

SNAP-Based Incentives for Healthy Food Access: Comparing Socio-demographic Factors of  
SNAP Shoppers at Farmers Markets to SNAP Participants  
in Washington State

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Abstract

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**ABSTRACT:** The proliferation of SNAP-based incentive programs (SBIPs) at farmers markets across the country stems from public health efforts to increase low-income individuals' access to fresh fruits and vegetables, yet little is known about the participants who use them. The present study compared population-based census and federal program demographic data for SNAP participants' demographic data collected as part of a SBIP evaluation in Washington State. SBIP evaluation data were collected August – October 2014 at fourteen markets (six in Seattle; four in Skagit County; and four in Spokane County). With some exceptions, demographic characteristics of the 225 evaluation respondents were relatively consistent across the three SBIPs, and indicated that farmers market programs may not currently reach a representative sample of SNAP participants in terms of race, gender, and having children in the household. Further evaluation and research are needed to better understand the extent to which SBIPs reach populations at highest risk for low fruit and vegetable consumption.

**Key words:** SNAP, Incentive Programs, farmers markets, EBT, food access

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## **Introduction**

The scientific community has widely accepted the importance of proper nutrition in reducing morbidity and mortality from chronic diseases (1, 2, 3, 4, 5). Low fruit and vegetable consumption is associated with higher rates of coronary heart disease, some cancers, and diabetes (6, 7). Broad recognition now exists that barriers to preventing chronic disease disproportionately affect the population. Socio-demographic factors such as race/ethnicity, gender, age, socioeconomic status, and geographic location all influence an individual's health (8). Racial and ethnic minority groups, low-income individuals, older adults (age 65 and over), and residents of rural areas have been identified as priority populations for reducing health disparities due to historically poor health outcomes (9).

Low-income individuals and families, including those eligible for the Supplemental Nutrition Assistance Program (SNAP), experience barriers in accessing, preparing, and consuming healthy foods, especially fresh fruits and vegetables (10). Among the barriers impacting the purchase of produce, price and lack of physical access appear to be important obstacles (11, 12, 13, 14, 15). For example, lower income and minority communities are less likely to have access to grocery stores with a wide variety of fruits and vegetables (16, 17, 18, 19, 20). Reduced financial and physical access to fresh produce is thought to contribute to the disproportionately lower rates of fruit and vegetable intake and the associated higher rates of negative health outcomes observed among low-income populations (21, 22).

In recent years, many incentive programs have sought to reduce financial barriers to fruit and vegetable consumption (23, 24, 25, 26, 27). The Food, Nutrition and Conservation Act of 2008 allocated \$20 million to the Healthy Incentives Pilot (HIP) to determine the impact of financial incentives at point-of-sale for purchase of fruits and vegetables on the diet quality of

SNAP participants. Between November 2011 and December 2012 7,500 randomly selected SNAP households in Hampden County Massachusetts received a 30 cent incentive for every SNAP dollar spent on select fruits and vegetables at participating retailers. Participants consumed a quarter of a cup (26%) more targeted fruits and vegetables over nonparticipants (28). While the majority (95%) reported high satisfaction with the program, 40% of HIP participants reported one or more of the following barriers: uncertainty about which fruits and vegetables qualified for the incentive, difficulty understanding how HIP worked, and lack of awareness about the program (28, 29). If SBIPs reduced these barriers, the health benefits of incentivizing fruit and vegetable purchases might improve for SNAP participants (11).

Since the Massachusetts pilot project, SBIPs have proliferated across the United States. In Washington alone there are over 40 farmers markets offering financial incentives to SNAP participants. Seattle's Fresh Bucks program was piloted in seven farmers markets in 2012 and expanded to 21 participating sites (16 farmers markets, two market garden stands, three farm stands) in 2014. Results of recent evaluations of these programs support those of the HIP evaluation: self-reported improvements in household diet, increased number of repeat users, and high levels of satisfaction with the program among shoppers, vendors, and farmers market staff (30, 31, 32, 33, 34, 35, 36, 37). Financially, markets have also reported an increase in SNAP electronic benefits transfer (EBT)<sup>1</sup> purchases at markets and increased EBT dollars spent (30, 31, 32, 33, 34, 35, 36, 37).

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<sup>1</sup> An electronic system that allows governments to issue benefits, including those from SNAP, via a magnetically encoded payment card

Building on the success of these programs, the USDA recently awarded \$31 million to incentive programs in 26 states through the Food Insecurity Nutrition Incentive (FINI) program authorized by the 2014 Farm Bill (38). The Washington State Department of Health and 60 multi-sector partners have joined the grantee list with nearly six million dollars awarded for a large-scale multi-year project to promote purchase of fruits and vegetables for SNAP clients (38, 39). Better understanding of demographic characteristics of SBIP participants in comparison to the broader SNAP population could help inform outreach efforts and target populations to address health disparities as part of FINI and other SBIPs (23, 24, 25, 26, 27).

This study aimed to expand on the available literature by investigating demographic and socioeconomic characteristics of SBIP<sup>2</sup> users and compare those to characteristics of the broader SNAP population in corresponding localities. We expect demographic and socioeconomic characteristics to differ between SNAP users who use the programs and those who do not.

## **Methods**

### ***Study Design***

This cross-sectional descriptive study was a secondary analysis of data collected from August - October 2014 during an evaluation of regional activities intended to increase access to healthy foods for low-income families. Data were collected at markets via incentive distribution tracking forms and in-person surveys with SBIP shoppers. Market staff and volunteers recorded frequency of use and amount of EBT and incentives used from each SBIP participant on distribution tracking forms. Customer surveys were developed by staff from the University of Washington Center for Public Health Nutrition (CPHN) in collaboration with staff from the

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<sup>2</sup> To avoid confusion, programs will be referred to as SBIPs with geographical designation

Washington State Farmers Market Association (WSFMA). Surveys included questions from the 2013 Fresh Bucks Program Evaluation conducted by CPHN and incorporated questions from evaluations of similar initiatives across the country to allow for comparison (34).

To better understand characteristics of SNAP subgroups using SBIPs, researchers looked at key socio-demographic characteristics of each population. Using the following variables: age, gender, race, presence of children in the household, and languages spoken at home; researchers compared SBIP customer survey data to the broader SNAP population in the corresponding localities.

### ***Data Collection***

Data were collected from a convenience sample of SNAP participants at fourteen<sup>3</sup> participating farmers markets (six in Seattle; four in Skagit County; and four in Spokane County). Sites were chosen by CPHN researchers, WSFMA staff, and grantees based on prior high levels of distribution of SNAP incentives and staff capacity to administer the surveys (35, 36). Researchers piloted each of the survey tools with market managers and/or other key stakeholders<sup>4</sup> and revised questions before data collection started.

SNAP shoppers were interviewed during August - October 2014 which was identified as peak market season. In Seattle, graduate and undergraduate research assistants trained to administer the survey conducted informal interviews with participants. Members of the collection team had proficiency in Cantonese, Vietnamese, and Spanish, to expand reach to users with limited English proficiency. In Skagit and Spokane Counties, market staff and volunteers

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<sup>3</sup> Farmers markets included: Broadway, Columbia City, City Hall, Madrona, Pike Place, and University District in Seattle; Anacortes, Bow Little, Mount Vernon, and Sedro Woolley in Skagit County; Emerson Garfield, South Perry, Spokane, and West Central in Spokane

<sup>4</sup> Other stakeholders included public health nutrition experts, WSFMA staff, Department of Health Leadership

stood near the market information booths on an ongoing basis and invited SBIP shoppers to participate in a brief survey. Refusal rates were estimated at less than 20% in Seattle and could not be calculated in Skagit and Spokane Counties (36).<sup>5</sup> Customer survey questions asked about frequency of visiting farmers markets, EBT and SBIPs; typical consumption of fruits and vegetables; perceived impact of SBIPs on family diet and produce purchases; and demographic characteristics. Research assistants, market staff, and volunteers entered survey results into a secure web-based data entry interface which exported results in an Excel file. WSFMA staff and volunteers recorded and cleaned all distribution tracking data. For a summary of data collection activities organized by region, see Table 1.

**Table 1. Data Collection Activities by Region**

Data Collection Tool		Region		
		Seattle	Skagit	Spokane
Incentive Distribution Tracking	Schedule	May-Oct 2014 <sup>6</sup>	May-Oct 2014	May-Oct 2014
	# of Markets	20	4	8 <sup>7</sup>
	# of Market Days	N/A	92	141
Customer Market Survey	Schedule	Aug-Sept 2014	Aug-Oct 2014	Aug-Oct 2014
	# of Markets	6	4	4
	# of Market Days	10	11	6
	# Surveys	191	58	76

Comparison data were extracted primarily from the U.S. Census Bureau’s American Community Survey (ACS) 3-year estimates from 2011-2013 and the United State Department of Agriculture’s (USDA) Food and Nutrition Service SNAP database; both of which are publicly available (40, 41, 42, 43). Due to limited availability of local comparison data for all variables,

<sup>5</sup> Interviewers were requested to document refusal rates but due to the busy nature of the market environment, interviewers were unable to track this information.

<sup>6</sup> Although tracking occurred throughout the full duration of the Fresh Bucks season (May-December), this analysis includes data from transactions between May and October for comparison

<sup>7</sup> Two of the eight markets are different market days at the same market location

some variables were compared to the SNAP population at the state and national levels. Table 2 describes comparison data source by variable.

**Table 2. Comparison Data Source by Variable and Level<sup>8</sup>**

	Data Source			
	ACS 3-year SNAP/Food Stamps (2011-2013)	ACS 3-year Poverty Status (2011-2013)	USDA FNS SNAP (2014)	USDA FNS SNAP (2013)
<b>Key Variables</b>				
Race	Local <sup>8</sup>			
Age	Local <sup>8</sup>			
Gender			National	
Primary language spoken at home				National
Education Level		Local <sup>8</sup>		
Children in the household	Local <sup>8</sup>			
<b>Other</b>				
Hispanic or Latino	Local <sup>8</sup>			

As shown in Table 2 Comparison data for SNAP population demographics came from a variety of sources. When recent ACS data were unavailable for the local level, researchers consulted 2010 ERS SNAP database for county level data (44). To the best of the authors' knowledge SNAP population data for gender and primary language spoken at home were unavailable at city, county, or state levels so national comparison data were used (42, 43). Lastly,

<sup>8</sup> Local refers to data available at the "local level" for each locality (i.e., county data for Skagit and Spokane, and city data for Seattle when available)

reliable education data<sup>9</sup> were unavailable for the SNAP population so authors used 2011-2013 3-year estimates from ACS for individuals who reported poverty status in the last 12 months (41).

The Institutional Review Board of University of Washington determined that this study did not require IRB review because we received written permission from WSFMA to use non-identifiable customer survey data and used aggregated data from publicly available sources.

### ***Data Analysis***

Researchers analyzed SBIP customer survey and distribution tracking data using a secure web-based data entry interface and Microsoft Excel to calculate descriptive statistics. Frequencies and means of demographic variables (age, gender, race, languages spoken at home, education level, and presence of children in the household under the age of 18) associated with SBIP evaluation respondents and SNAP population data in corresponding localities were described. Rigorous statistical tests were not conducted in this study because the statistical power of any statistical test (i.e., chi square or fisher's exact tests) used to make comparisons across demographic characteristics may be very low. In studies with low power, there is a higher probability of committing a type I error (i.e., detecting a statistically significant effect that is not truly present). Therefore, descriptive statistics are reported below.

## **Results**

### ***SBIP Sample Characteristics***

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<sup>9</sup> SNAP Quality Control Program collects data on education level in SNAP population who participate in E&T programs but do not recommend using this variable due to nearly ten percent of adults missing or having an unknown code.

Between May and October 2014, 4,620 participants used their EBT card to participate in SBIPs at markets and stands in Seattle (3,532), and Skagit (372) and Spokane (716) Counties. In Seattle and Skagit, SBIP participants were matched up to \$10 per day in incentives<sup>10</sup> Spokane provided a \$2 incentive for every \$5 spent at the market with no limit. SBIP shoppers could redeem the incentive for fresh fruits and vegetables at participating markets before the end of the program.<sup>11</sup> These 4,620 participants represent 6.9% of the 66,719 SNAP recipients in the regions studied (35, 36, 40). The customer survey sample of 325 SBIP participants represents roughly 7% of the estimated 4,620 SBIP participants who shopped at participating sites between August and October 2014. Demographic characteristics are described for each region in Table 3.

**Table 3. Characteristics of 2014 SBIP Evaluation Respondents (Description of Survey Sample by Region)<sup>12</sup>**

	Seattle (n=191)	Skagit (n=58)	Spokane (n=76)
<b>Race</b>			
White	122	45	58
Black	14	0	1
American Indian/Alaskan Native	1	1	2
Asian	23	0	0
Native Hawaiian/Pacific Islander	3	0	0
Combination	8	2	6
Other	17	7	6
Total	188 <sup>12</sup>	55 <sup>12</sup>	73 <sup>12</sup>
<b>Ethnicity</b>			
Hispanic or Latino	15	8	5
Identify with any ethnic or cultural group	76	10	12
<b>Gender</b>			
Female	124	47	56
Male	60	9	18
Neither	5	0	1

<sup>10</sup> Incentives were provided in the form of tokens or vouchers

<sup>11</sup> In Seattle, SBIP programs ran year-round while programs in Skagit and Spokane Counties ended in October.

<sup>12</sup> Missing data represents respondents who chose not to answer or left the field blank

	Total	189 <sup>12</sup>	56 <sup>12</sup>	75 <sup>12</sup>
Age				
	18-30	70	14	19
	31-50	68	25	35
	51-65	37	11	13
	65+	14	6	7
	Total	189 <sup>12</sup>	56 <sup>12</sup>	74 <sup>12</sup>
Languages Spoken at Home				
	English	171	54	75
	Spanish	9	5	4
	Other	29	0	2
	Total	188 <sup>12</sup>	56 <sup>12</sup>	75 <sup>12</sup>
Education Level				
	Less Than High School Graduate	4	6	1
	High School Graduate	22	7	11
	Some College	45	23	27
	College Degree	85	13	24
	Post-College (i.e., MA or PhD)	31	6	12
	Total	187 <sup>12</sup>	55 <sup>12</sup>	75 <sup>12</sup>
Households with one or more children under the age of 18				
	Yes	44	30	37
	No	141	28	39
	Total	185 <sup>12</sup>	58	76

For all three regions, the majority of SBIP survey respondents were female (70.9%), under the age of 65 (91.5%), and over half (53.9%) had a college degree or higher. The majority of respondents were White (71.2%), followed by other (9.5%), Asian (7.3%), combination of races (5.1%), Black/African American<sup>13</sup> (4.7%), American Indian/Alaska Native (1.3%), and Native Hawaiian/Pacific Islander (0.9%). Almost all (94.0%) respondents spoke English at home followed by other (9.7%) and Spanish (5.6%). Approximately 9% reported Hispanic ethnicity and 31.8% reported belonging to an ethnic or cultural heritage of importance to them.

<sup>13</sup> The majority of those who identified as Black/African American or Asian were surveyed at Seattle Markets. In Skagit and Spokane Counties, there were less than 1% of respondents who identified as Black/African American.

For the most part, characteristics were relatively consistent across regions with the exception of two variables. Exceptions were that Seattle SBIP respondents were racially diverse, and approximately three quarters (76.2%) of respondents in Seattle lived in households without children under the age of 18 compared to roughly half in Skagit (48.3%) and Spokane (51.3%).

***SBIP Sample Compared to Overall SNAP Population in Corresponding Localities***

Using publicly available SNAP participant data, we compared demographic characteristics of SBIP respondents to those of the overall SNAP population for the corresponding localities. Table 4 shows these characteristic comparisons in terms of percentages. Though survey sample sizes for two regions (Skagit and Spokane) fall below 100, reporting these data in percentages allows for direct comparisons with local SNAP populations.

<b>Table 4. Characteristics of 2014 SBIP Evaluation Respondents in Comparison to SNAP Participants in Corresponding Localities</b>							
		Seattle (n = 191)		Skagit County (n=58)		Spokane County (n=76)	
		SBIP (%)	SNAP (%)	SBIP (%)	SNAP (%)	SBIP (%)	SNAP (%)
<b>Race and Hispanic or Latino Origin</b>							
<b>One Race</b>							
	White	64.9	48.8	81.8	82.1	79.5	86.6
	Black	7.5	24.2	--	1.6	1.4	4.1
	American Indian/Alaskan Native	0.5	2.0	1.8	2.9	2.7	3.0
	Asian	12.2	15.8	--	0.6	--	1.2
	Native Hawaiian/Pacific Islander	1.6	0.3	--	--	--	0.3
	Combination	4.3	6.9	3.6	5.1	8.2	1.3
	Other	9.0	2.1	12.7	7.3	8.2	3.5
<b>Ethnicity</b>							
	Hispanic or Latino	8.0	7.3	15.3	23.7	7.4	5.4
<b>Gender</b>							
	Female	65.6	56.0	83.9	56.0	74.7	56.0
	Male	31.7	44.0	16.1	44.0	24.0	44.0
	Neither	2.7	--	--	--	1.3	--
<b>Age</b>							
	Under 65	92.6	72.6	89.3	71.6	90.5	77.8

65+*	7.4	27.4	10.7	28.4	9.5	22.2
Language(s) Spoken at Home						
English	90.9	77.3	96.4	77.3	100.0	77.3
Spanish	4.8	10.4	8.9	10.4	5.3	10.4
Other	15.4	2.9	--	2.9	2.7	2.9
Education Level						
Less Than High School						
Graduate	2.1	37.2	10.9	31.0	1.3	26.2
High School	11.8	19.5	12.7	10.4	14.7	14.6
Some College	24.1	13.8	41.8	11.4	36.0	13.1
College degree or higher	62.1	5.5	34.5	5.6	48.0	5.2
Households with one or more children under the age of 18						
Yes	23.8	30.1	51.7	54.5	48.7	45.6
No	76.2	69.9	48.3	45.5	51.3	54.4

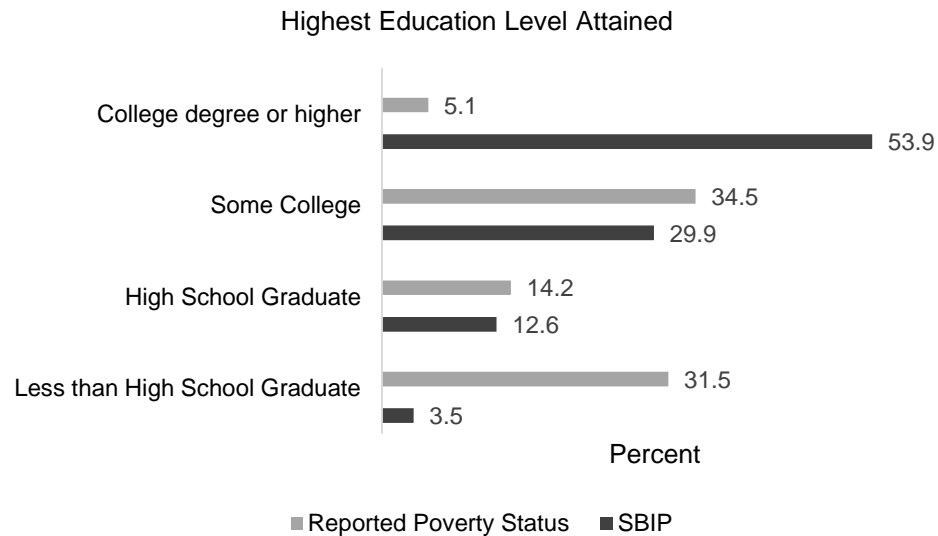
\*Comparison data are for households with one or more people over the age of 60 but SBIP is over 65.

In comparing SBIP sample to the overall SNAP population, we found noteworthy differences in demographic characteristics particularly gender, education level, and age. Compared to national SNAP data, SBIP respondents were overwhelmingly female. Approximately half (56%) of national SNAP participants identify as female while nearly three quarters (74.7%) of SBIP respondents were female. This varied slightly by region (65.6% in Seattle, 83.9% in Skagit and 74.7% in Spokane).

Figure 2 shows differences in educational attainment among SBIP respondents and persons who reported poverty status in the past 12 months in the three localities. We were unable to find reliable data on levels of education for SNAP participants for comparison so poverty status data from the 2013 American Community Survey 3-year estimates were used. The percentages of respondents who marked “high school” or “some college” were relatively consistent with education data for persons who reported poverty status in the last year. However, 53.9% of SBIP respondents in Seattle, Skagit, and Spokane reported a college degree or higher

compared to only 5% of the persons experiencing poverty in the corresponding localities. Of these college-educated SBIP respondents, over half (28.7%) reported a degree post-college (i.e., MA or PhD).

**Figure 2. Educational Attainment among SBIP Respondents and Individuals Reporting Poverty Status in the Past 12 Months**



Among these three localities, the number of SNAP households living with one or more people aged 60 and over ranges from 22.2 to 28.4%. Though our surveys asked participants to report on slightly different age brackets, the range among SBIP respondents is less than half of that in all SNAP households with only 7.4 to 10.7% reporting an age of 65 or over.

In Skagit and Spokane Counties, the proportion of respondents’ races were similar to that of the respective SNAP populations. In Seattle, however, the majority of SBIP participants (64.9%) identified as “White” whereas less than half (49.8%) of the total SNAP population are White. Similarly, nearly a quarter (24.2%) of the SNAP population in Seattle identify as “Black” which compares to less than one tenth (7.5%) of SBIP survey respondents. In Skagit, 23.7% of the SNAP population are Hispanic or Latino but only 15.3% of SBIP respondents reported this.

## **Discussion**

The primary purpose of this analysis was to better understand the degree to which SNAP-based incentive programs are reaching SNAP participants who are at highest risk for low fruit and vegetable consumption. The findings of this analysis support current literature that SNAP users who shop at farmers markets are predominantly English speaking, White, highly educated women, and under the age of 65 years old (37). When compared to demographic data for all SNAP participants in each of the three localities, it appears that SBIP shoppers differ in important ways from the broader population of SNAP users. While SBIPs are designed to reduce financial barriers to fruit and vegetable consumption among low-income populations, they may not reach those at highest risk.

Although farmers market nutrition incentives have been cited as one method for increasing access to fruits and vegetables, many barriers outside of cost have been reported for low-income populations. Focus group members from previous evaluations note location and inconvenient hours as two major barriers to participating in SBIPs (23, 36). In larger municipalities like Seattle, farmers markets have more locations, operating days, and hours compared to those in less populated regions (23). Similarly, not perfect, public transportation systems are more prevalent and convenient in urban areas than rural areas; previous studies have found that lack of transportation can be a major barrier in rural localities (44).

The existing literature on the relationship between physical access to fruits and vegetables and consumption in urban areas is mixed. For example, a recent study of Seattle adults from all income levels found that only one third of respondents shopped at their nearest supermarket for their primary food supply, and those who shopped at low-cost supermarkets were more likely to travel beyond their nearest supermarket. This study also found that fruit and

vegetable consumption was not associated with physical distance (45). However, another study found that with each additional supermarket in a census tract, fruit and vegetable consumption among black residents increased by 32% (46).

While the literature may be mixed in regards to physical barriers, we know that socioeconomic and racial/ethnic disparities in health status are large and persistent. Obesity rates are rising faster in Black and Hispanic populations than in White populations. Factors that influence dietary intake of fruits and vegetables in these populations are only partly understood (46). Previous studies have shown that compared to Whites, adults of other races are less likely to consume the recommended amounts of fruits and vegetables (46, 47). Racial and ethnic minorities have also been shown to frequent farmers markets less often than Whites (37, 48, 49). Little is known about whether racial and ethnic groups have different perceptions of local food and farmers markets, but one Michigan study suggests markets provide an unwelcome environment for Latina patrons and vendors (50). Our study did not explore perceptions to this detail, however, our predominately White sample suggests that different racial/ethnic subgroups may have unique barriers or respond differently to SBIPs.

Overall, it appears that females and women without children may be more likely to take advantage of SBIPs than men. According to a 2014 Food Marketing Institute Study, 76% of female primary shoppers claim to have all or most of grocery responsibility (51). Considering these results and SNAP shopper trends, it is not unusual to see that women are more likely to participate in SBIP. However, one possible explanation for the lower proportion of SBIP survey respondents belonging to a household with children is the potential bias that SNAP users who attend farmers markets with children (or who have children) have parental responsibilities and

therefore, less time to dedicate to participation in a survey (34). This seems especially relevant in higher traffic markets like those targeted in Seattle.

In regard to age, older adults are the fastest growing segment of the U.S. population and are at an increased risk for chronic conditions (52, 53). Although the elderly population as a whole consume more fruits and vegetables than the general population, previous studies have estimated that only 21% to 37% of men and 29% to 45% of women aged 65 and older achieve the recommended servings per day (54, 55, 56, 57). In our small sample, less than 10% of SBIP respondents reported an age of 65 or over whereas 25% of SNAP households in these localities lived with one or more people aged 60 and over. This suggests older adults may face additional barriers to SBIP participation; these could include functional limitations and disabilities to access fresh fruits and vegetables. In particular, mobility-impaired and homebound individuals who rely on assistance may be more vulnerable to under nutrition (58).

Many researchers have reported that as educational attainment increases, so does fruit and vegetable consumption (47, 60). Our results show a large proportion of SBIP respondents had a bachelor's degree or higher. This supports previous studies that have found trends in educational attainment in relationship to increased farmers market patronage (61). Our findings suggest that educational attainment may influence in SBIP participation.

As with any study of this nature, there are strengths and limitations that deserve mention. The conclusions of this study are constrained by the sample size and sampling approach in each region. In Seattle, survey recruitment occurred on two days at each market for four to five hours each which could have increased the likelihood of surveying frequent users of the program. It is important to note that SBIP survey respondents may differ in important ways from SBIP participants who chose not to complete a survey. One strength in Seattle was the availability of

research assistants who were proficient in languages other than English while the lack of multi-lingual interviewers in the two other regions could limit the diversity of the survey sample. The conversation style of the interviews and limited staffing could have led to variation in how questions were asked or understood. Furthermore, all customer survey data were based on self-report which subjects these measures to self-report and social desirability bias (62).

Comparison data were limited to publicly accessible information for demographic characteristics of SNAP users in each locality. This includes population-based data for a defined geography that may or may not reflect a meaningful service area for the farmers markets with SBIPs. The evaluation sampling approach limits generalizability to SBIP participant population in the three communities studied; further the unique demographics of respondents and SNAP participants in each region preclude the results from being generalizable to typical SNAP populations. Furthermore, this study omits comparison data for low-income individuals who may be SNAP-eligible, excluding populations who may be at an even higher risk for low fruit and vegetable consumption. The study used counts obtained through EBT used tracking data. These data may over- or underestimate some demographic characteristics of the SBIP population due to problems associated with counting people more than once when they get new EBT numbers due to program, turnover, and replacement of EBT cards<sup>14</sup>.

Due to our sample size and generalizability, experts advised against statistical testing. This limits our ability to present these results with statistical significance. Though this was an exploratory study in a community setting, future research would benefit from a more rigorous study design that allows testing for statistical significance.

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<sup>14</sup> Anecdotal reports indicate that rates of reissued EBT cards have been historically high, overestimating the number of people using SBIPs while underestimating the frequency with which individuals use the program.

### ***Future Research and Policy Implications***

Further exploration of SNAP subgroups who are using the programs, and the extent to which SBIP users reflect the broader SNAP population is crucial to planning SBIPs. As Washington State programs continue to expand their work to improve food access among the SNAP population, it is imperative to further explore shopping patterns, successful messaging, and target outreach to Washington's most vulnerable populations. Future evaluations would benefit from joint efforts from multi-sector agencies to collect data regarding those who use and do not use the program. Most SNAP data systems are used to determine SNAP eligibility and household benefit amounts. Lead agencies should leverage partnerships to gather standardized data for SBIP shoppers and SNAP populations.

From a policy perspective, understanding the patterns of use of food assistance programs is an important step towards improving health status among vulnerable populations. Our findings suggest that some groups of SNAP participants may respond differently to the availability of fresh fruits and vegetables at farmers markets. These results may also provoke reflection among public health professionals and policy makers about the most effective ways to increase fruit and vegetable access and consumption for specific populations.

### **Conclusion**

This analysis adds to our understanding of who is participating in SBIPs at farmers markets in relation to the SNAP population as a whole in three regions in Washington State. Demographic characteristics of local farmers market SBIP survey respondents do not reflect those of local SNAP populations in terms of race, gender, age, and education level. Future

evaluations need to use more rigorous methods to fully understand the degree to which these programs engage and benefit the most vulnerable.

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