# Impact of a Produce Prescription Program on Shopping Habits and Fruit and Vegetable Consumption Among New Yorkers with Hypertension

**Erin Dowling, MPH, Christine Dominianni, PhD, Indira Debchoudhury, MPH, Nicole Andersen, MS, RDN, Gabrielle Solis, MPH**
Bureau of Chronic Disease Prevention, New York City Department of Health and Mental Hygiene

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## Background:

- Hypertension is a major risk factor for heart disease, a leading cause of death both in New York City (NYC) and nationwide.
- Consuming a diet rich in fruits and vegetables (F/V) can reduce the risk of cardiovascular disease[1].
- The cost of F/V is a barrier to consumption for many New Yorkers.
- From 2017-2021, the NYC Department of Health's Pharmacy to Farm Prescriptions program provided coupons redeemable for F/V at farmers markets.

## Objective:

- To assess changes in fruit and vegetable consumption and farmers markets shopping behaviors among Pharmacy to Farm participants.

## Study Design, Settings, Participants:

- Eligible participants were
  - 18+ years
  - On medication for hypertension
  - Receiving Supplemental Nutrition Assistance Program (SNAP) benefits
- Recruitment occurred at 19 participating NYC pharmacies.
- Participants received monthly prescriptions for $30 worth of Health Bucks coupons redeemable for fresh produce at NYC farmers markets.
- At enrollment and each subsequent pharmacy visit, participants were encouraged to complete a self-administered survey about F/V consumption and farmers market shopping behaviors.

## Measured Outcome/Analysis:

- Total daily servings of F/V were calculated and compared at enrollment and at the last completed survey using the Wilcoxon signed-rank test.
- McNemar's tests were used to compare changes in shopping frequency and behaviors at farmers markets.




1. Aune D, et al. Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality-a systematic review and dose-response meta-analysis of prospective studies. Int J Epidemiol. 2017 Jun 1;46(3):1029-1056.

## Results:

- A total of 1,019 participants had at least one follow-up survey with complete responses for all F/V consumption questions. Table 1. shows the demographic makeup of participants
  - Median time from enrollment to last survey was 264 days (min-max: 20-1,383 days).
- At enrollment median F/V intake was 2.44 (IQR-1.52, 3.71) servings per day
- Comparing enrollment to last survey, daily F/V consumption was unchanged. Similar trends were observed for fruit and vegetable consumption analyzed independently (Table 2.)
- The percent of participants that reported shopping at farmers markets at least once a month increased (Figure 1.)
- Most participants reported buying more F/V at farmers markets since joining the program. (Figure 2.)

**Table 1. Demographics of survey participants**

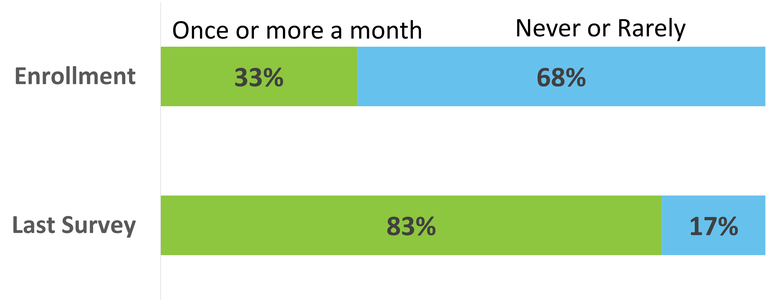
| | Participants with complete F/V responses (N=1019) n (%) |
|---|---|
| **Sex** | |
| Female | 685 (68) |
| Male | 317 (32) |
| **Race/Ethnicity** | |
| Black /African-American | 179 (18) |
| Hispanic or Latino | 580 (59) |
| White | 81 (8) |
| Asian | 105 (11) |
| Other | 32 (3) |
| **Age at Enrollment** | |
| 18-44 years | 41 (4) |
| 45-64 years | 361 (36) |
| 65+ years | 597 (60) |
| **Education Attainment** | |
| Less than HS | 391 (43) |
| HS Graduate | 243 (26) |
| Some College | 138 (15) |
| College Graduate | 146 (16) |

Note: number may not sum to total due to missing data

**Table 2. Change in daily fruit and vegetable intake**

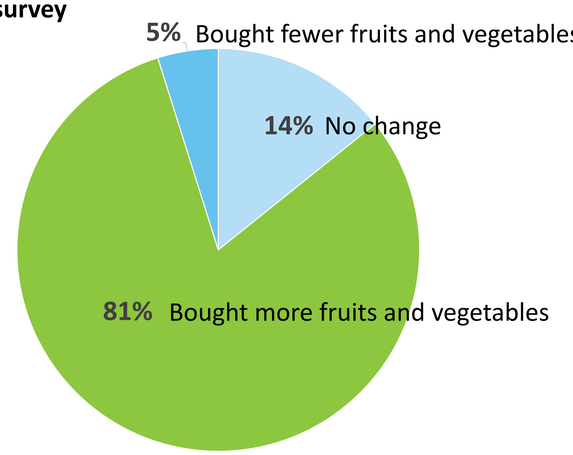
| Servings/Day | Median (IQR) | P-Value |
|---|---|---|
| Total Fruit + Vegetables | -0.03 (-1.01, 1.00) | 0.767 |
| Vegetables Only | -0.01 (-0.74, 0.79) | 0.386 |
| Fruit Only | 0.00 (-0.36, 0.29) | 0.516 |

**Figure 1. Shopping frequency at farmers markets between enrollment and last survey**




P-value for McNemar test: <0.001

**Figure 2. Reported change in fruit and vegetable purchases at farmers markets at last survey**




## Conclusion:

- Participants reported a significant increase in shopping frequency and increased F/V purchases at farmers markets. However, this did not translate to increases in self-reported F/V consumption.

## Implications and Future Research

- Null observed changes in F/V consumption necessitates further evaluation of the program and participant experience
  - Program elements to consider:
    - Program setting (pharmacy incentive disbursement/ farmers market for redemption)
    - Incentive amount
    - Evaluation procedures
- Focus groups are planned to explore questions around barriers to increased fruit and vegetable consumption, understand participant experience of survey collections, and identify opportunities for future incentive programs

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