

# Fruit and Vegetable Prescription<sup>®</sup> Program

2017 | Evaluation Reports



# Acknowledgments



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This report was prepared by the Emory University Evaluation Team  
for Wholesome Wave Georgia.

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Wholesome Wave Georgia is grateful for the opportunity to work with our Fruit and Vegetable Prescription® Program partners, without whom this work would not be possible. We are excited to continue these relationships as we expand the program to increase affordable access to healthy food across Georgia.

## **FVRx 2017 Partners**

**Athens Farmers Market**

**Athens Nurses Clinic**

**Augusta Locally Grown**

**Common Market**

**Community Foundation of Greater Atlanta**

**Emory University**

**Gilly Vending**

**Good Samaritan Health Center**

**Grady Memorial Hospital**

**Harrisburg Family Health Clinic**

**Icebox Ministries**

**John H. & Wilhelmina D. Harland Charitable Foundation**

**Kaiser Permanente of Georgia**

**Medical College of Georgia**

**Morehouse School of Medicine**

**Open Hand Atlanta**

**R. Howard Dobbs Jr. Foundation**

**University of Georgia**

**Veggie Park Farmers Market**

# Introduction

Wholesome Wave Georgia's Fruit and Vegetable Prescription Program (FVRx) for the year 2017 was conducted across six primary care clinics serving low-income communities in Atlanta, Athens, and Augusta, Georgia. Participants were eligible based on chronic disease risk factors and low income level. Over six months, patients received fruit and vegetable vouchers worth \$1 per family member per day, redeemable at a local food retail site, as well as nutrition education, cooking classes, and, for some sites, group exercise classes.



## Data Collection

Participants completed surveys at baseline and post-intervention to assess demographic characteristics, food security, knowledge of factors related to fruits and vegetables, importance of factors when purchasing fruits and vegetables, difficulties involved in purchasing and consuming produce, as well as fruit and vegetable consumption. At monthly visits, all sites collected information on both fruit and vegetable consumption as well as weight and blood pressure. Grady sites collected additional information on hemoglobin A1C and lipids measures were collected including triglycerides, HDL, LDL, and total cholesterol. The Augusta site collected heart rate and blood glucose information as well.

## Statistical Methods

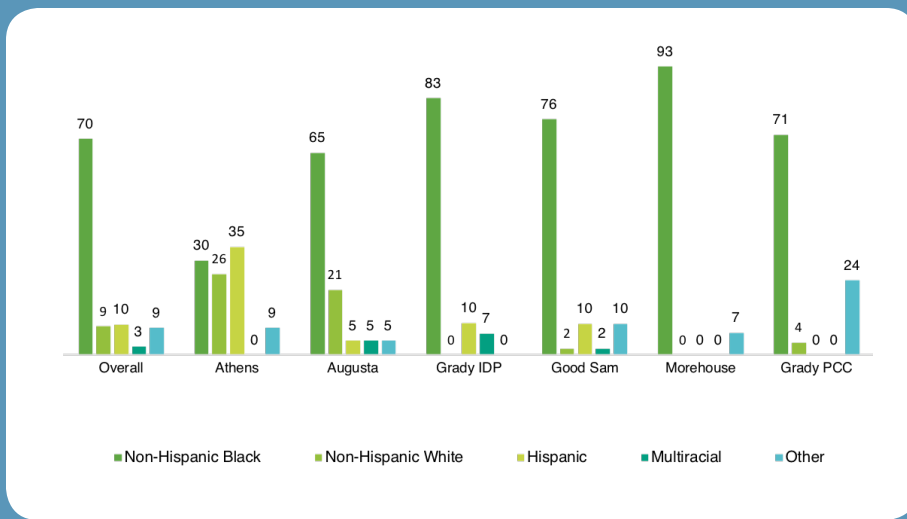
Descriptive statistics (e.g., means, frequencies, cross-tabulations) were used to document program implementation, to assess baseline characteristics of FVRx program participants, and to describe any changes in key outcomes, such as frequency of shopping at farmers' markets, fruit and vegetable consumption, and body weight, from pre-test to post-test. Paired t-tests were used to test the significance of change in measurements for continuous outcomes including knowledge, importance, fruit consumption, and vegetable consumption outcomes. Longitudinal approaches were used to analyze measurements collected on a monthly basis. Mixed models were used to create unadjusted and adjusted models with both fixed and random effects to control for variations across site and for the confounding presented by participant sex. Model specification was determined using the backwards elimination technique.



# Demographics

The 2017 FVRx Prescription Program reached a total of 219 households with a 51% rate of retention overall. Additionally, the total food incentives for all 5 sites equaled \$47,376.11. The 2017 FVRx cohort represents a largely underserved population with 79% reporting a household income less than \$25,000 annually and 61% receiving some form of public assistance. Approximately one third of participants did not have any form of health insurance and one half reported to be insured through Medicaid, Medicare, or other public insurance. Nearly one third of all participants across all sites received disability as their primary means of income and another third reported to be unemployed.

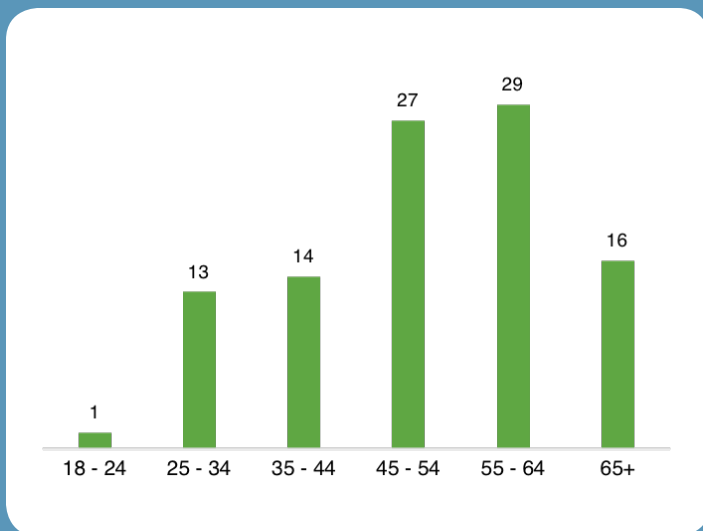
**Figure 1. Race/Ethnicity by Site**



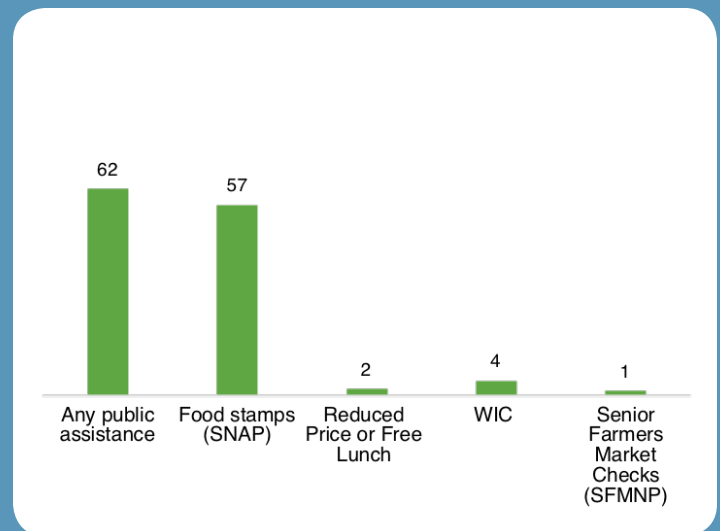
**Health Insurance Status**

- 49%** Medicaid or Medicare
- 34%** Uninsured
- 8%** Insured privately
- 4%** Insured via Employer

**Figure 2. Age Distribution of Overall Cohort**



**Figure 3. Public assistance**



# Food Security

The food incentives for each of the FVRx Program sites are as follows: Athens, \$10,714; Augusta, \$19,902; Grady, \$12,228; Morehouse, \$4,533; the Good Samaritan site was not measured. Participants were asked questions at baseline and post-intervention about food security indicators for the last 30 days. From baseline to the end of the program, the percentage reporting that often food didn't last and there wasn't money to buy more decreased by 79% across all sites (Figures 4 & 5). Further, the overall percentage reporting to often go hungry due to lack of money for food decreased by 89% over the course of the program and the percentage reporting to cut size of meals or skip meals due to financial constraints also decreased by 75%.

## At Baseline:

**22%** often couldn't afford a balanced meal

**44%** often cut the size of meals or skipped meals due to financial constraints

**30%** were often hungry because there wasn't enough food

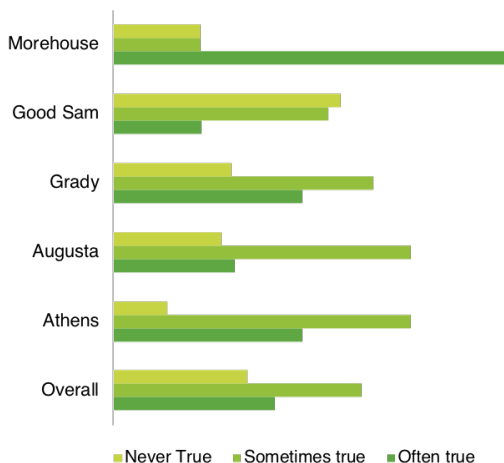
## Post-Intervention:

**4%** often couldn't afford a balanced meal

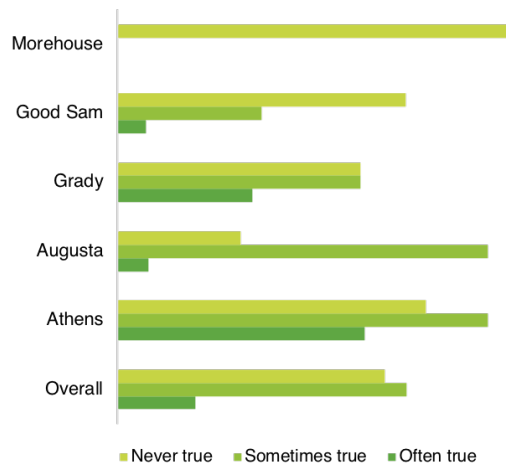
**11%** often cut the size of meals or skipped meals due to financial constraints

**3%** were often hungry because there wasn't enough food

**Figure 4.** Baseline percentage of participants by site reporting that in the last 30 days food didn't last and they didn't have money to buy more



**Figure 5.** Post-intervention percentage of participants by site reporting that in the last 30 days food didn't last and they didn't have money to buy more

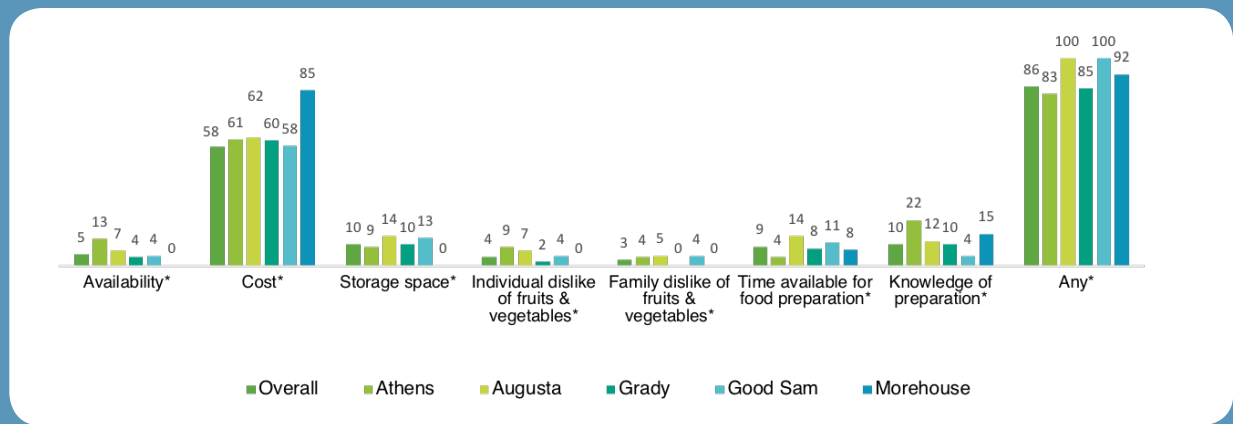


# Difficulties Eating Fruits & Vegetables

Participants were asked questions at baseline and post-intervention to better understand barriers to eating fruits and vegetables. All sites asked questions related to difficulty at baseline but only Athens asked these questions at the post-intervention survey. At baseline, 94% of participants reported some form of difficulty and the most common issue reported was cost of produce. Issues reported did not vary by site for any individual difficulty, however the proportion reporting to have any difficulty did vary significantly by site (chi sq. p-value = 0.0139). At the Athens site, any difficulty reported decreased from 83% to 33.3% from baseline to post-intervention, a statistically significant reduction.

\* Statistically significant

**Figure 6. Baseline Difficulties Eating Fruits & Vegetables by Site**



**Table 1. Change in Difficulties in Eating Fruits and Vegetables from Baseline to End of Intervention for the Athens Site Only**

Difficulty	Baseline % Reporting	Baseline N	Post-Intervention % Reporting	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Availability	13.0	23	13.0	23	0	0.00 (-0.23, 0.23)	0.00	1.0000
Cost	60.9	23	13.0	23	-79	-0.48 (-0.73, -0.22)	-3.87	0.0008
Storage Space	8.7	23	8.7	23	0	0.00 (-0.13, 0.13)	0.00	1.0000
Individual Dislike of Fruits & Vegetables	8.7	23	0.0	23	-100	-0.09 (-0.21, 0.04)	-1.45	0.1619
Family Dislike of Fruits & Vegetables	4.4	23	0.0	23	-100	-0.04 (-0.13, 0.05)	-1.00	0.3282
Time Available for Food Preparation	4.4	23	0.0	23	-100	-0.04 (-0.13, 0.05)	-1.00	0.3282
Knowledge of Preparation	21.7	23	0.0	23	-100	-0.22 (-0.40, -0.04)	-2.47	0.0216
Any Difficulty Reported	82.6	23	30.4	23	-63	-0.52 (-0.74, -0.30)	-4.90	<0.0001

# Knowledge

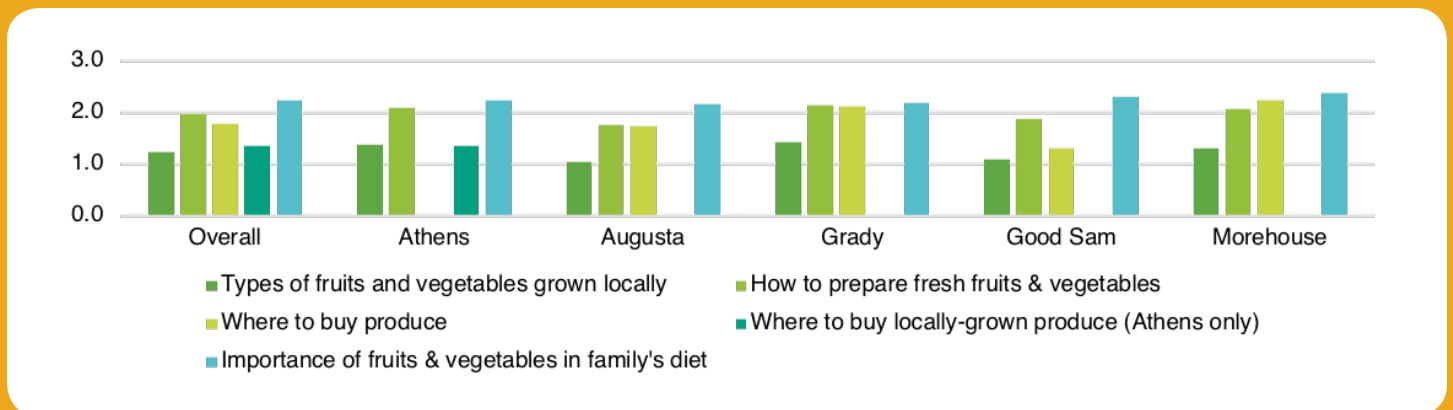
Participants were asked questions at baseline and post-intervention about their knowledge related to fruits and vegetables. For each topic, participants were asked to specify whether they knew a lot, some, only a little, or none. These responses were then converted into a score ranging from 0 to 3, with 0 indicating no knowledge, 1 indicating a little, 2 indicating some, and 3 indicating the most knowledge, so that average knowledge by site could be assessed (Figures 7 & 8).

**Table 2. Change in Knowledge Related to Fruits and Vegetables from Baseline to End of Intervention**

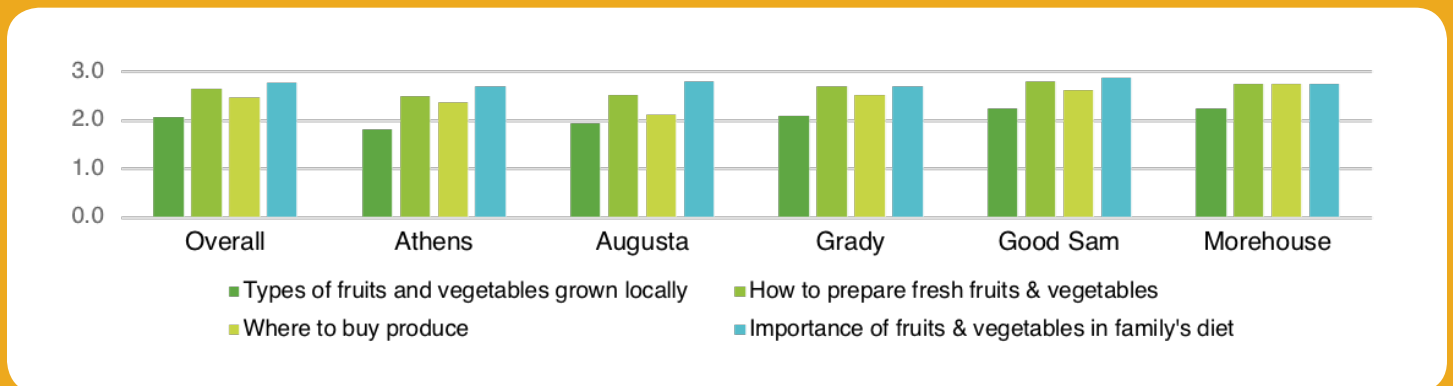
Categories of Knowledge	Baseline Average Score	Baseline N	Post-Intervention Avg. Score	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Types of Fruits & Vegetables Grown Locally	1.2	169	2.1	169	75.0	0.55 (0.46, 0.64)	11.53	<.0001
How to Prepare Fresh Fruits & Vegetables	2.0	168	2.7	91	35.0	0.58 (0.49, 0.66)	14.03	<.0001
Where to Buy Produce	1.8	148	2.5	90	38.9	0.64 (0.50, 0.78)	8.79	<.0001
Importance of Fruits & Vegetables in Family's Diet	2.2	168	2.8	90	27.3	0.55 (0.46, 0.64)	11.53	<.0001

**Figure 7. Baseline Knowledge Scores by Site**

\*Athens' "where to buy produce" results excluded from Figure 7



**Figure 8. Post-Intervention Knowledge Scores by Site**





# Importance

Participants were asked questions at baseline and post-intervention related to their perceived importance of various factors related to purchasing fruits and vegetables. For each topic, participants were asked to specify whether it was very important, pretty important, a little important, or not at all important. These responses were then converted into a score ranging from 0 to 3, with 0 indicating that the aspect is not at all important, 1 indicating it is of little importance, 2 indicating it is pretty important, and 3 indicating it is very important, so that average importance by site could be assessed (Figures 9 & 10).

\*Sites reporting at baseline: Augusta, Athens, Grady, Morehouse

\*\*Sites reporting at post-intervention: Grady, Morehouse

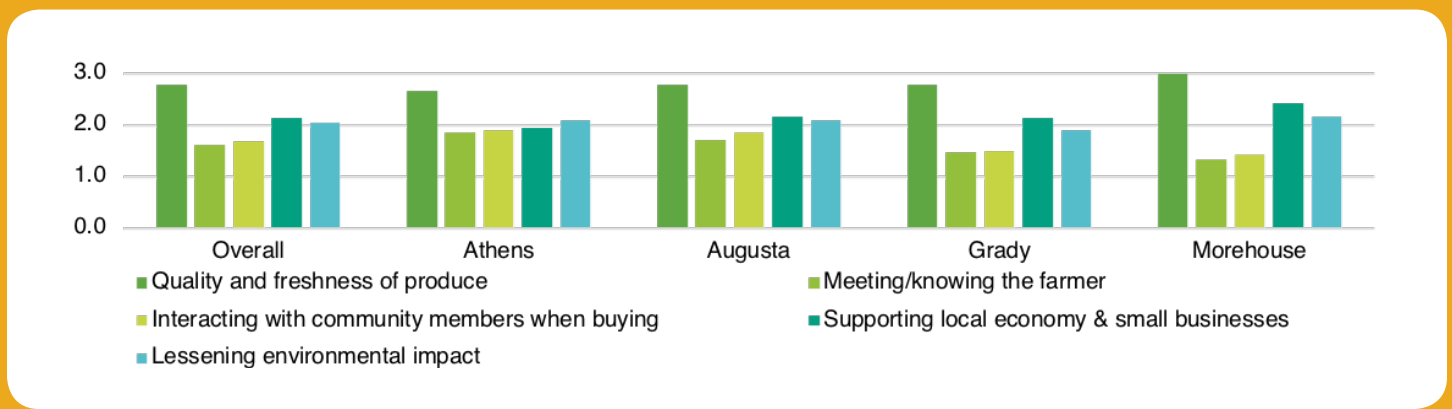
**Table 3. Change in Reported Importance Related to Fruits and Vegetables from Baseline to End Of Intervention**

Categories of Knowledge	Baseline Average Score	Baseline N	Post-Intervention Avg. Score	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Quality & Freshness of Produce	2.8	121	2.9	34	3.6	0.11 (0.02, 0.19)	2.46	0.0156
Meeting/Knowing the Farmer	1.6	119	1.6	34	0.0	-0.08 (-0.27, 0.10)	-0.87	0.3855
Interacting with Community Members when Buying	1.7	118	1.7	34	0.0	0.06 (-0.16, 0.28)	0.55	0.5833
Supporting Local Economy & Small Businesses	2.1	120	2.3	34	9.5	0.00 (-0.19, 0.19)	0.00	1.0000
Lessening Environmental Impact	2.0	120	2.2	33	10.0	0.27 (0.10, 0.44)	3.11	0.0024

# Importance

Participants at the Good Samaritan site were not asked these questions before or after intervention and only participants at Grady and Morehouse were asked both pre and post-intervention. Participants at the Good Samaritan, Athens, and Augusta sites were only asked these questions at baseline.

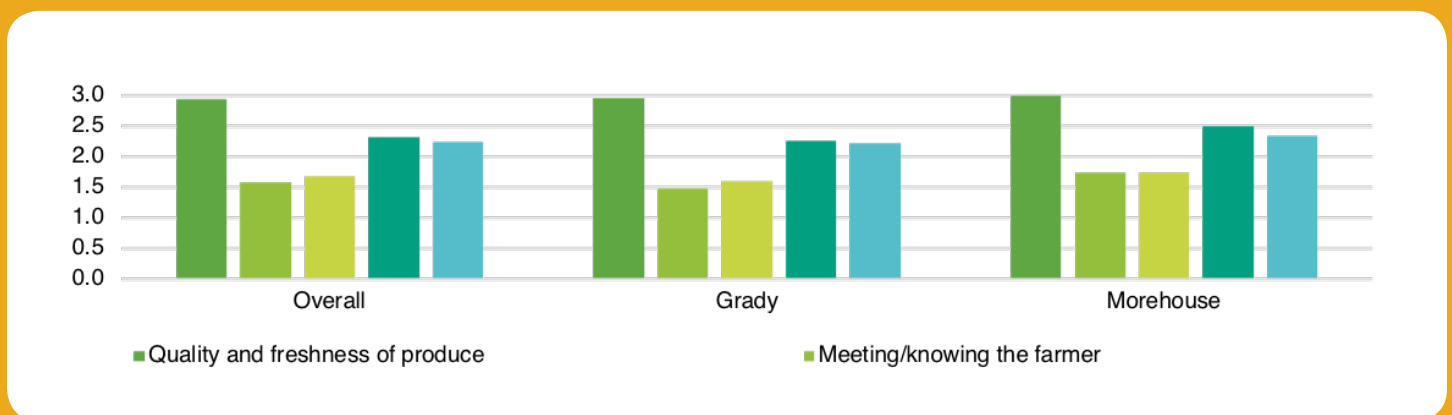
**Figure 9. Baseline Importance Scores by Site**



\*Sites reporting at baseline: Augusta, Athens, Grady, Morehouse

\*\*Sites reporting at post-intervention: Grady, Morehouse

**Figure 10. Post-Intervention Importance Scores by Site**



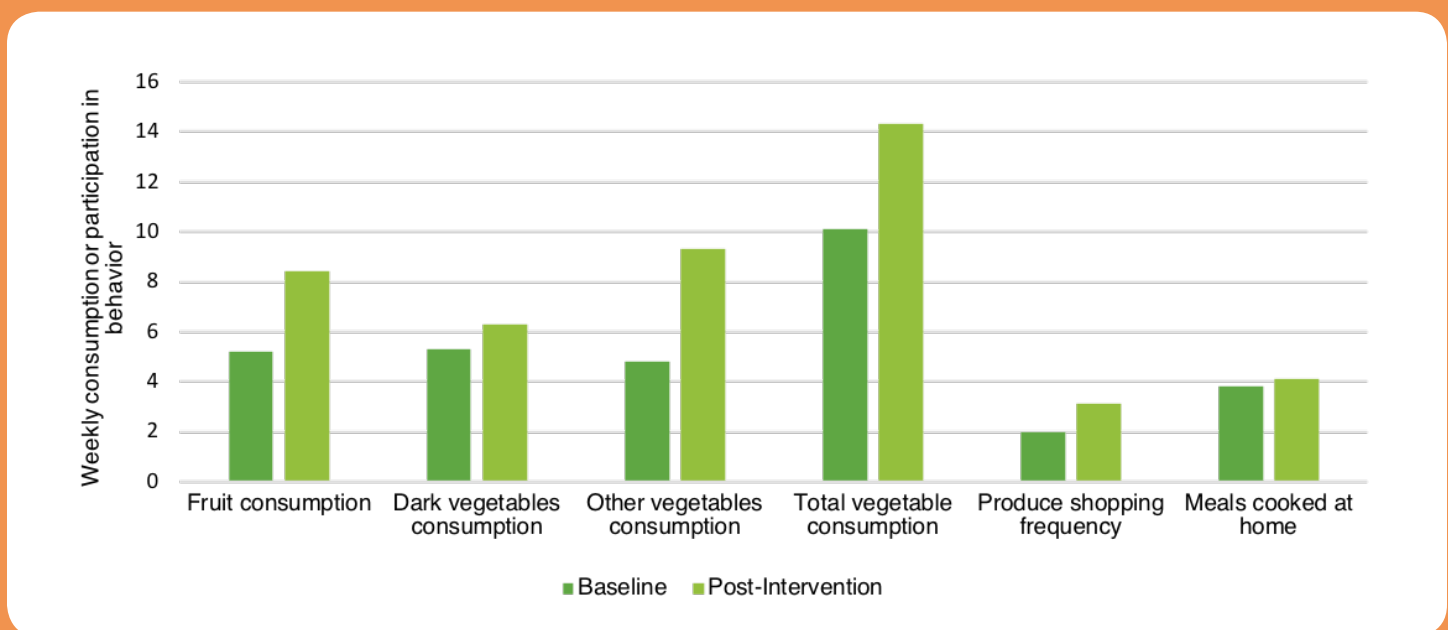
# Fruit & Vegetable Consumption Pre & Post Surveys

Participants were asked at baseline and after completion of the program to report either average weekly fruit, dark vegetable, and other vegetable consumption as well as shopping frequency and number of meals cooked at home. Additionally, participants were asked to report average weekly or daily fruit and total vegetable consumption at monthly meetings. Weekly average fruit and vegetable consumption was calculated for those sites that asked for daily figures in order to increase comparability across sites.

**Table 4. Change in Fruit and Vegetable Consumption From Baseline to End of Program, Overall**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	5.9 (4.3, 7.4)	76	9.0 (6.9, 11.1)	76	52.5	3.1 (0.4, 5.8)	2.27	0.0263
Dark Green Vegetable Consumption	5.1 (3.7, 6.5)	75	5.8 (4.3, 7.4)	59	13.7	-0.1 (-2.3, 2.0)	-0.11	0.9094
Other Vegetables Consumption	4.6 (3.4, 5.8)	76	9.7 (6.8, 12.5)	76	110.9	5.1 (1.8, 8.3)	3.11	0.0026
Total Vegetable Consumption	9.7 (7.3, 12.0)	76	14.2 (11.0, 17.3)	76	46.4	4.5 (0.6, 8.5)	2.27	0.0258
Produce Shopping Frequency	2.2 (1.8, 2.5)	76	3.0 (2.8, 3.3)	76	36.4	0.9 (0.5, 1.2)	4.54	<.0001
Meals Cooked at Home	3.6 (3.1, 4.1)	76	4.0 (3.5, 4.6)	76	11.1	0.5 (-0.0, 1.0)	1.84	0.0695

**Figure 11. Weekly Behavior Change from Baseline to Post-Intervention**



## Fruit & Vegetable Consumption Pre & Post Surveys by Site

Tables 5 and 6 present site-specific fruit and vegetable consumption and participation in shopping and cooking behaviors from pre to post-intervention for Athens and Augusta sites. At Athens, participants experienced significant increases in dark green vegetable, other vegetable, and total vegetable consumption as well as increases in produce shopping frequency. At Augusta, participants experienced significant increases in fruit and total vegetable consumption as well as frequency of cooking meals at home.

**Table 5. Baseline And Post-Intervention Average Reported Consumption and Participation In Behaviors For The Athens Site**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	3.6 (0.9, 6.2)	16	4.8 (2.9, 6.6)	16	33	1.2 (-2.0, 4.4)	0.80	0.4351
Dark Green Vegetables Consumption	2.3 (0.9, 3.8)	15	4.9 (2.2, 7.7)	16	113	2.9 (1.0, 4.9)	3.23	0.0061
Other Vegetables Consumption	1.8 (0.4, 3.2)	16	4.3 (2.4, 6.2)	16	139	2.5 (0.4, 4.6)	2.53	0.0231
Total Vegetable Consumption	4.0 (1.4, 6.5)	16	9.2 (5.4, 13.1)	16	130	5.3 (2.7, 7.8)	4.39	0.0005
Produce Shopping Frequency	1.7 (1.0, 2.4)	16	3.1 (2.7, 3.6)	16	82	1.4 (0.7, 2.2)	4.07	0.001
Meals Cooked at Home	4.7 (3.3, 6.0)	16	5.8 (4.9, 6.6)	16	23	1.1 (-0.1, 2.3)	2.00	0.0645

**Table 6. Baseline and Post-Intervention Average Reported Consumption and Participation In Behaviors for the Augusta Site**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	2.1 (0.3, 3.9)	17	18.1 (12.1, 24.2)	17	762	16.0 (9.9, 22.1)	5.55	<.0001
Dark Green Vegetables Consumption	2.0 (0.8, 3.2)	17	-	0	-	-	-	-
Other Vegetables Consumption	1.9 (1.1, 2.7)	17	23.7 (14.6, 32.7)	17	1146	21.8 (12.8, 30.7)	5.16	<.0001
Total Vegetable Consumption	3.9 (1.0, 5.7)	17	23.7 (14.6, 32.7)	17	507	19.8 (10.6, 29.1)	4.54	0.0003
Produce Shopping Frequency	2.2 (1.5, 2.8)	17	2.8 (2.3, 3.3)	17	28	0.6 (-0.1, 1.4)	1.83	0.0854
Meals Cooked at Home	3.5 (2.3, 4.7)	17	4.4 (3.2, 5.7)	17	38	0.9 (0.1, 1.8)	2.44	0.0267

## Fruit & Vegetable Consumption Pre & Post Surveys by Site

Tables 7 and 8 present site-specific fruit and vegetable consumption and participation in shopping and cooking behaviors from pre to post-intervention for the Grady sites. At the Grady sites, no significant effects were found, likely due to lack of power to detect differences in a small sample size.

**Table 7. Baseline and Post-Intervention Average Reported Consumption and Participation in Behaviors for the Grady IDP Sites**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	5.1 (1.6, 8.6)	17	7.2 (3.5, 11.0)	17	41	2.1 (-2.7, 7.0)	0.92	0.3693
Dark Green Vegetables Consumption	4.8 (1.5, 8.1)	17	6.1 (2.8, 9.5)	17	27	1.3 (-3.7, 6.4)	0.56	0.5835
Other Vegetables Consumption	6.2 (2.6, 9.7)	17	7.9 (3.4, 12.5)	17	27	1.8 (-3.6, 7.2)	0.69	0.4996
Total Vegetable Consumption	10.9 (5.3, 16.6)	17	14.0 (6.8, 21.2)	17	28	3.1 (-5.8, 11.9)	0.74	0.4689
Produce Shopping Frequency	2.4 (1.8, 3.0)	17	3.1 (2.7, 3.6)	17	29	0.7 (-0.1, 1.5)	1.81	0.0897
Meals Cooked at Home	3.4 (2.3, 4.6)	17	2.5 (1.4, 3.6)	17	-26	-0.9 (-2.0, 0.1)	-1.86	0.0820

**Table 8. \*Baseline and Post-Intervention Average Reported Consumption and Participation in Behaviors for the Grady PCC Site**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	8.3 (-2.1, 18.7)	6	6.5 (-1.5, 14.6)	6	-22	-1.8 (-16.2, 12.8)	-0.31	0.7693
Dark Green Vegetables Consumption	5.3 (-3.1, 13.6)	6	4.4 (-4.2, 12.9)	6	-17	-0.9 (-14.3, 12.6)	-0.16	0.8764
Other Vegetables Consumption	3.2 (-0.7, 7.1)	6	4.9 (-3.4, 13.2)	6	53	1.7 (-8.2, 11.6)	0.44	0.6766
Total Vegetable Consumption	8.4 (-3.7, 20.5)	6	9.3 (-7.6, 26.2)	6	11	0.9 (-22.3, 24.0)	0.09	0.9282
Produce Shopping Frequency	1.8 (0.6, 3.1)	6	2.8 (1.4, 4.2)	6	56	1.0 (-1.4, 3.4)	1.07	0.3318
Meals Cooked at Home	3.2 (1.6, 4.7)	6	1.9 (0.4, 3.3)	6	-41	-1.3 (-2.8, 0.3)	-2.08	0.0925

## Fruit & Vegetable Consumption Pre & Post Surveys by Site

Tables 9 and 10 present site-specific fruit and vegetable consumption and participation in shopping and cooking behaviors from pre to post-intervention for the Good Samaritan and Morehouse sites. At the Good Samaritan site, participants experienced significant increases in fruit, dark green vegetable, other vegetable, and total vegetable consumption as well as number of meals cooked at home per week. No significant effects were found at the Morehouse site, likely due to lack of power to detect differences associated with high program dropout rates from baseline to post-intervention.

**Table 9. Baseline and Post-Intervention Average Reported Consumption and Participation in Behaviors for the Good Samaritan Site**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	12.4 (9.4, 15.4)	16	6.2 (2.7, 9.8)	16	-50	-6.2 (-10.3, -2.1)	-3.22	0.0057
Dark Green Vegetables Consumption	11.1 (7.7, 14.6)	16	6.5 (3.1, 9.8)	16	-41	-4.7 (-7.9, -1.5)	-3.09	0.0075
Other Vegetables Consumption	9.6 (6.6, 12.5)	16	4.3 (1.8, 6.9)	16	-55	-5.3 (-8.5, -2.0)	3.41	0.0038
Total Vegetable Consumption	20.7 (15.0, 26.4)	16	10.8 (6.0, 15.6)	16	-48	-9.9 (-15.0, -4.9)	-4.20	0.0008
Produce Shopping Frequency	2.5 (1.6, 3.4)	16	3.1 (2.4, 3.7)	16	24	0.6 (-0.5, 1.7)	1.09	0.2930
Meals Cooked at Home	2.9 (2.0, 3.9)	16	3.8 (2.9, 4.8)	16	31	0.9 (-0.0, 1.8)	2.07	0.0564

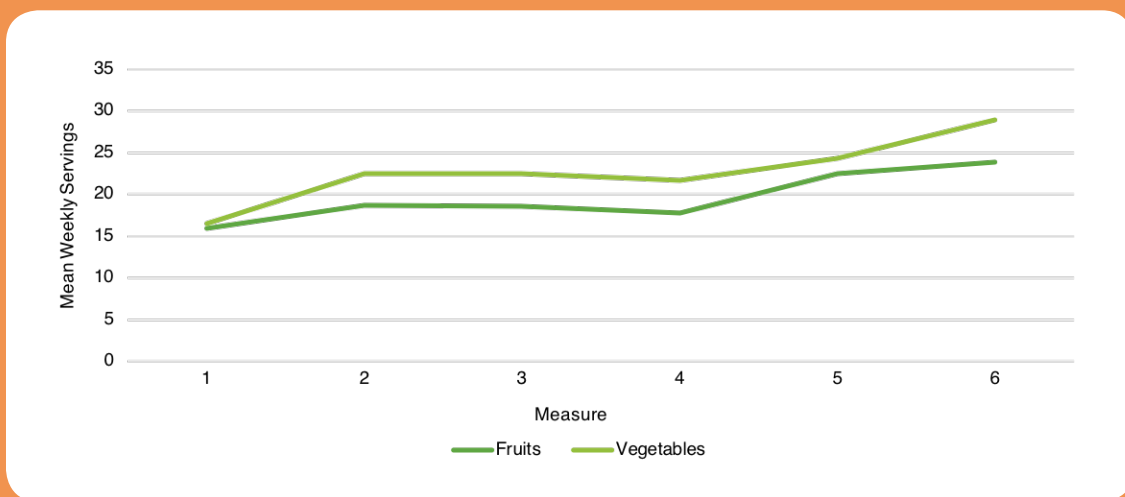
**Table 10. Baseline and Post-Intervention Average Reported Consumption and Participation in Behaviors for the Morehouse Site**

Behavior	Baseline average weekly consumption/participation in behavior	Baseline N	Post-intervention average weekly consumption/participation	Post-Intervention N	% Difference	Mean Change (95% CI)	T Value	T-Test P-Value
Fruit Consumption	4.3 (-0.6, 9.2)	4	8.8 (-4.5, 22.2)	4	105	4.5 (-8.5, 17.5)	1.10	0.3520
Dark Green Vegetables Consumption	6.3 (-2.4, 15.0)	4	7.9 (-0.6, 16.5)	4	25	1.6 (-11.2, 14.4)	0.40	0.7136
Other Vegetables Consumption	3.1 (-0.4, 6.6)	4	7.5 (-6.9, 21.9)	4	142	4.4 (-13.3, 22.2)	0.80	0.4841
Total Vegetable Consumption	9.4 (-1.6, 20.4)	4	15.4 (-6.1, 37.0)	4	64	6.1 (-24.1, 36.2)	0.64	0.5680
Produce Shopping Frequency	2.0 (-0.6, 4.6)	4	3.3 (2.5, 4.1)	4	65	1.3 (-0.8, 3.3)	1.99	0.1411
Meals Cooked at Home	3.0 (-1.8, 7.8)	4	5.6 (1.3, 10.0)	4	87	2.6 (-2.7, 8.0)	1.57	0.2152

# Fruit and Vegetable Consumption Monthly Measures

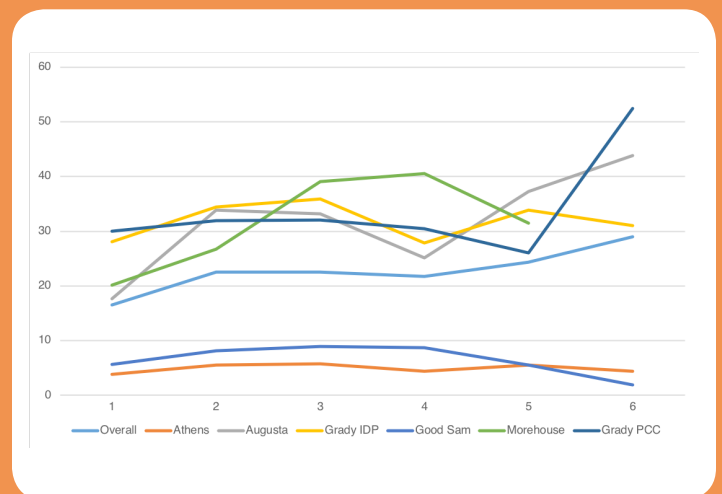
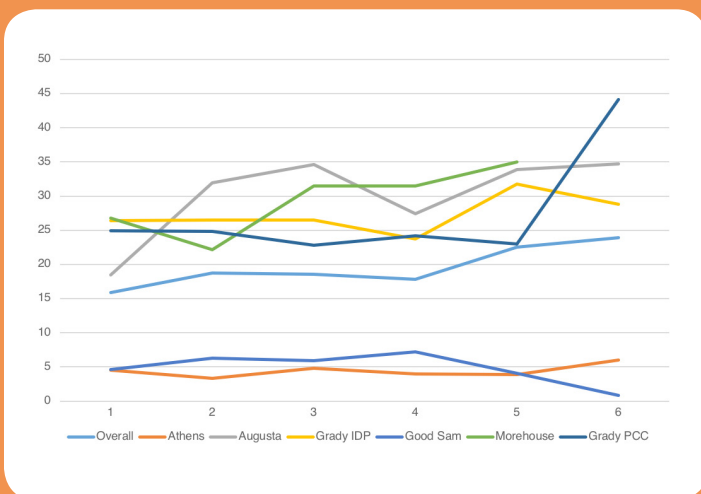
Fruit and vegetable consumption was measured at monthly clinical visits via self-report. Figure 12 shows mean reported fruit and vegetable consumption over the course of the program. Figures 13 & 14 illustrate the variation by site in fruit and vegetable consumption change throughout the program with the dark-green colored line representing overall change.

**Figure 12. Mean Servings of Fruits and Vegetables Reported at Monthly Measures Over Course of Program**



**Figure 13. Fruit Consumption Over Time by Site**

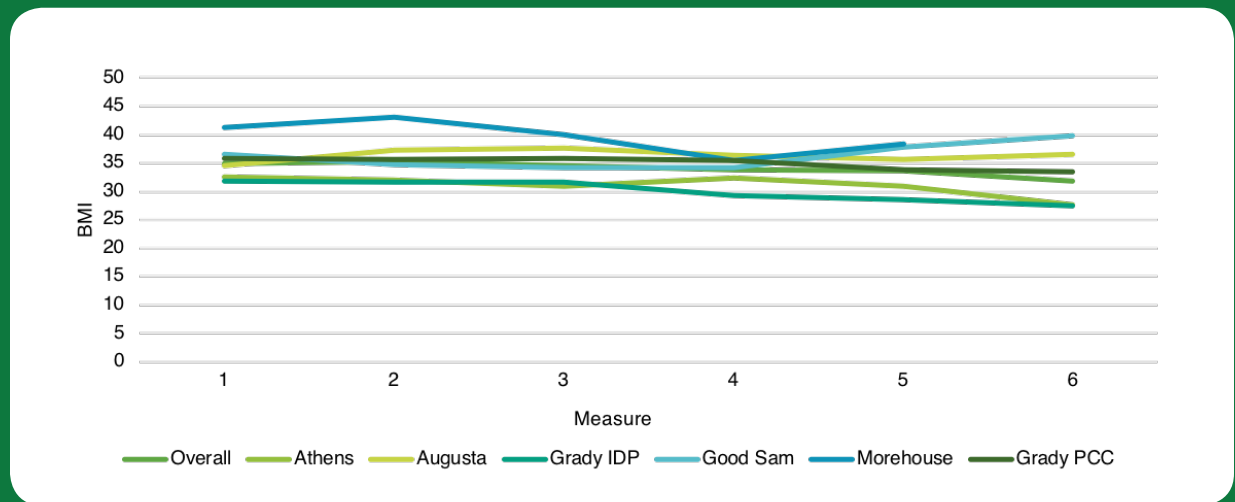
**Figure 14. Vegetable Consumption Over Time by Site**



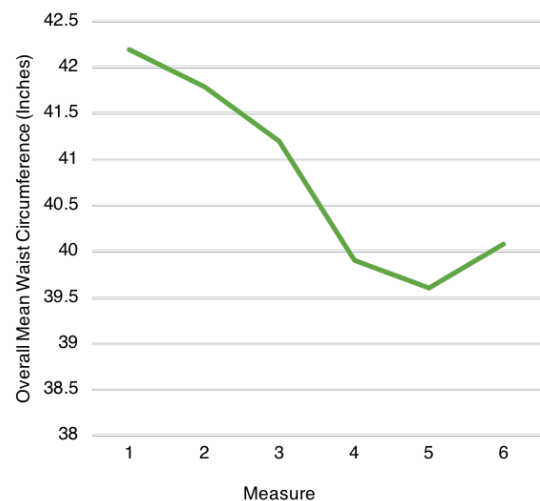
# Clinical Outcomes

Health indicators including weight and blood pressure were measured approximately monthly at each site. Overall, BMI decreased by 10.6% on average from baseline to the sixth monthly measurement (Note: N= 146 at baseline; N=34 at 6th reading). Waist circumference decreased by 5% on average from baseline to final measurement. Systolic blood pressure decreased by an average 8.8% and diastolic blood pressure decreased by an average 2.2% from baseline to final measurement.

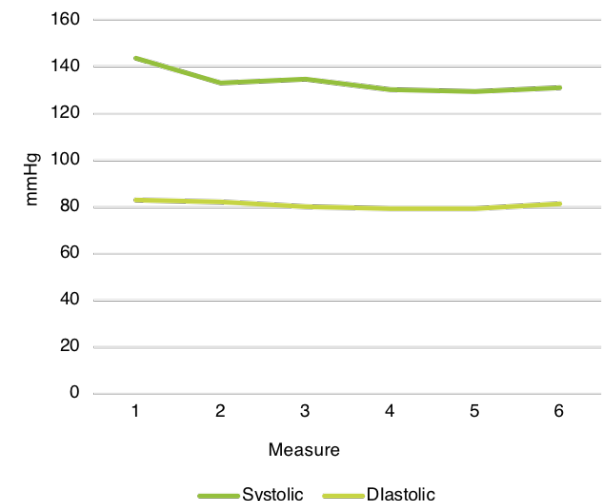
**Figure 15. Mean BMI Across All Sites at Monthly Measures**



**Figure 16. Mean Waist Circumference in Inches Across All Sites at Monthly Measures**



**Figure 17. Mean Blood Pressure (mmHg) Across All Sites at Monthly Measures**





# Clinical Outcomes

At the two Grady sites, hemoglobin A1C and lipids measures were collected including triglycerides, HDL, LDL, and total cholesterol. Augusta collected heart rate and blood glucose information as well. Significant decreases were seen in BMI and diastolic blood pressure measurements over the course of the program. Diastolic blood pressure reductions remained significant after controlling for site of intervention and participant sex. Unadjusted results and controlled results are presented below in Table 11. Note on interpretation of estimates in Table 5: fruit consumption can be interpreted as having increased an average 1.56-1.67 servings per week for every visit completed and vegetables as having increased by an average of 1.70-1.88 servings per week for every visit completed. Sex was controlled for in Model 3 presented as it was the only significant confounder identified in model selection. Males and females had significantly different baseline and post-intervention measures for key measures presented; these differences were controlled for in the statistical models presented in Table 5.

**Table 11. Effect of Program on Monthly-Measured Outcomes**

Outcome	N	Unadjusted Model (95% CI)	Model 2 ****	Model 3*****
Fruit Consumption	580	1.56 (0.80, 2.31)	1.55 (0.80, 2.30)	1.67 (0.90, 2.45)
Vegetable Consumption	582	1.70 (0.92, 2.48)	1.66 (0.89, 2.44)	1.88 (1.04, 2.73)
BMI	585	-0.15 (-0.30, -0.00)	-0.15 (-0.30, 0.00)	-0.10 (-0.27, 0.06)
Waist Circumference (inches)*	433	-0.08 (-0.21, 0.04)	-0.08 (-0.21, 0.05)	-0.10 (-0.24, 0.04)
Systolic Blood Pressure	468	-0.53 (-1.31, 0.25)	-0.54 (-1.33, 0.25)	-0.61 (-1.43, 0.21)
Diastolic Blood Pressure	467	-0.72 (-1.24, -0.19)	-0.85 (-1.38, -0.32)	-0.72 (-1.26, -0.17)
Hemoglobin A1C**	89	0.03 (-0.02, 0.08)	0.03 (-0.02, 0.08)	0.03 (-0.02, 0.08)
Heart Rate***	66	1.22 (-0.41, 2.84)	1.22 (-0.41, 2.84)	1.12 (-0.50, 2.75)
Blood Glucose***	116	1.95 (-3.06, 6.96)	1.95 (-3.06, 6.96)	2.33 (-2.88, 7.55)
HDL**	95	0.37 (-0.53, 1.27)	0.37 (-0.53, 1.27)	0.38 (-0.52, 1.28)
LDL**	94	0.06 (-1.63, 1.76)	0.06 (-1.63, 1.76)	0.07 (-1.66, 1.80)
Triglycerides**	93	3.50 (-2.93, 9.93)	3.50 (-2.93, 9.93)	3.09 (-3.31, 9.48)
Total Cholesterol**	96	0.83 (-2.06, 3.72)	0.83 (-2.06, 3.72)	0.80 (-2.09, 3.69)

\* Sites reporting: Athens, Grady, Good Samaritan, Morehouse

\*\* Sites reporting: Grady

\*\*\* Sites reporting: Augusta

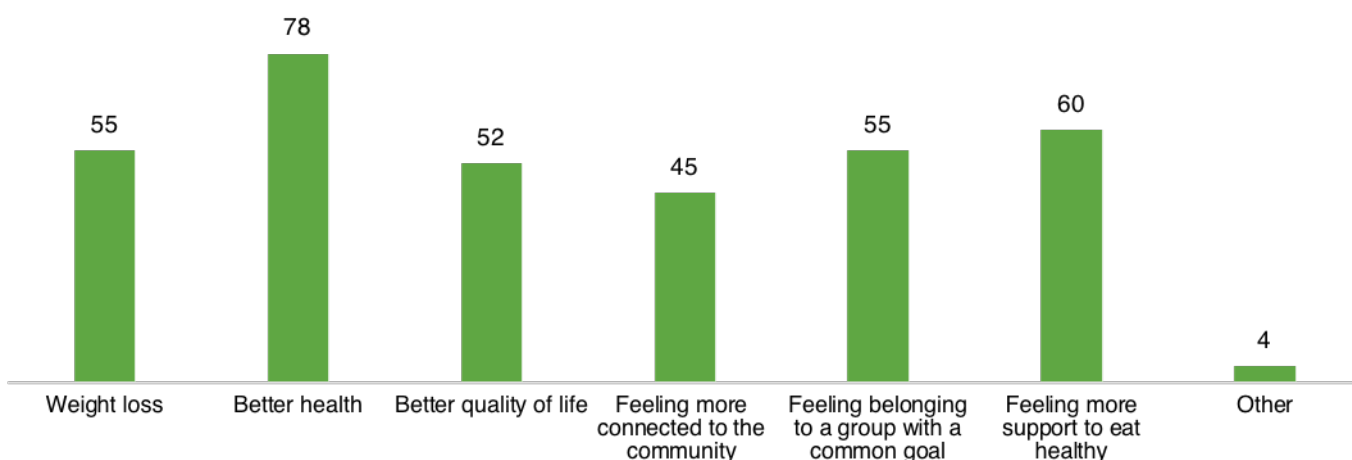
\*\*\*\* Model 2 controls for site

\*\*\*\*\* Model 3 controls for site and sex

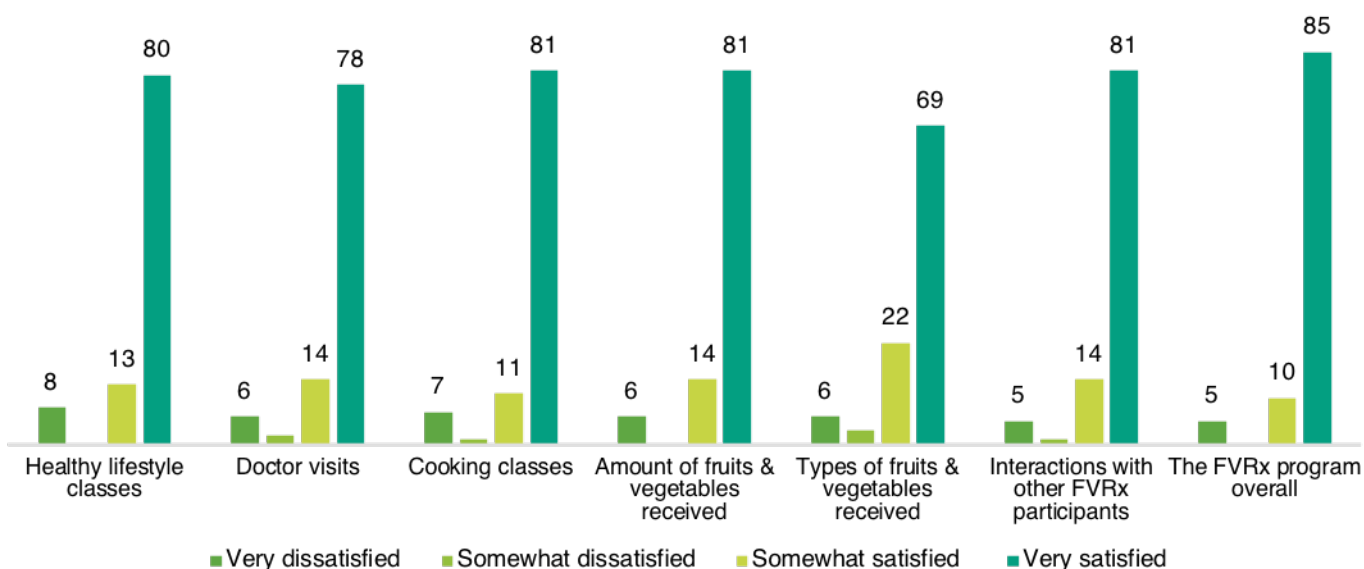
# Participant Feedback

In the post-program survey participants were asked to report the benefits, if any, they experienced as a result of participation in the program and were asked to select all that applied. The most frequent benefit reported was improved health, followed by feeling that they had a greater support system to help them eat healthy (Figure 18). Benefits reported did vary significantly by site. Additionally, participants were asked to report their satisfaction on various aspects of the program in likert scale format. The majority of participants reported to be very satisfied on every aspect of the program.

**Figure 18. Reported benefits of participation in the program**



**Figure 19. Reported satisfaction with aspects of the program**







## Discussion

The FVRx program demonstrated efficacy in improving food security, knowledge of key factors related to fruits and vegetables, and fruit and vegetable consumption. From baseline to the end of the program, reported knowledge of fruits and vegetable preparation, where to buy produce, the importance of fruits and vegetables in family diets, and types of fruits and vegetables grown locally increased significantly.

Additionally, participation in the program was associated with statistically significant reductions in BMI and diastolic blood pressure. The pre—and post-survey measures estimate that fruit consumption significantly increased by an average of 3.9 servings per week and that vegetable consumption significantly increased by an average of 5.86 servings per week. Meanwhile, monthly measurement models controlling for site and sex estimate that fruit consumption increased, but not statistically significantly, by an average of 1.67 servings per week and vegetable consumption significantly increased by an average of 1.88 servings per week.

Participants in the program reported to have experienced improved health, weight loss, improved quality of life, and having a greater support system to make healthy eating choices. Common difficulties participating in the program reported included transportation and the timing of classes, highlighting potential opportunities for program improvement.

## Limitations

This evaluation may be limited by several measurement and analysis constraints. The first major limitation is related to the self-report of key study variables. In self report designs, individuals tend to over report healthy behaviors, therefore, it is likely that fruit and vegetable consumption was overestimated in this analysis. Potential bias in measurements likely contributed to the large difference in fruit and vegetable consumption estimates between pre/post and monthly data.

Additionally, in intervention studies it is common to see some effect even in groups who received no intervention (i.e. control groups). This evaluation did not include a control group to compare participants results to, making it impossible to adjust for this intervention effect. This may have led to an overestimation of the impact of the program on key outcomes. Further, the large variations in programmatic design across sites may have introduced bias into analysis. However, where possible and appropriate, confounding by site has been adjusted for in statistical models presented. The use of linear mixed models for monthly measurements requires the assumption that all variables are normally distributed. The skewness values for some variables modeled may be considered borderline non-normal by some definitions in the literature. However, despite these potential limitations, estimates reflect the most appropriate estimates based on available data.



# Conclusions

Wholesome Wave Georgia’s FVRx program demonstrates that a small financial incentive worth \$1 per family member per day along with a 6-month educational intervention can effectively improve food security, knowledge of key factors related to fruits and vegetables, and fruit and vegetable consumption in a low-income population with chronic disease.

## Appendix: Attrition Rates

At baseline, 184 individuals were enrolled in the program and completed a baseline survey. At post intervention, 91 individuals remained in the program and completed a post-program survey. This represents an overall program loss of 50.5%. This varied by site with losses ranging from 26.7% to 64.3%. For monthly measures, program losses from baseline to month 6 were 77.5% overall and varied by site with losses ranging from 50% to 100%. Monthly visit losses from month 1 to month 6 were 26.3% overall and varied by site with losses ranging from 13.6% to 53.8%.

**Table 11. Program Losses From Baseline Survey to Post-Program Survey**

Site	Baseline	Post-intervention	% Difference
Overall	184	91	-50.5
Athens	15	11	-26.7
Augusta	43	18	-58.1
Grady IDP	29	17	-41.4
Good Sam	50	21	-58.0
Morehouse	14	5	-64.3
Grady PCC	33	19	-42.4

**Table 12. Program Losses Across Monthly Visits**

Site	1	2	3	4	5	6	% Difference (Measure 1 to Measure 3)	% Difference (Measure 1 to Measure 6)
Overall	160	137	118	91	68	36	-26.3	-77.5
Athens	22	19	19	17	15	11	-13.6	-50.0
Augusta	41	35	27	26	22	10	-34.1	-75.6
Grady IDP	28	22	20	14	11	7	-28.6	-75.0
Good Sam	39	35	33	19	8	3	-15.4	-92.3
Morehouse	13	12	6	5	4	0	-53.8	-100.0
Grady PCC	17	14	13	10	8	5	-23.5	-70.6