

Background:

- Fruit and healthy vegetable (excluding fried potatoes) consumption has been shown to reduce the risk of cardiovascular disease, but few New York City (NYC) adults report consuming recommended amounts.
- Households with low incomes often consume fewer fruits and healthy vegetables than those with higher incomes.
- Increased availability of financial incentives for farmers market purchases could reduce barriers to affordable produce, thereby potentially increasing consumption.

Objective:

- This study offers a preliminary evaluation of the year-round expansion of the NYC financial incentive for farmers market purchases, known as Health Bucks (HBs). Through the program, people with Supplemental Nutrition Assistance Program (SNAP) receive \$2 in HBs, redeemable for fruits and healthy vegetables, for every \$5 spent. We aimed to assess possible short-term effects on fruit and healthy vegetable purchasing and consumption.

Study Design, Settings, Participants:

- Two cross-sectional surveys of NYC farmers market shoppers were conducted, immediately before (June 2016) and one year after (June 2017) implementation of year-round expansion of HBs.
- The survey included questions on frequency and quantity of fruits and vegetables consumed, attitudes about cost and preparation of fresh produce, as well as knowledge and use of Health Bucks incentives.
- Eligible respondents were individuals aged 18+ enrolled in SNAP and able to complete an interview-administered survey in English or Spanish.
- Each participant received a 2-ride Metro-card (\$5.50) as an incentive for participation.
- A convenience sample of respondents was surveyed each year (Ns= 425 and 453).



Measured Outcome/Analysis:

- This analysis focuses on daily fruit and healthy vegetable consumption, measured through validated dietary screening questions.
- Adjusted multivariable linear regression models were conducted using SAS version 9.4 (Cary, NC, USA). Significance was determined at $p < 0.05$.

Results:

- Overall, participants were predominantly female (70.7%), Hispanic or Latino (37.3%), had completed 4 years of college or more (36.9%), and had health insurance (87.7%) (Table 1).
- Mean daily intake (servings) of fruit remained constant between years (0.7 vs 0.7, $p=0.612$) (Table 2).
- Mean daily intake (servings) of healthy vegetables increased between years (2.4 vs. 2.7, $p=0.005$) (Table 2).

Table 1. Demographics of Survey Participants

	Overall (N=878)			Wave 1 (N=425)			Wave 2 (N=453)			Chi Square P-Value
	n	%	95% CI	n	%	95% CI	n	%	95% CI	
Sex										
Male	256	29.2	(26.2, 32.2)	138	32.5	(28.0, 36.9)	118	26.1	(22.0, 30.1)	0.073
Female	621	70.7	(67.7, 73.7)	287	67.5	(63.1, 72.0)	334	73.7	(69.7, 77.8)	
Other	1	0.1	(0.0, 0.3)	0	-	-	1	0.2	(0.0, 0.7)	
Race/Ethnicity										
White	234	28.9	(25.8, 32.0)	102	25.6	(21.3, 29.9)	132	32.0	(27.5, 36.5)	0.005
Black or African-American	146	18.0	(15.4, 20.7)	81	20.4	(16.4, 24.3)	65	15.8	(12.3, 19.3)	
Hispanic or Latino	302	37.3	(34.0, 40.6)	135	33.9	(29.3, 38.6)	167	40.5	(35.8, 45.3)	
American Indian/Alaska Native	7	0.9	(0.23, 1.5)	5	1.3	(0.2, 2.4)	2	0.5	(0.0, 1.2)	
Asian	61	7.5	(5.7, 9.4)	38	9.6	(6.7, 12.4)	23	5.6	(3.4, 7.8)	
Other	60	7.4	(5.6, 9.2)	37	9.3	(6.4, 12.2)	23	5.6	(3.4, 7.8)	
Education										
Grade 11 or less	162	18.7	(16.1, 21.3)	75	17.9	(14.2, 21.5)	87	19.4	(15.8, 23.1)	0.042
Grade 12 or GED	201	23.2	(20.4, 26.0)	112	26.7	(22.4, 30.9)	89	19.9	(16.2, 23.6)	
College 1-3 years	185	21.3	(18.6, 24.0)	94	22.4	(18.4, 26.4)	91	20.3	(16.6, 24.0)	
College 4 years or more	320	36.9	(33.7, 40.1)	139	33.1	(28.6, 37.8)	181	40.4	(35.9, 45.0)	
Insurance Coverage										
Yes	751	87.7	(83.4, 88.1)	378	89.2	(86.0, 91.9)	373	82.5	(79.0, 86.0)	0.005
No	125	14.3	(12.0, 16.6)	46	10.9	(7.9, 13.8)	79	17.5	(14.0, 21.0)	

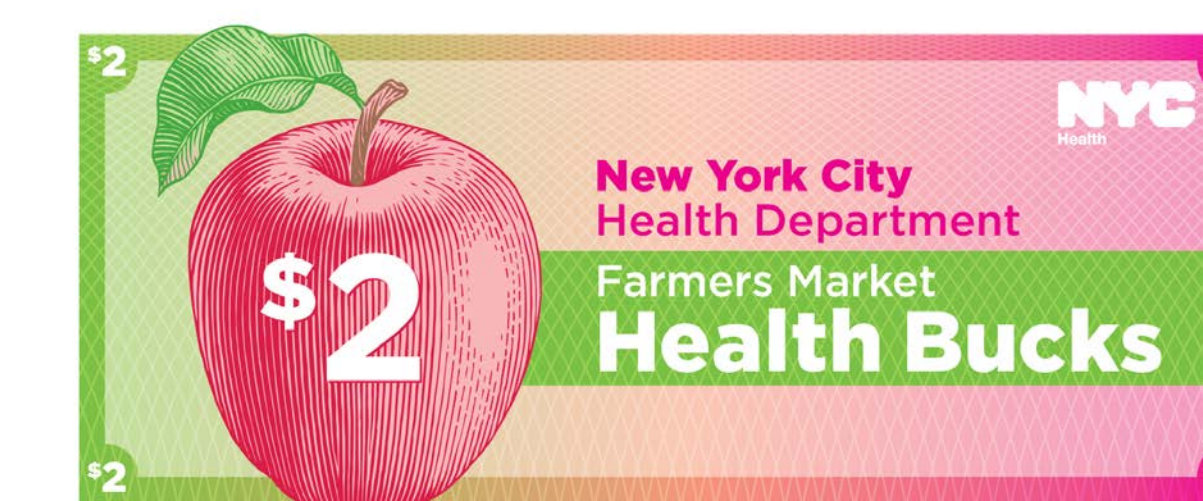
Table 2. Adjusted Mean Fruit and Vegetable Daily Intake

Servings/Day	Wave 1 (2016) n=425	Wave 2 (2017) n=453	P-Value
	Mean (95% CI)	Mean (95% CI)	
Fruit	0.7 (0.2, 1.1)	0.7 (0.2, 1.2)	0.612
Healthy Vegetables	2.4 (1.5, 3.4)	2.7 (1.8, 3.6)	0.005
Fruit + Healthy Vegetables	3.2 (2.0, 4.4)	3.5 (2.3, 4.7)	0.020

Note: Adjusted models include fixed effects for year, market location, sex, race/ethnicity, education and insurance.

Conclusion:

- Expansion of HB's from 5 to 12 months was associated with increased healthy vegetable consumption among people with SNAP at NYC farmers markets.



Implications & Future Research

- Explore produce consumption during other times of the year when a variety of both fruit and healthy vegetables are widely available at farmers markets.
- Further research fruit and healthy vegetable consumption habits (e.g., snacking habits).
- Study the average percentage of EBT benefits spent at farmers markets, among people with SNAP shopping at farmers markets.
- Examine barriers to increased participation in the program.
- Explore consumption among populations that do not typically shop at farmers markets and potential produce incentives at alternative food retailers (e.g., supermarkets).



Funding:

- This work was supported by USDA Food Insecurity Nutrition Incentive (grant no. 2016-70025-25227)

