whether participants' behavior conformed to the recommendations of the Dietary Guidelines for Americans (DGA) (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2020). Each IA used these guidelines to recode participant responses from each survey before submitting data to PHI CWN for evaluation. Direct education participant demographics and survey data were recorded by the North Carolina SNAP-Ed IAs in a Microsoft Excel template provided by PHI CWN. Table 1 shows SNAP-Ed indicators relevant to direct education in FFY 2023.

**Table 1. SNAP-Ed Evaluation Framework Indicators Relevant to the North Carolina Direct Education Activities**

Relevant Indicator	Description
MT1c	Eating more than one kind of fruit throughout the day or week
MT1d	Eating more than one kind of vegetable throughout the day or week
MT1g	Drinking water
MT1h	Drinking fewer sugar-sweetened beverages (SSBs)
MT1l	Cups of fruit consumed per day
MT1m	Cups of vegetables consumed per day

**Policy, Systems, and Environmental Changes**

PSE changes were reported by North Carolina IAs using the MT5 and MT6 indicators as described in Table 2. Those IAs that worked with sites or organizations to implement nutritional or physical activity supports reported each PSE site, PSE change, promotional effort, estimated reach, and other pertinent information to describe each PSE change. Reporting of reach was not standardized, but IAs were provided general guidelines to support them in estimating reach counts. North Carolina IAs also reported on LT5 and LT6 indicators for sites that implemented multi-level and multi-component interventions (i.e., sites with a PSE change and one or more of the following components: evidence-based education, marketing, parent/community involvement, and staff training on continuous program and policy implementation).

**Table 2. SNAP-Ed Evaluation Framework Indicators Relevant to PSE Work in North Carolina**

Relevant Indicator	Description
MT5b/MT6b	Total number of policy changes
MT5c/MT6c	Total number of systems changes
MT5d/MT6d	Total number of environmental changes
MT5e/MT6e	Total number of promotional efforts for a PSE change
MT5f/MT6f	Potential Reach: Total potential number of individuals who encountered the improved environment or were affected by the policy change on a regular (typical) basis and were assumed to be influenced by it.

Relevant Indicator	Description
LT5a/LT6a	Total number of sites or organizations that implemented a multi-component and multi-level intervention with one or more changes in MT5/MT6 (site or organizational adoption of PSE changes and promotion) and one or more of the following additional components: <ol style="list-style-type: none"> <li>1. Evidence-based education</li> <li>2. Marketing</li> <li>3. Parent/community involvement</li> <li>4. Staff training on continuous program and policy implementation</li> </ol>
LT5b/LT6b	Total number of components per site or organization, and types of components implemented during the period assessed

## Statistical Analysis

### Direct Education

Descriptive statistics (frequencies, percentages) of the survey sample demographics and outcomes were computed. Statistical analyses were conducted to evaluate changes in the percentage of participants meeting dietary guidelines pre- to post-intervention. For dichotomous outcomes, such as indicators related to healthy eating (MT1), McNemar tests were conducted to test for differences in the proportion of participants that met guidelines pre- and post-intervention. For continuous outcomes, such as cups of fruit (MT1l) and cups of vegetables (MT1m) consumed per day, paired-sample *t*-tests were conducted to test for differences in mean self-reported cups of fruits or vegetables pre- to post-intervention. For statistically significant results on McNemar tests or paired-sample *t*-tests ( $p < .05$ ), an effect size was calculated to determine the magnitude of differences between post- and pre-intervention results.

Since SNAP-Ed interventions are tailored for specific age groups to address different dietary needs by age, statistical analyses for direct education were conducted by age category (i.e., children, teenagers, adults, and seniors) and not combined.

## Policy, Systems, and Environmental Changes

Nutrition and physical activity supports were assessed to identify the number of PSE sites and changes that were implemented within various community settings throughout North Carolina. For the MT5 and MT6 indicators listed previously in Table 2, the total number of policy (MT5b, MT6b), systems (MT5c, MT6c), and environmental (MT5d, MT6d) changes, the number of



promotional efforts (MT5e, MT6e), and the top settings where PSEs occurred were reported. Estimated reach (MT5f, MT6f) was reported for PSE changes. For LT5 and LT6 indicators the total number of sites that implemented a multi-component and multi-level intervention with one or more changes in MT5/MT6 (LT5a, LT6a) as well as the total number of components per site, and types of components implemented (LT5b/LT6b) were reported. PSE activities were reported in the Program Evaluation and Reporting System (PEARS), and an export was generated for this analysis. Descriptive statistics were conducted to analyze relevant PSE outcomes.

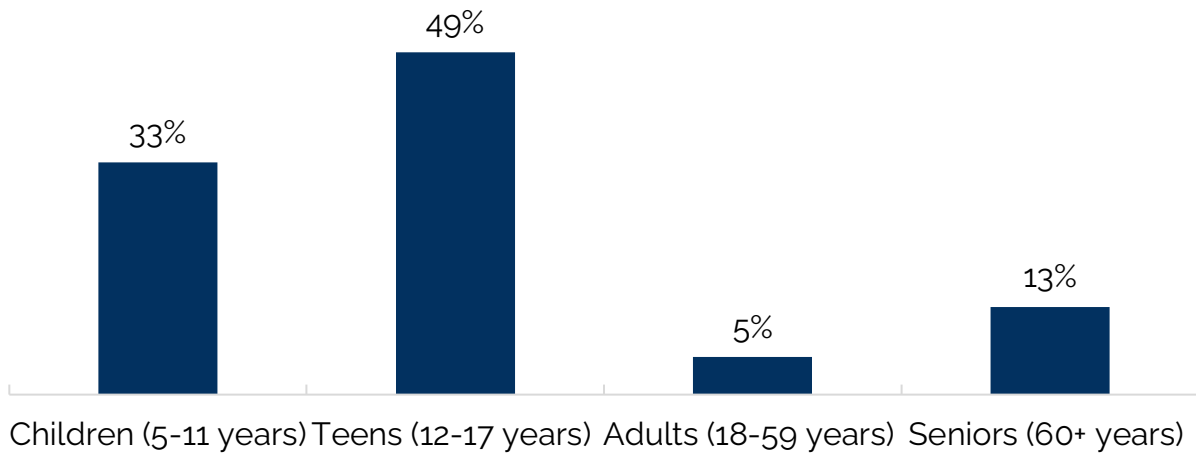
## Findings

The findings for the direct education and PSE interventions implemented are presented below. Direct education findings are presented for the MT1 indicator and disaggregated by age category. PSE findings are presented for the MT5 and MT6 indicators and disaggregated by domain and setting. Additionally, implementation supports for PSEs (LT5 and LT6 indicators) are included in the findings for FFY 2023.

### Direct Education Program Overview

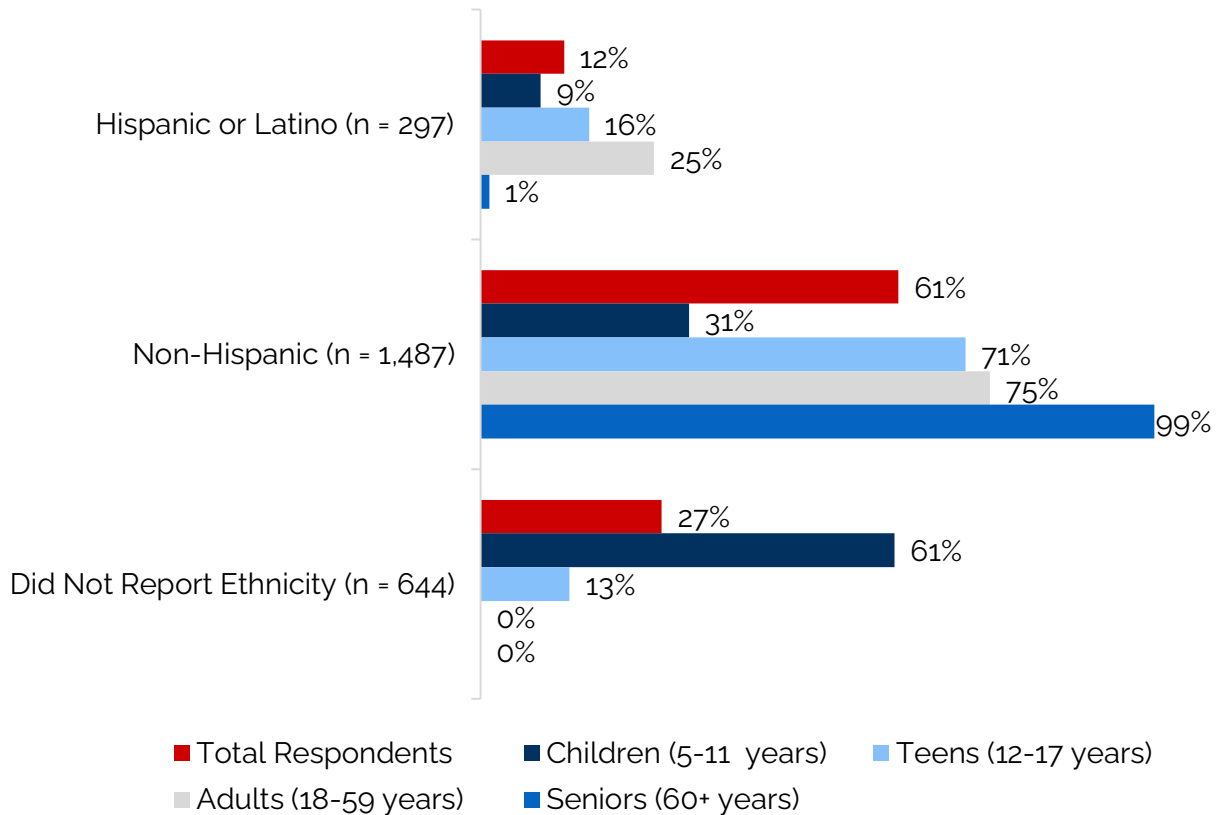
There were 2,428 direct education participants with pre- and post-intervention survey responses for at least one healthy eating (MT1) indicator. As shown in Figure 5, the majority of the respondents were children and teens, with 806 (33%) children (5-11 years), 1187 (49%) teens (12-17 years), 130 (5%) adults (18-59 years), and 305 (13%) seniors (60 years and older).

**Figure 5. Direct Education Survey Respondents by Age Group (n = 2,428)**



Figures 6, 7, and 8 depict the ethnicity, race, and sex distribution of direct education survey respondents.

**Figure 6. Direct Education Survey Respondents by Ethnicity and Age Group (n = 2,428)**



**Figure 7. Direct Education Survey Respondents by Race and Age Group (n = 2,428)**

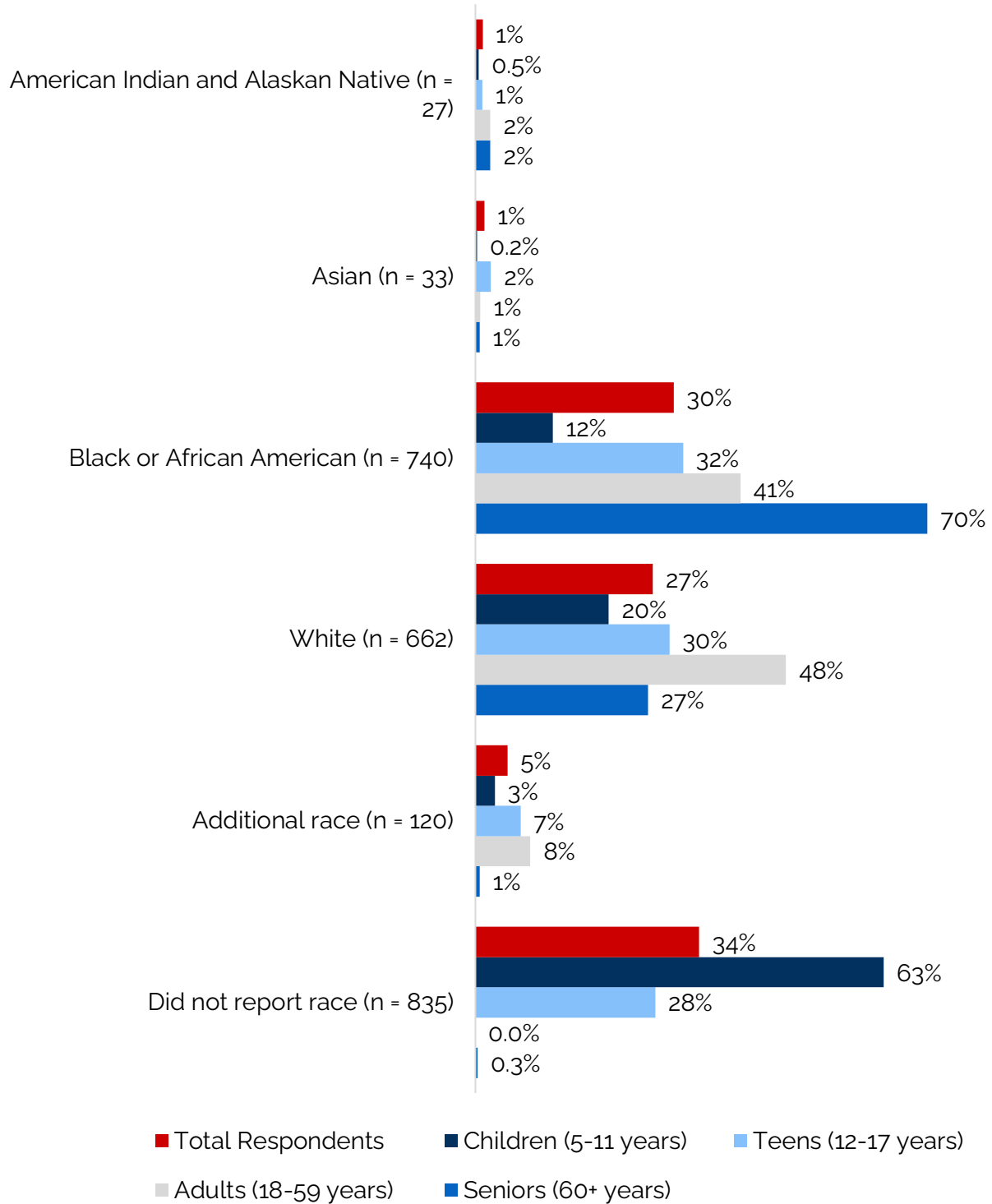
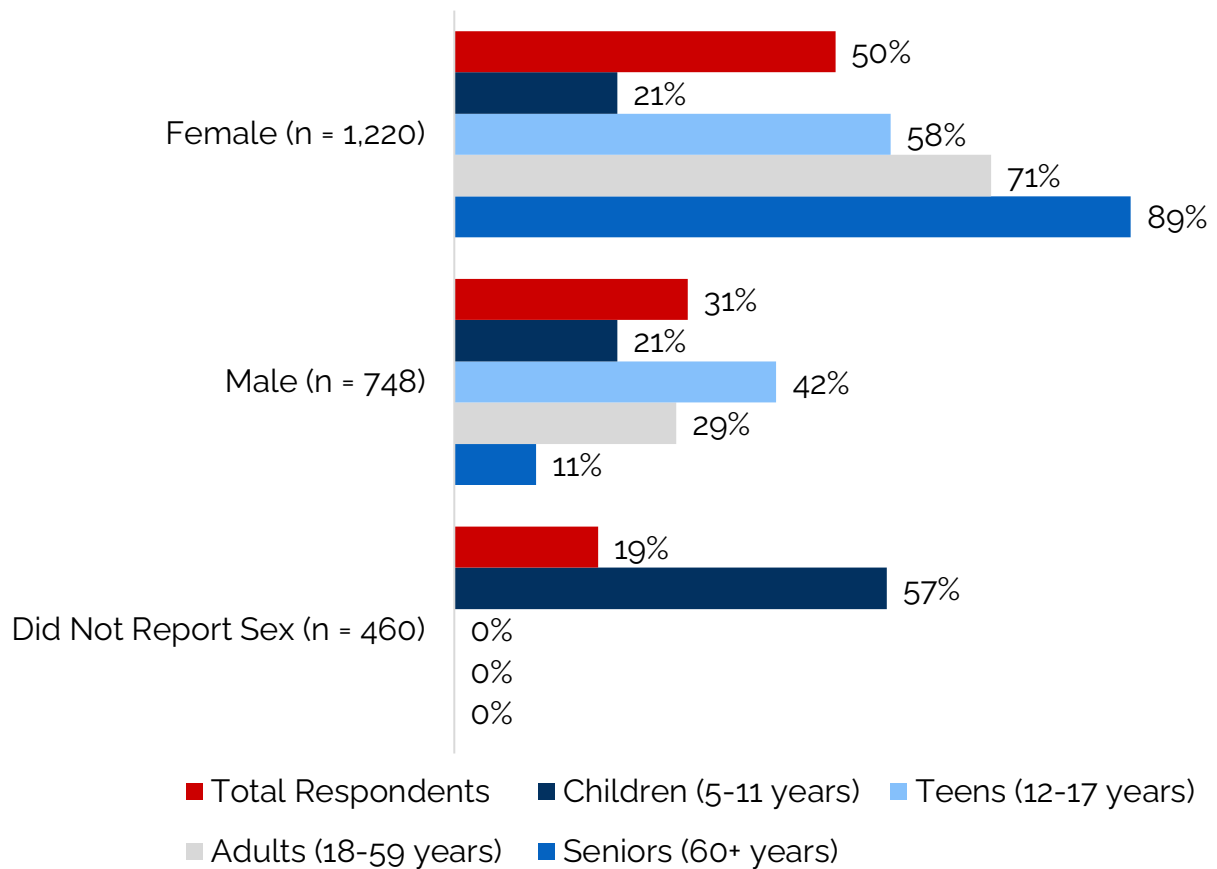


Figure 7 note: Less than 1% of participants were Pacific Islanders or more than one race.

**Figure 8. Direct Education Survey Respondents by Sex and Age Group (n = 2,428)**



**Direct Education Outcomes**

Overall, children and teen healthy eating behaviors remained consistent from pre- to post-intervention, although children did show a significant increase in the percentages meeting dietary guidelines for water. Among adults and seniors, there were significant improvements in fruit and vegetable consumption.

**Children (Ages 5-11)**

Figure 9 shows the percentage of children who met the dietary recommendations for the four healthy eating (MT1) indicators measured by North Carolina IAs. Largely, children remained the same pre- to post-intervention, however, there was a statistically significant increase in the percentage of children who met the recommendation for drinking water.

**Figure 9. Percentage of Children (ages 5-11 years) who Met DGA Recommendations for MT1 Indicators**

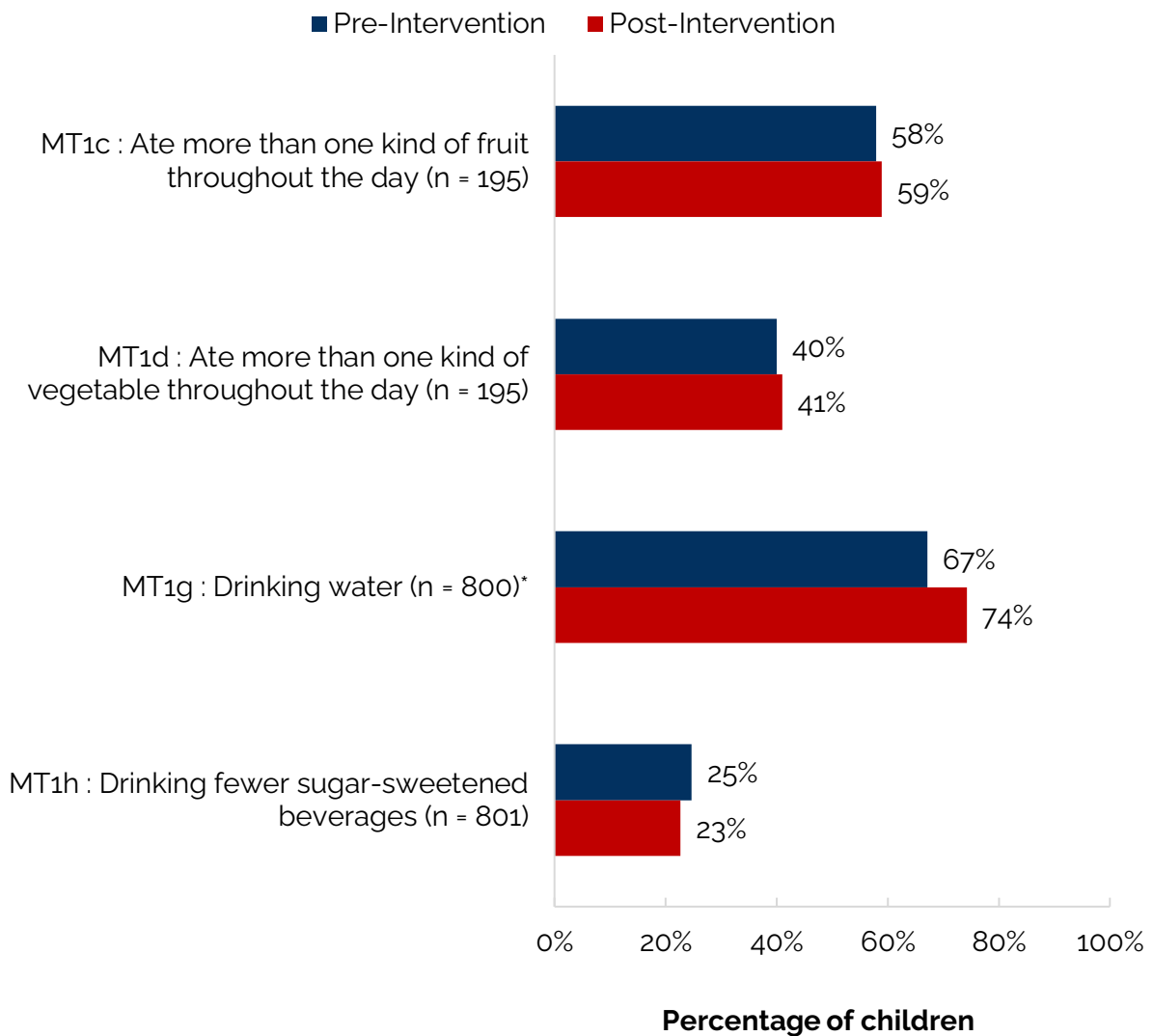
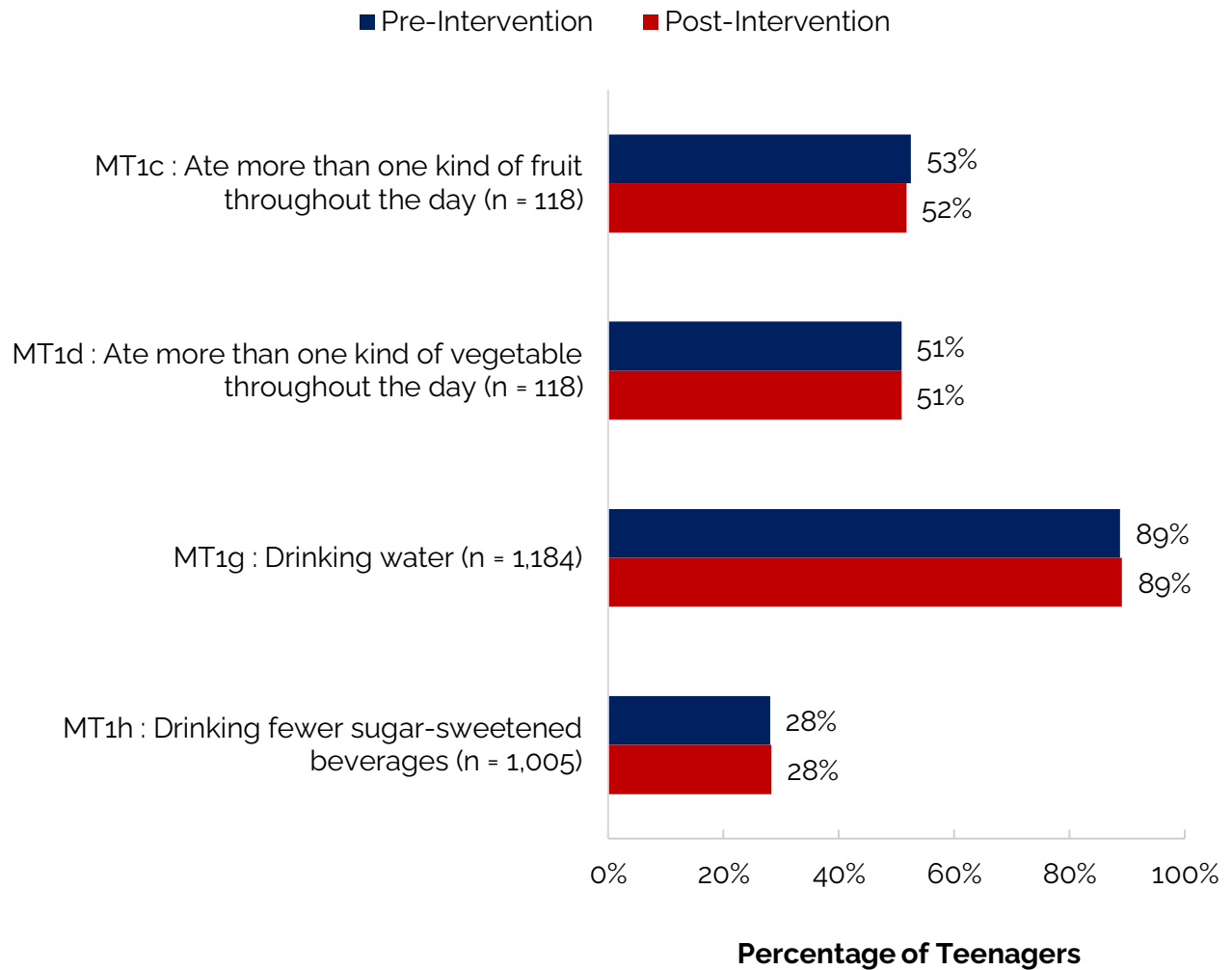


Figure 9 note: \* indicates a statistically significant change from pre- to post-intervention based on McNemar's test at a significance level of  $\alpha=0.05$ . MT1g: McNemar's test ( $X^2(1) = 16.41, p < 0.001, g = 0.15$ ).

**Teenagers (ages 12-17)**

As shown in Figure 10, teenagers' eating behavior largely remained the same pre- to post-intervention.

**Figure 10. Percentage of Teenagers (ages 12-17 years) who Met DGA Recommendations for MT1 Indicators**



## Adults (Ages 18-59)

The proportion of adults meeting recommendations for healthy eating increased significantly for all measured outcomes except water consumption (Figure 11).

**Figure 11. Percentage of Adults (ages 18-59 years) who Met DGA Recommendations for MT1 Indicators**

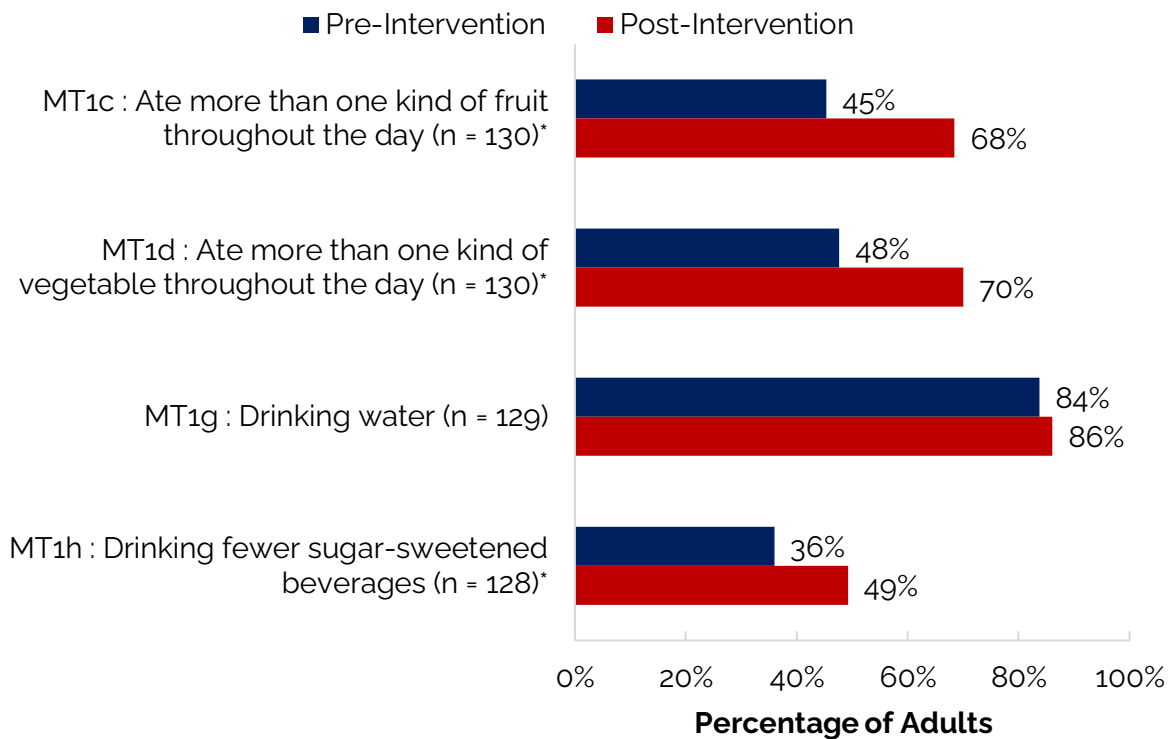


Figure 11 note: \* indicates a statistically significant change from pre- to post-intervention based on McNemar's test at a significance level of  $\alpha=0.05$ . MT1C: McNemar's test ( $X^2(1) = 23.4, p < 0.001$ ), MT1d: McNemar's test ( $X^2(1) = 20.1, p < 0.001$ ), and MT1h: McNemar's test ( $X^2(1) = 11.13, p < 0.001$ ).

### MT1l and MT1m. Cups of fruit/vegetables consumed per day.

Only some IAs collected fruit and vegetable consumption in cups. There were 77 adults who reported cups of fruit and vegetables they ate each day. The DGA recommends consuming two or more cups of fruit a day and 2.5 or more cups of vegetables per day (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2020).

Pre-intervention, 38% of adult respondents ( $n = 29$ ) reported consuming two or more cups of fruit which increased to 64% ( $n = 49$ ) post-intervention. Additionally, the average amount of fruit consumed daily increased significantly by 0.45 cups per day pre- to post-intervention.

**Figure 12. Cups of Fruit Consumed by Adults, Per Day**

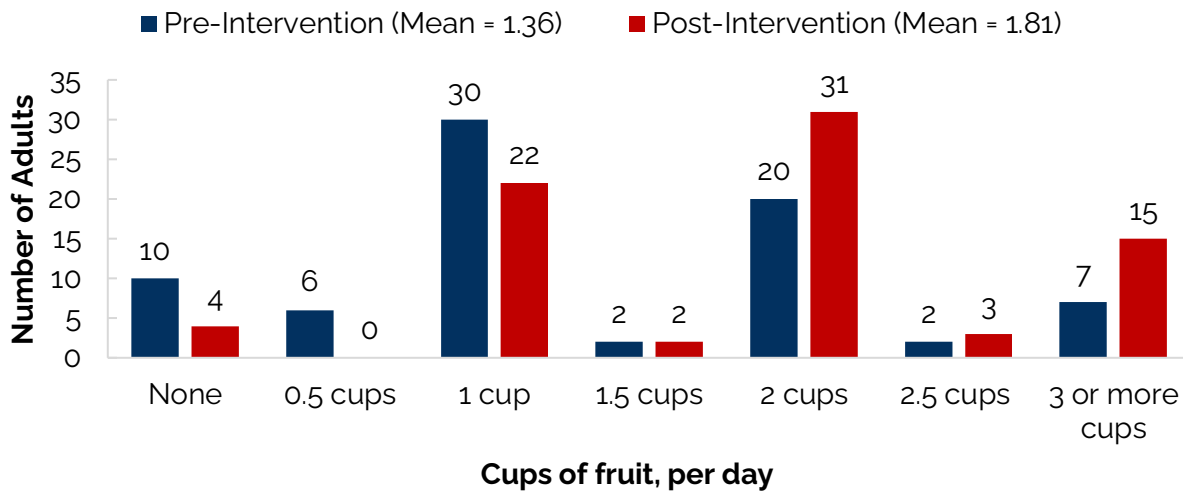


Figure 12 note: Statistically significant paired-samples t-test,  $n = 77$ , pre-intervention ( $M = 1.36$ ,  $SD = 0.87$ ) post-intervention ( $M = 1.81$ ,  $SD = 0.82$ ;  $t(76) = 4.58$ ,  $p < 0.001$ ,  $d = 0.5$ )

As shown in Figure 13, pre-intervention, only 16% of adult respondents ( $n = 12$ ) reported consuming two and a half or more cups of vegetables which increased to 32% ( $n = 25$ ) post-intervention. Additionally, the average amount of vegetables consumed daily increased significantly by 0.36 cups per day pre- to post-intervention.

**Figure 13. Cups of Vegetables Consumed by Adults, Per Day**

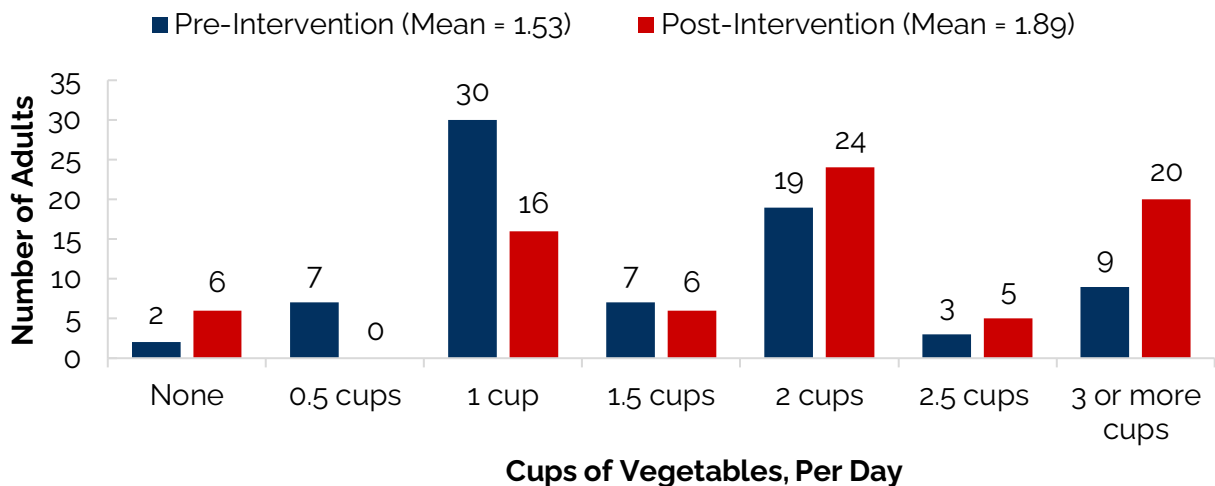


Figure 13 note: Statistically significant paired-samples t-test,  $n = 77$ , pre-intervention ( $M = 1.53$ ,  $SD = 0.82$ ) post-intervention ( $M = 1.89$ ,  $SD = 0.9$ ;  $t(76) = 3.56$ ,  $p < 0.001$ ,  $d = 0.4$ )

### Seniors (Ages 60 and older)

As shown in Figure 14, there was a significant increase in the percentage of seniors who met the recommendation for the consumption of more than one kind of fruit and vegetable.

**Figure 14. Percentage of Seniors who Met DGA Recommendations for MT1 Indicators**

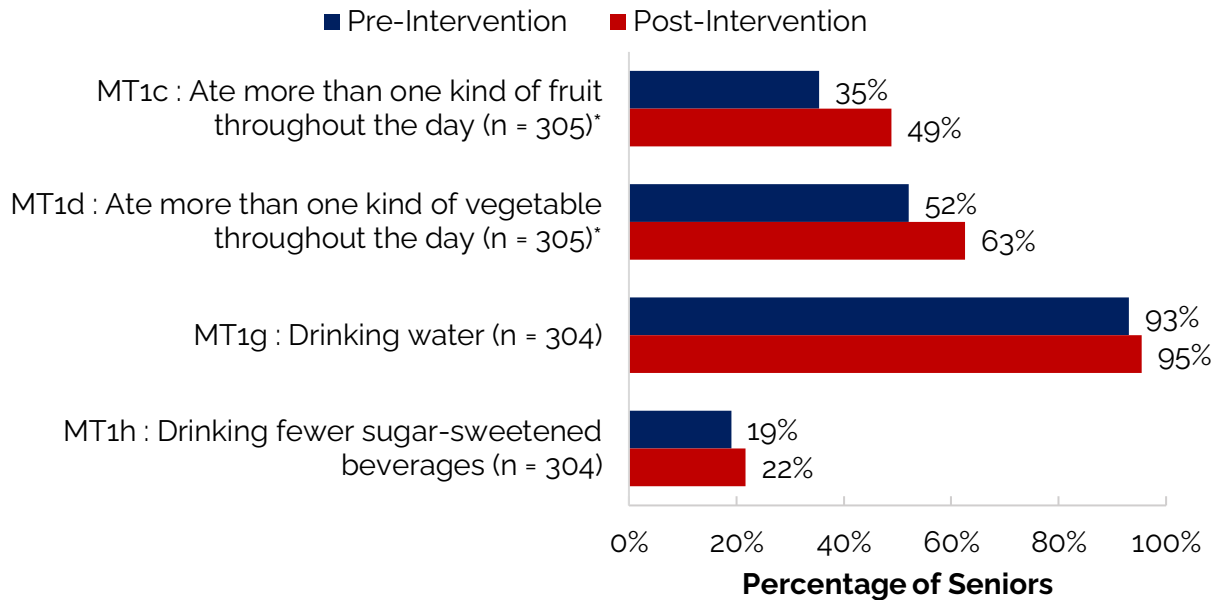


Figure 14 note: \* indicates a statistically significant change from pre- to post-intervention based on McNemar's test at a significance level of  $\alpha=0.05$ . MT1c: McNemar's test ( $X^2(1) = 20.3, p < 0.001, g = 0.26$ ) and MT1d: McNemar's test ( $X^2(1) = 10.9, p < 0.001, g = 0.18$ )

### MT1l and MT1m. Cups of fruit/vegetables consumed per day.

There were 243 seniors who reported cups of fruit and 245 who reported cups of vegetables they ate each day. Pre-intervention, 26% of senior respondents ( $n = 64$ ) reported consuming two or more cups of fruit which increased to 44% ( $n = 107$ ) post-intervention. Additionally, the average amount of fruit consumed daily increased significantly by 0.44 cups per day pre- to post-intervention (Figure 15).

**Figure 15. Cups of Fruit Consumed by Seniors, Per Day**

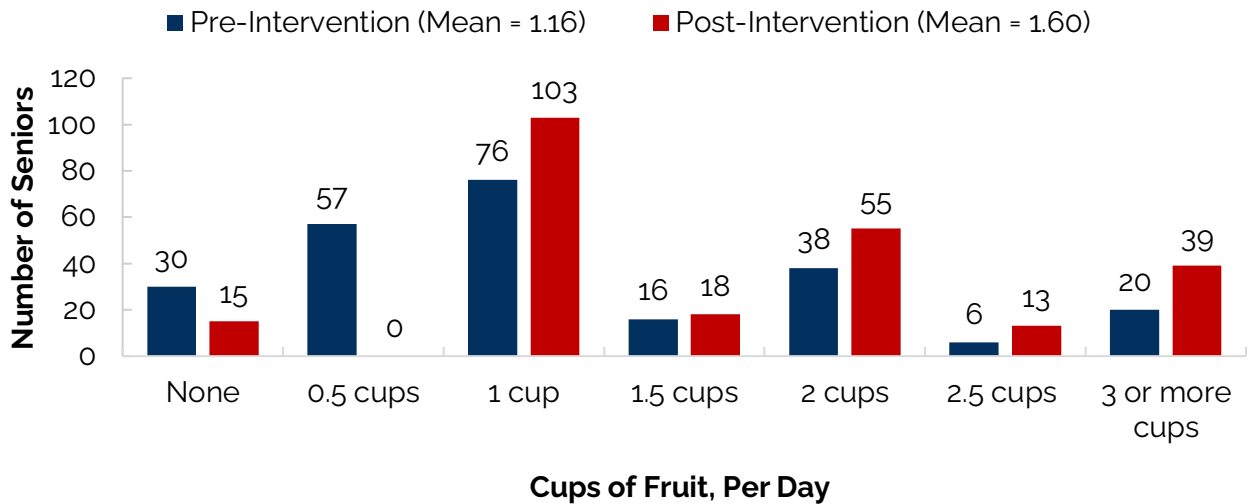


Figure 15 note: Statistically significant paired-samples t-test,  $n = 243$ , pre-intervention ( $M = 1.16$ ,  $SD = 0.85$ ) post-intervention ( $M = 1.6$ ,  $SD = 0.85$ ;  $t(242) = 8.4$ ,  $p < 0.001$ ,  $d = 0.5$ )

As shown in Figure 16, pre-intervention, only 16% of senior respondents ( $n = 40$ ) reported consuming two and a half or more cups of vegetables which increased to 36% ( $n = 89$ ) post-intervention. Additionally, the average amount of vegetables consumed daily increased significantly by 0.43 cups per day pre- to post-intervention.

**Figure 16. Cups of Vegetables Consumed by Seniors, Per Day**

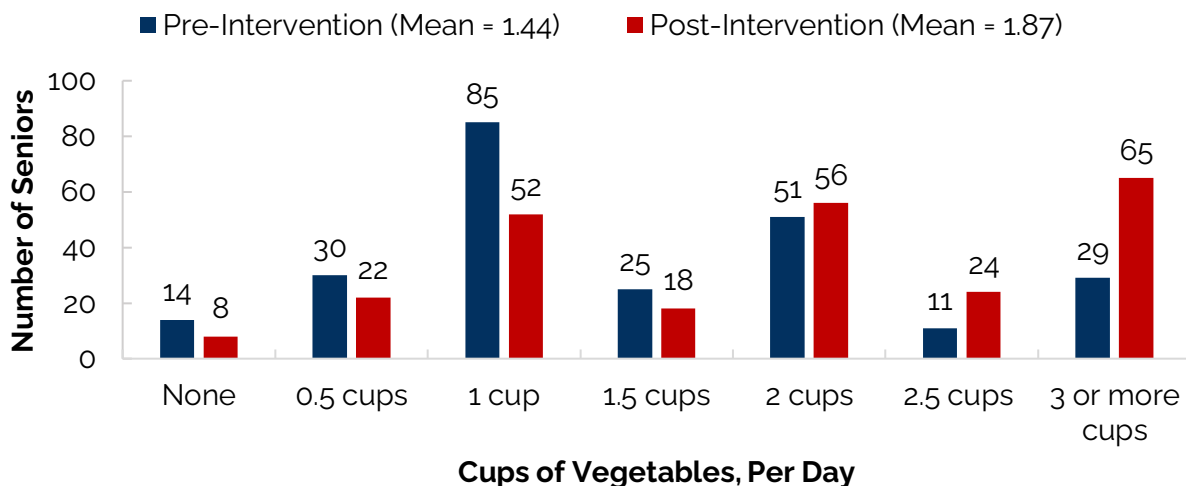


Figure 16 note: Statistically significant paired-samples t-test,  $n = 245$ , pre-intervention ( $M = 1.44$ ,  $SD = 0.84$ ) post-intervention ( $M = 1.87$ ,  $SD = 0.92$ ;  $t(244) = 7.2$ ,  $p < 0.001$ ,  $d = 0.5$ )

## Direct Education Summary of Results

Overall, outcomes from the FFY 2023 direct education programs indicate improvements in healthy eating behaviors after participating in a direct education program for some groups. Adults and seniors both reported increasing the variety and quantity of fruits and vegetables consumed during FFY 2023. Only children reported drinking more water and only adults reported drinking fewer sugar-sweetened beverages (SSBs) post-intervention. Teenagers reported no significant improvements in healthy eating or drinking behaviors.

To understand the effect of these changes, an effect size was calculated for all statistically significant measures to determine the magnitude of change. Effect size is not as dependent on sample size as other tests. Larger effect sizes indicate more meaningful changes in the behaviors reported by direct education participants. Two measures of effect size were used based on the types of analyses that were performed: the *d* statistic (parametric tests of continuous data) and the *g* statistic (tests of binary data). Each statistic has its range of values indicating whether the effect size is small, medium, or large, as shown in Table 3 (Cohen, 1988).

**Table 3. Interpretation of Effect Size for Direct Education Results**

Effect Size	Small	Medium	Large
<i>d</i>	0.20	0.50	0.80
<i>g</i>	0.05	0.15	0.25

Table 4 shows effect size estimates and interpretations for all significant direct education results. Almost all changes had a medium or large effect size.

**Table 4. Interpretation of Effect Size for Direct Education Results**

Age Group	Indicator	Description	Change from Pre- to Post-Intervention	Effect Size	Effect Size Interpretation
Child	MT1g	Drinking Water	Increased water consumption	<i>g</i> = 0.15	Medium
Adult	MT1c	Ate more than one kind of fruit	Increased fruit consumption	<i>g</i> = 0.42	Large
	MT1d	Ate more than one kind of vegetable	Increased vegetable consumption	<i>g</i> = 0.37	Large
	MT1h	Drinking fewer sugar-sweetened beverages	Decreased SSB consumption	<i>g</i> = 0.37	Large
	MT1l	Cups of fruit consumed per day	Increased fruit consumption	<i>d</i> = 0.5	Medium
	MT1m	Cups of vegetables consumed per day	Increased vegetable consumption	<i>d</i> = 0.4	Small

Age Group	Indicator	Description	Change from Pre- to Post-Intervention	Effect Size	Effect Size Interpretation
Senior	MT1c	Ate more than one kind of fruit	Increased fruit consumption	$g = 0.26$	Large
	MT1d	Ate more than one kind of vegetable	Increased vegetable consumption	$d = 0.19$	Medium
	MT1l	Cups of fruit consumed per day	Increased fruit consumption	$d = 0.5$	Medium
	MT1m	Cups of vegetables consumed per day	Increased vegetable consumption	$d = 0.5$	Medium

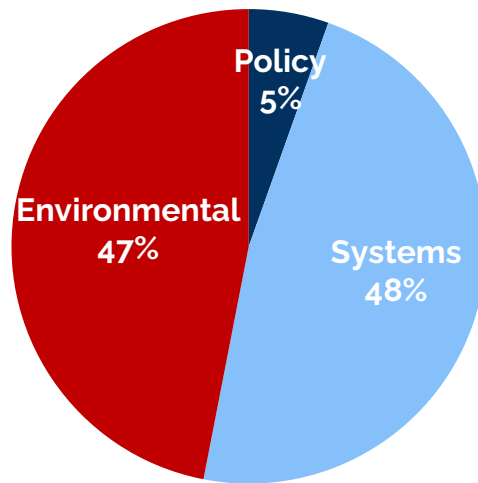
Table 4 note:  $g$  = Cohen's  $g$  statistic,  $d$  = Cohen's  $d$  statistic



## Policy, Systems, and Environmental Changes

In FFY 2023, North Carolina SNAP-Ed implemented PSE interventions in 48 out of the 100 counties in North Carolina. As shown in Figure 17, there were 588 changes comprising 32 (5%) policy changes, 280 (48%) systems changes, and 276 (47%) environmental changes. Of the total number of changes adopted, 518 (88%) were nutrition-related changes, 66 (11%) were physical activity-related changes and four (1%) were both nutrition and physical activity-related changes.

**Figure 17. PSE Change by Approach Type**



### Policy Changes

All 32 policy changes reported for FFY 2023 were nutrition-related (Table 4). The most common were related to increasing healthy food and beverage and increasing or improving nutrition education or cooking classes ( $n = 15$ ).

**Table 4. Nutrition-Related Policy Changes (MT5b)**

Policy Change Description	Frequency
Policy increasing healthy foods and beverages	15
Policy for increasing or improving nutrition education or cooking activities	15
Policy limiting unhealthy foods	1
Food/beverage or nutrition-related policy (childcare wellness, school wellness, workplace wellness, etc.)	1

## Systems Changes

There were 280 systems changes reported in FFY 2023, 242 changes related to nutrition, 34 changes related to physical activity, and four changes related to both nutrition and physical activity. The four systems changes related to both nutrition and physical activity were physical activities to incorporate more culturally relevant practices.

Table 5 shows the top five nutrition-related systems changes in FFY 2023, with the most frequent being the collection or gleaning of excess healthy foods for distribution to clients, needy individuals, or charitable organizations ( $n = 58$ ).

**Table 5. Top Nutrition-Related Systems Changes (MT5c)**

Systems Change Description	Frequency
Collection or gleaning of excess healthy foods for distribution to clients, needy individuals, or charitable organizations	58
Opportunities for parents/students/community to access fruits and vegetables from the garden	35
Professional development opportunities on nutrition (e.g. nutrition standards, gardening, breastfeeding, etc.)	21
Opportunities for parents/students/community to work in the garden	19
Mechanism for distributing produce to families or communities (e.g. gardens, or farmer's markets)	17

Table 6 shows the 34 systems changes related to physical activity, with the most frequent being increasing professional development opportunities on physical activity ( $n = 19$ ), followed by incorporating physical activity into the school day ( $n = 13$ ).

**Table 6. Physical Activity-Related Systems Changes (MT5d)**

Systems Change Description	Frequency
Professional development opportunities on physical activity	19
Incorporation of physical activity into the school day or during classroom-based instruction (not recess/free play or PE)	13

Systems Change Description	Frequency
Complete streets systems change (e.g. street design manual, transit system improvements, active transportation prioritized in the city budget, etc.)	1
Increased quantity (minutes) of physical education (PE)	1

## Environmental Changes

There were 276 environmental changes reported in FFY 2023, with 244 changes related to nutrition and 32 changes related to physical activity.

Table 7 lists the top three environmental changes related to nutrition with the most frequent being initiating, improving, expanding, reinvigorating, or maintaining edible gardens ( $n = 71$ ).

**Table 7. Top Three Nutrition-Related Environmental Changes (MT5d)**

Environmental Change Description	Frequency
Initiation, improvement, expansion, reinvigoration, or maintenance of edible gardens	71
Onsite garden produce for meals/snacks provided on-site	25
Ongoing, point-of-decision prompts to make a healthy eating behavior choice (could include signage, taste tests, and other interactive displays)	19

Table 8 shows the top physical activity-related environmental changes, with the most frequent being physical activity facilities, equipment, structures, or outdoor space ( $n = 13$ ).

**Table 8. Top Physical Activity-Related Environmental Changes**

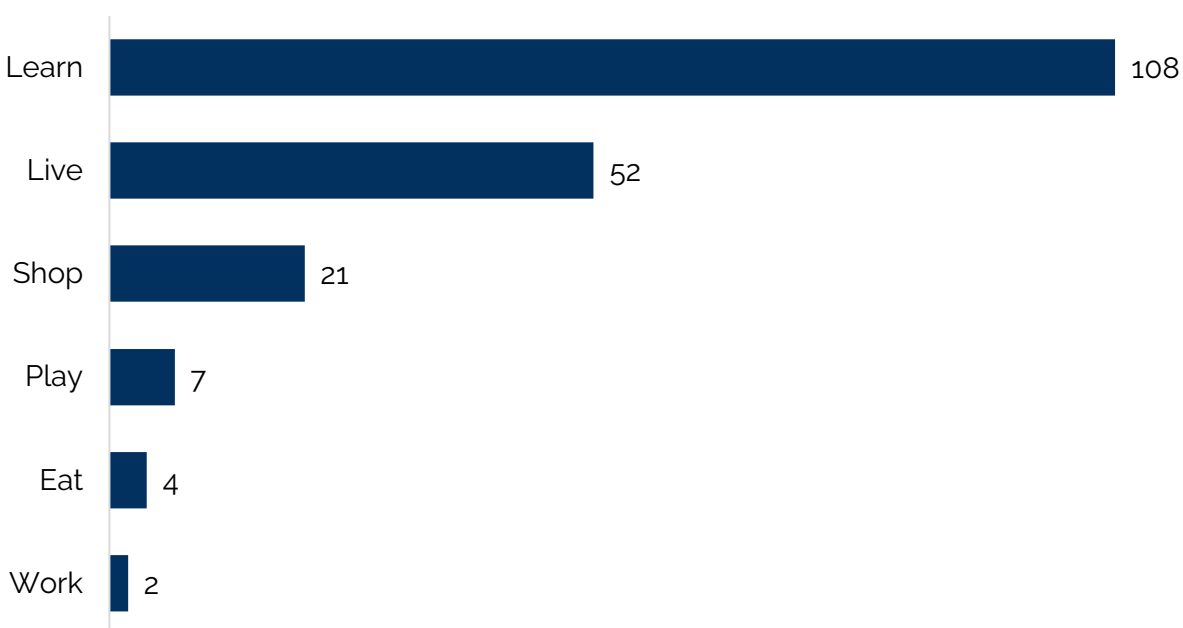
Environmental Change Descriptions	Frequency
Physical activity facilities, equipment, structures, or outdoor space	13
Incorporated physical activity/reduced sitting during usual, ongoing site activities and functions	7

Environmental Change Descriptions	Frequency
Ongoing, point-of-decision prompts to make physical activity choices (could include signage and other interactive educational displays to prompt physical activity such as walking, stairs, or bicycle paths)	3
Opportunities for structured physical activity	3
Access or safety of walking or bicycling paths	3

### PSEs by Domain

PSE changes took place in multiple settings where North Carolinians eat, learn, live, play, shop, and work. As shown in Figure 18, most PSE changes took place at sites where people learn ( $n = 108$ ), live ( $n = 52$ ), and shop ( $n = 21$ ).

**Figure 18. Number of PSE Sites by Domain**



The total estimated reach for all PSE changes shown in Table 9 was 85,034 individuals. Over half of the reach (52%) was in settings within the Learn domain.

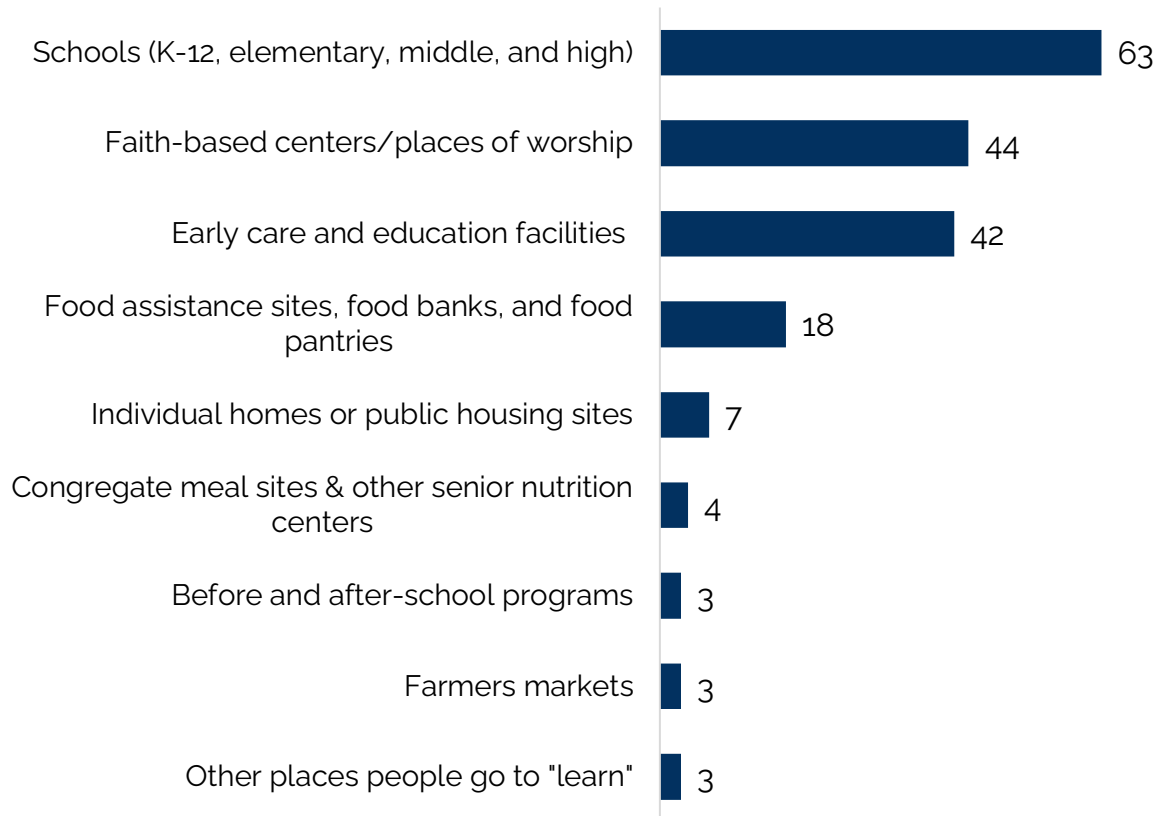
**Table 9. Estimated Reach of PSE changes, by Domain**

Domain	Reach	Percent
Learn	44,533	52%
Shop	25,087	30%
Play	10,330	12%
Live	4,629	5%
Eat	440	1%
Work	15	<1%
<b>Total Estimated Reach</b>	<b>85,034</b>	<b>100%</b>

**PSEs by Setting**

North Carolina IAs reported the specific settings where PSE changes were implemented. As shown in Figure 19, the most frequently reported settings were schools (*n* = 63), faith-based centers (*n* = 44), and early care and educational facilities (*n* = 42). In addition to the settings included in Figure 19, North Carolina IAs also reported PSE changes at community and recreation centers, gardens, other places people go to work, youth organizations, family resource centers, group living arrangements, health care clinics, and hospitals, libraries, and parks and open spaces.

**Figure 19. Number of PSE Changes, by Setting**



*Figure 19 note: Only settings reported by 3 or more sites are included in the graph (total settings = 18).*

### **Nutrition and Physical Activity Supports Implementation (LT5/LT6)**

Implementation of PSE changes was assessed by looking at the number of sites in each type of setting within the eat, learn, live, play, shop, and work domains reporting a multi-component and multi-level intervention. The implementation features are intended to enhance the likelihood of the interventions' impact and sustainability and therefore represent the long-term (LT5 and LT6) indicators from the SNAP-Ed Evaluation Framework (USDA-FSN, 2016). There were 156 sites reporting at least one nutritional support (MT5) PSE change and 48 sites reporting at least one physical activity support (MT6) PSE change along with one or more of the following components:

- Evidence-based education
- Marketing
- Parent/community involvement
- Staff training or continuous program and policy implementation

Table 10 shows the total number of reported components among sites that also reported at least one nutritional support (MT5) PSE change.

**Table 10. Total Number of Components per Site for Sites that Implemented at Least One Nutritional Support (MT5) PSE Change (LT5b)**

Number of components	Number of sites
One component	39
Two components	92
Three components	22
Four components	3
<b>Total</b>	<b>156</b>

The most frequently reported component paired with nutritional support (MT5) PSE changes was staff training or continuous program and policy implementation ( $n = 102$ ), followed by evidence-based education ( $n = 101$ ) (Table 11).

**Table 11. Number of Sites Implementing at Least One Nutritional Support (MT5) PSE Change and Each Type of Specific Additional Component (LT5b)**

Specific component	Number of sites
Staff training or continuous program and policy implementation	102
Evidence-based education	101
Parent/community involvement	61
Marketing	37

Table 12 shows the total number of reported components among sites that also reported at least one physical activity support (MT6) PSE change.

**Table 12. Total Number of Components Per Site for Sites that Implemented at Least One Physical Activity Support (MT6) PSE Change (LT6b)**

Number of components	Number of sites
One component	33
Two components	11
Three components	2
Four components	2
<b>Total</b>	<b>48</b>

The most frequently reported component paired with physical activity support (MT6) PSE changes was evidence-based education ( $n = 40$ ). A complete list of the specific components can be found in Table 13.

**Table 13. Number of Sites Implementing at Least One Physical Activity Support (MT6) PSE Change and Each Type of Specific Additional Component (LT6b)**

Specific component	Number of sites
Evidence-based education	40
Parent/community involvement	15
Staff training on continuous program and policy implementation	7
Marketing	4

### PSE Summary of Results

IAs reported 588 PSE changes at 194 sites, which had a combined reach of 85,034 individuals. Of those, 32 were policy changes, 280 were systems changes, and 276 were environmental changes. Most PSE changes were related to nutrition ( $n = 518$ ), with 66 changes related to physical activity. Multi-component and multi-level

interventions were reported at 156 sites with nutrition-related PSE changes and 48 sites with physical activity-related PSE changes.



## Success Stories

### Families and Community Connect over Garden Activities at a Fall Festival

In fall 2023, GrowWELL with Poe Childcare Center, in collaboration with Pam's School of Raleigh, hosted a collaborative fall festival to engage families in garden activities, provide educational opportunities for the youth, and build community. Community partners like, PNC and The Produce Box, sponsored several fun and educational garden-related activities for youth including;



- Tasting a harvest salad
- Weighing and counting produce and purchasing it with "Pam" dollars they earned at the school "bank"
- Planting a salad greens bowl to take home
- Practicing counting pretend money at a farmer's market apple stand
- Meeting a farmer
- Playing many games

Children also took home a garden-themed storybook to continue learning at home.

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*"Kids loved picking out and weighing their own produce. Many family members came out and had such a fun time. Thank you, Poe, for helping us bring Fall Fest back!"*

*-Mary Edwards (Director of Pam's School of Raleigh)*

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Over 70 individuals participated in the Fall Festival. The majority of participants reported greater interest in cooking and eating more fruits and vegetables. The event also helped to increase buy-in and awareness of the GrowWELL with Poe Center garden program in the community and initiated new cross-sector partnerships for future needs. To learn more about the garden program please visit [GrowWELL Garden](#).



## Franklinton Community Garden: For our locals, by our locals

The Franklinton Community Garden began six years ago to provide “local fresh produce grown for our locals by our locals”. Managed by about 40 volunteers, the Franklinton Community Garden is a staple in the town of Franklinton, where community members can meet, and volunteers can give back to the community they love.

Over the past two years, the Franklin County Cooperative Extension collaborated with North Carolina State University (NCSSU) Steps to Health (SNAP-Ed) to provide funding for supplies and materials needed to help expand and enhance the Franklinton Community Garden including, watering cans, seeds, fertilizer, compost, compost bins, wiring, and wood posts. These supplies enabled the garden to grow more food for the community, expand education on a variety of garden topics (i.e., cooking demonstrations and composting), and introduce community members to a variety of new fruits and vegetables. Volunteering in the community garden also increased physical activity opportunities and community connectedness.

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*“It’s not just about people getting fruits and vegetables, which is important, but it is a community thing where people get to talk to each other”*

*-Franklinton Community Garden Volunteer*

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Take Control, a Steps to Health nutrition education program, was also provided to the seniors at the Franklinton Senior Center, located directly behind the community garden. With an estimated reach of 300 families, the Franklinton Community Garden continues to provide fruits, vegetables, physical activity, and social connectedness to its community members.

For more about the Franklinton Community Garden, watch the [Around Franklin County video](#).



## Durham Double Bucks Program Addressing Food Insecurity

The Triangle Double Bucks program in North Carolina matches cash, Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants and Children (WIC) Farmers Market Nutrition Program (FMNP), and Senior FMNP funds spent at farmers markets for people living in public housing, receiving WIC, and receiving SNAP without a cap on what can be matched at each market. In Federal Fiscal



Year 2023, Durham's Innovative Nutrition Education (DINE) increased its Double Bucks program to support seven farmers markets in three counties in North Carolina. Along with the farmers markets, DINE partnered with WIC, the American Heart Association, the Durham Center for Senior Life, and the Durham Housing Authority to promote and support the markets.

The markets provided \$122,961 in Double Bucks incentives in 4,186 transactions. Double Bucks was utilized by 747 unduplicated households.

DINE and the farmers markets partnered with University of North Carolina School of Public Health to design and execute a customer survey and found that Double Bucks is having a positive impact on the customers who utilize the program. Of the 135 Double Bucks customers who participated in the survey:

- 85% strongly agreed that Double Bucks makes food more affordable.
- 84% strongly or somewhat agreed that they eat more fruits and vegetables because of Double Bucks.
- 77% of participants strongly agreed that they prefer to spend their nutrition benefits at a farmers' market rather than a grocery store.

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*"The SNAP program is amazing and makes good food so much more accessible for low-income communities!"*

*-Customer shopping with Double Bucks at Eno River Farmers' Market*

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Additional funding for the 2024 and 2025 market seasons was secured for the three markets located in Durham County. DINE continues to work with the Wake County and Orange County markets to secure additional funding. For more information about the Double Bucks program see: [Duke provides funding to Durham's Double Bucks Program addressing food insecurity.](#)

## From Cafeteria to Home: Inspiring Healthy Habits with Teen Cuisine

In Martin County North Carolina, 17 high school students embarked on a six-week culinary adventure with the Teen Cuisine curriculum. One of the classes focused on the protein food group helped the students learn that foods like dried beans and peanut butter were excellent protein sources. Students also explored the benefits of eating lean proteins and discussed healthy cooking methods.

The impact of these lessons was immediate. Students began discussing their food choices in the cafeteria and encouraging each other to opt for healthier options. The positive influence of the program is also highlighted by students' eagerness to share and implement what they learned at home.



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*I'm going to tell my Mom to only grill fish from now on because that's the healthy way to cook it!"*

*-Student using the Teen Cuisine Curriculum*

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This newfound awareness and peer support in making nutritious choices marked a significant step toward fostering long-term healthy eating habits. The Teen Cuisine curriculum not only educated these young minds about nutrition but also empowered them to take charge of their health, inspiring a ripple effect of healthy habits within their families and beyond.



## Culinary Kids: "Big Savings and Quality Time"

In Federal Fiscal Year 2023, nutrition educators for University of North Carolina – Greensboro (UNCG) Recipe for Success used a Culinary Kids curriculum to teach children how to include nutritious ingredients in their meals. The children who participated in Culinary Kids showed enthusiasm for eating healthier meals and being able to share recipes with their families. Kimberly Titlebaum, a nutrition educator at UNCG-Recipe for Success, reflects on how the goals of the program, to build connection through family and food, extended one family's food budget further and toward better health. Please note that participant names have been changed to protect their privacy.

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*Any parent knows, weeknight dinners can be hard. Add to that a full-time job and no spouse, and it would come as no surprise that Nicole, a librarian in High Point North Carolina, found herself relying on fast food almost every night of the week.*

*I met Nicole and her daughter Sidney when teaching a once-a-week class for children at the High Point Library. Our class used the curriculum Culinary Kids which Recipe for Success has developed over recent years. This curriculum focuses on teaching kids how to read a recipe and incorporating whole grain foods into their meals.*

*Kids usually complete this class excited to bring what they learn home to their families. As an educator, however, it is rare that I get a chance to know what happens next. So, when I ran into Nicole a year after Sidney took my class, I had the chance to learn the way lessons from culinary kids' cascade, from the classroom to a family's kitchen. Sidney was enthusiastic after the class, her mom told me, "so we started using a few techniques at home." Nicole went on, "Over the next few months, we really changed our family's routines." The pair can now be found on Sunday afternoons chopping away with their new kitchen ritual. Nicole and Sidney particularly like the "cook once, eat twice" technique, as it saves them time during their busy weeks. Nicole said she was feeling healthier and found that Sunday afternoon food prep was a fantastic way for her and Sidney to ensure they share some quality time with each other every week. Nicole's eyes lit up as she began to wrap up her story, "and we are saving so much money!"*

*- Kimberly Titlebaum, a nutrition educator at UNCG-Recipe for Success*

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## Returning to In-Person Cooking Matters for Kids Lessons-UNC Chapel Hill Child Nutrition Project

Since the spring of 2017, the SNAP-Ed Child Nutrition Project at the University of North Carolina (UNC-CHI) at Chapel Hill has offered Cooking Matters for Kids lessons to children attending afterschool programs in Orange County Schools, but in-person opportunities were limited since 2020 due to the COVID-19 pandemic. During Federal Fiscal Year 2023, the SNAP-Ed Child Nutrition Project at UNC Chapel Hill returned to teaching in-person Cooking Matters for Kids classes for the first time since the spring of 2020.



Due to partnerships with the Inter-Faith Food Shuttle and the Orange County Afterschool Program, a total of seven sessions per site were held at three Afterschool Programs - New Hope Elementary School, Grady Brown Elementary School, and Efland Cheeks Elementary School - in the fall of 2022. Additionally, a total of 10 sessions per site were offered at Pathways Elementary School and New Hope Elementary School in the spring of 2023. In total, 115 third through fifth graders participated in the Cooking Matters for Kids classes. Students who participated in the Cooking Matters for Kids classes showed improvement in making healthy food choices and increased self-efficacy in preparing healthy meals and snacks. For more information about SNAP-Ed Child Nutrition Project at the University of North Carolina (UNC-CHI) at Chapel Hill please contact, [CarolinaHungerInitiative@unc.edu](mailto:CarolinaHungerInitiative@unc.edu).



## The Power of Lived Experience: A community champion's journey to advocacy for safer streets

In Fairview, North Carolina the youth have inspired their residents to learn how to become civically engaged and advocate for improvements necessary for safer communities. Since 2019, the Fairview Youth in Action Program (FYIAP), has completed various assessments, audits, and workshops to identify the barriers and facilitators for improving walkability in their neighborhood. As part of this effort, the University of North Carolina Food, Fitness, Opportunity Research Collaborative (UNC-FFORC) team has led traffic calming workshops, which provide Spanish interpretation and translation services, to engage Fairview community members in the decision-making process for implementing changes to their local built environment.

Carlos, a 16-year resident of the Fairview community has first-hand experience with the barriers to active living, but it wasn't until his two daughters started participating in the FYIAP that he realized he could do something about it. Inspired by his daughters, he began attending the UNC-FFORC workshops, where he learned how to advocate for change. As a parent, Carlos is motivated by his children's future. As a community champion, Carlos will continue to learn about ways to bring the community together to advocate for changes in both his community and other communities that have been historically excluded from the decision-making process.



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*"We want to leave something good and positive for the next generation. We want a peaceful community."*

*-Carlos*

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The youth of Fairview have inspired their residents to learn about ways to become civically engaged and how to advocate for improvements necessary for safer communities. Their work has also highlighted the importance of co-creating inclusive spaces that are culturally and linguistically adapted so all community members can voice their ideas. For more information about Fairview community's continued partnership with UNC-FFORC please contact, [fforcteam@unc.edu](mailto:fforcteam@unc.edu).



## Conclusions and Discussion

### **Adults and seniors are consistently improving healthy eating behaviors.**

In FFY 2023, there is evidence of positive changes in healthy eating behaviors among adult and senior participants in SNAP-Ed direct nutrition education programs in North Carolina. Adults and seniors showed consistent, statistically significant improvements in fruit and vegetable intake for both FFY 2022 and FFY 2023. Additionally, adults showed a significant improvement in eating more than one type of fruit and vegetable each week while seniors saw improvements in eating more than one type of vegetable from FFY 2022 to FFY 2023.

### **Healthy drinking habits are more likely to improve among adult SNAP-Ed participants.**

Adult SNAP-Ed participants are the only age group to show consistent improvements in healthy drinking habits. In both FFY 2022 and FFY 2023, adults significantly decreased sugar-sweetened beverage consumption. While children did not see any improvements in decreasing their sugar-sweetened beverages, there was a significant increase in water consumption in FFY 2023.

### **Teenage SNAP-Ed participants maintained similar eating and drinking patterns throughout FFY 2023.**

While children, adults, and seniors showed improvements in at least one healthy eating or drinking behavior, teenagers remained the same throughout FFY 2023. It is unclear why teenagers showed no improvement after participating in direct nutrition education; however, around half were eating more than one kind of fruit or vegetable each day, almost all were drinking water, and less than one-third were drinking sugar-sweetened beverages, so there was not as much room for improvement as in the adult and senior populations. More granular measures to capture smaller changes may help evaluate the impact of direct education interventions. Additional research to identify barriers to improved healthy eating behaviors may also be helpful to explore.

### **The number of PSE changes increased while the reach decreased from FFY 2022 to FFY 2023.**

A total of 588 PSE changes were implemented in North Carolina with a combined reach of 85,034 across 194 sites. Compared to FFY 2022, the total number of PSE changes increased, including increases in the number of policy changes, systems changes, and environmental changes. While there was an increase in PSE changes and sites, the estimated reach of PSE changes decreased in North Carolina from 108,309 in FFY 2022 to 85,034 in FFY 2023.

## Recommendations

Based on the findings of this evaluation, the following recommendations should be considered:

- **Consider alternative approaches to improve healthy beverage intake among SNAP-Ed participants.**
  - Compared to fruit and vegetable intake, drinking more water and decreasing SSBs is less consistent among the majority of SNAP-Ed participants. Increasing education (i.e., social marketing campaigns) and targeted PSE approaches (i.e., healthy vending machine options, community challenges, etc.) to increase drinking water and decrease SSB intake could help SNAP-Ed participants improve healthy beverage intake.
- **Consider tailoring direct education approaches to teens to increase healthy food and beverage intake among these populations.**
  - Teenagers had no significant improvements for healthy food or beverage intake after completing nutrition education for FFY 2023. Alternative direct education approaches should be explored to ensure the information is relevant to the teenage group. Consider taking steps to know more about teenagers in North Carolina (i.e., focus groups, community listening sessions, etc.) to better tailor nutrition education for this age group.
- **Consider engaging with youth SNAP-Ed participants to identify barriers to healthy eating and drinking in North Carolina.**
  - Both children and teens showed no significant improvement in fruit and vegetable intake for FFY 2023. Consider increasing community engagement efforts for youth SNAP-Ed participants. For example, conducting surveys and focus groups with SNAP-Ed participants to identify barriers to healthy eating, conducting a series of community listening sessions with SNAP-eligible youth, or establishing a youth advisory board to help identify promising SNAP-Ed programming activities for youth participants. Identifying the barriers impacting youth SNAP-Ed participants could help to tailor nutrition education for this age group.
- **Consider more sensitive evaluation measures to identify smaller changes.**
  - Few changes were detected among children and teens in FFY 2023; however, measures that measure actual intake in smaller increments (cups or times per day) could show changes after participating in SNAP-Ed interventions.

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## Appendix 1

Table A1 shows the demographic distribution of the 2,428 direct education participants with pre- and post-intervention data for at least one outcome measure.

**Table A1. Direct Education participants with pre- and post-intervention data, by ethnicity, race, and sex by age category (n = 2,428)**

		Children (5-11 years) n = 806	Teens (12-17 years) n = 1,187	Adults (18-59 years) n = 130	Seniors (60+ years) n = 305	Total Participants n = 2,428
Categories		n (%)	n (%)	n (%)	n (%)	n (%)
Ethnicity	Hispanic or Latino	71 (9%)	189 (16%)	33 (25%)	4 (1%)	297 (12%)
	Not Hispanic or Latino	246 (31%)	843 (71%)	97 (75%)	301 (99%)	1,487 (61%)
	Did Not Report Ethnicity	489 (61%)	155 (13%)	0 (0%)	0 (0%)	644 (27%)
Race						
Race	American Indian or Alaska Native	4 (1%)	13 (1%)	3 (2%)	7 (2%)	27 (1%)
	Asian	2 (0.2%)	28 (2%)	1 (1%)	2 (1%)	33 (1%)
	Black	96 (12%)	379 (32%)	53 (41%)	212 (70%)	740 (31%)
	Pacific Islander	1 (0.1%)	2 (0.2%)	0 (0%)	0 (0%)	3 (0.1%)
	White	165 (21%)	354 (30%)	62 (48%)	81 (27%)	662 (27%)
	Additional Race Not Listed	24 (3%)	83 (7%)	11 (9%)	2 (1%)	120 (5%)
	More Than 1 Race	8 (1%)	0 (0%)	0 (0%)	0 (0%)	8 (0.3%)
	Did Not Report Race	506 (63%)	328 (28%)	0 (0%)	1 (0.3%)	835 (34%)
Sex						
Sex	Female	173 (22%)	683 (58%)	92 (71%)	272 (89%)	1,220 (50%)
	Male	173 (22%)	504 (43%)	38 (29%)	33 (11%)	748 (31%)
	Did Not Report Sex	460 (57%)	0 (0%)	0 (0%)	0 (0%)	460 (19%)

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Konnie Khánh Tran, SNAP Outreach and Education Coordinator

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- East Carolina University – Motivating Adolescents with Technology to Choose Health (MATCH)
- North Carolina Agricultural and Technical State University – Try Healthy
- North Carolina State University – Steps to Health
- Second Harvest Food Bank of Northwest North Carolina
- University of North Carolina at Chapel Hill – Center for Health Promotion and Disease Prevention
- University of North Carolina at Greensboro – Recipe for Success



**NC SNAP-ED**



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Division of Child and Family Well-Being



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