

# FARMERS' MARKET UTILIZATION AMONG SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM RECIPIENTS IN NEW ORLEANS, LOUISIANA: PRELIMINARY FINDINGS

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**Objective:** Farmers' markets are increasingly being promoted as a means to provide fresh produce to poor and underserved communities. However, farmers' market (FM) use remains low among low-income patrons. The purpose of our study was to examine FM awareness and use, grocery shopping behaviors, and internet use among Supplemental Nutrition Assistance Program (SNAP) recipients.

**Design:** A descriptive analysis of preliminary data was performed to evaluate quantitative baseline data among SNAP recipients between June and August 2016 in New Orleans, Louisiana (N=51). Data were collected via a 42-item online survey that included demographics, internet use, FM awareness and use, health information seeking behaviors and fruit and vegetable purchasing behaviors.

**Results:** Less than half of the survey respondents (n=24) had ever been to a FM. Local grocery stores and Wal-Mart were most used for purchasing fruits and vegetables (88% and 84%, respectively). The most common sources of healthy eating information were Women, Infants and Children (WIC) and the internet, frequently accessed via smartphones. More than 80% of participants were not aware that local FMs accepted electronic benefit transfer payments as a form of payment.

**Conclusion:** These results support the incorporation of promotional methodology that combines internet-based mobile technology and existing services (eg, WIC) as a viable strategy to improve farmers' market use among low-income populations. As most participants were not aware that participating FMs accept electronic benefit transfer payments, this fact should be emphasized in promotional material. *Ethn Dis.* 2017;27(Suppl 1):295-302; doi:10.18865/ed.27.S1.295.

## INTRODUCTION

The health benefits of consuming adequate quantities of fruits and vegetables (FV) is well-established,<sup>1-6</sup> yet <10% of adults in the United States meet the current US Department of Agriculture (USDA) 2015 Dietary Guidelines for FV consumption.<sup>6</sup> According to recent Behavioral Risk Factor Surveillance System data, only 13% of respondents nationwide met or exceeded dietary recommendations for fruits and only 9% for vegetables.<sup>7</sup> Poor and underserved communities experience particularly low FV consumption rates, despite the existence of federal nutrition enhancement programs such as the Supplemental Nutrition Assistance Program (SNAP).<sup>8-10</sup> This is especially evident in southern states, such as Louisiana (LA).<sup>7</sup>

To address these health disparities, the Institutes of Medicine, USDA, and the Centers for Disease Control

and Prevention have recommended nationwide interventions to improve dietary behavior and health outcomes, including the use of farmers' markets (FM) in low-income communities.<sup>11-13</sup> Indeed, many studies show that FV consumption improves with FM use.<sup>14-16</sup> Monetary incentive programs such as 'Healthy Bucks' and 'Double-Up Food Bucks' offer matching dollar amounts to SNAP benefits used to purchase produce.<sup>15,17</sup> While the findings are promising for these and similar programs, the long-term impact on FV consumption is not consistent.<sup>8,18,19</sup> In fact, poor and underserved individuals face several barriers to utilizing FMs, such as transportation,<sup>20,21</sup> cultural differences,<sup>21</sup> cost,<sup>22,23</sup> lack of awareness of FM locations,<sup>18,24,25</sup> or the ability to use SNAP benefits at FMs.<sup>22,24-26</sup> These findings suggest a need for further testing of multi-faceted methodology that combines monetary incentives with educational and promotional

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components to improve FM use.

Social marketing (SM) techniques may have recently shown promise in improving FM use and FV purchasing and consumption. Social marketing is defined as "the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal welfare and that of their society."<sup>27</sup> Researchers have recently employed SM methodology

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to promote FV consumption among schoolchildren in SNAP-eligible households<sup>29</sup> and adults.<sup>23,29-31</sup> The recently developed 'Food Hero Social Marketing Campaign' has been successful in improving FV consumption in SNAP-eligible Oregonians via distributing healthful recipes through websites, social media and grocery stores.<sup>29,30</sup> Furthermore, the proliferation of the internet and mobile technology has expanded health communication and information-seeking behaviors among low-in-

come and minority populations.<sup>32-35</sup>

Therefore, an internet-based social media campaign could be an effective strategy to increase FM use and FV consumption among SNAP participants. To our knowledge, there are no published studies that use a SM approach to increase FM use among low-income residents.

The purpose of our study was to collect baseline data for a novel pilot SM campaign, known as Healthy Roots for You, which aims to increase FM awareness and use. Therefore, we administered a quantitative survey to assess awareness of FM and purchasing incentives, food purchasing and health information-seeking behaviors, internet use, and barriers to FM use among SNAP participants in New Orleans, Louisiana. Comparisons were made between FM users and non-users. Results from this study of preliminary data will be used to enhance the content of the Healthy Roots for You pilot program to increase FM usage among SNAP participants.

## METHODS

### Design

A cross-sectional study design was used to collect and analyze baseline quantitative data among SNAP recipients for the Healthy Roots for You pilot and feasibility study. Data were collected via a 42-item online survey that included demographics, internet use, FM awareness and use, health information-seeking behaviors, and FV purchasing and consumption. For evaluation purposes, data from FM users and non-FM users were compared to characterize

what factors may contribute to, or hinder, FM use in the target population. All procedures were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants included in the study. The LSUHSC Institutional Review Board approved this study protocol.

### Community Partner Involvement

Researchers from the Louisiana State University Health Sciences Center (LSUHSC) collaborated with Daughters of Charity (DOC) Women, Infants and Children (WIC) clinic and Hollygrove Market and Farm (HMF). Both partner locations were ideally located within the Hollygrove neighborhood, a predominantly underserved community in New Orleans. Both community partners played central roles in this study. DOC allowed LSUHSC researchers and community health workers to recruit participants at their WIC clinic and facilitated this process. Our partnership with HMF was instrumental as the market was targeted as the epicenter of the Healthy Roots for You program. Both community partners provided insight related to the community and greatly enhanced the efficiency of this study.

### Participants

Eligible participants had to: be aged  $\geq 18$  years; enrolled in SNAP; access the internet  $\geq 2$  times a week; have a valid email address; and reside within a five-mile radius of the HMF.

The latter criterion was included as that geographic area was considered to contain a high density of program-eligible clientele to ensure adequate recruitment. Recruitment personnel explained the study to participants and obtained consent documents. Participants then completed an on-line via SurveyMonkey© (<http://surveymonkey.com>). A total of 118 participants enrolled during the recruitment phase. Of these 118, 60 were lost to attrition/follow-up and seven did not complete the survey. Data presented here represent the 51 participants who completed the baseline survey. All data were de-identified for all analysis purposes.

## Survey

The initial 57-item survey was designed using SurveyMonkey© and included the following variables: demographics, internet use, health information-seeking behaviors, food shopping and consumption, as well as FM use and awareness. The survey was reviewed by a panel of nutrition and public health professionals and scientists for content validity, readability and cultural appropriateness. Items were discarded if they fell below a content validity index of .8. Based on these criteria, 15 items were removed. The final 42-item survey included Likert-type response options, multiple choice, and open-ended questions. Consenting participants were provided a link to the survey and completed it online.

## Data Analysis

After data were uploaded to a central server, study personnel downloaded the data in the form of a

**Table 1. Characteristics of SNAP participants, N=51, comparing those who had been to a farmers' market at least once in the past year to those who had not**

Variable	Have been to a FM, n=24	Never been to a FM, n=27	P
	mean ± SD		
Age, years	33.4 ± 11.3	29.8 ± 9.8	.23
Average number inhabitants per household	3.5 ± 2.0	3.9 ± 1.3	.36
	n (%)		
Sex			.53
Female	24 (47.1)	26 (51.0)	
Male	-	1 (2.0)	
Ethnicity			.57
African American	22 (43.1)	25 (49.0)	
Caucasian	1 (2.0)	1 (2.0)	
Hispanic	1 (2.0)	-	
No response	-	1 (2.0)	
Education			.27
Some or completed high school	11 (39.3)	17 (60.7)	
Some or completed college	13 (56.5)	10 (43.5)	
Marital status			.36
Married/cohabitating	5 (3.3)	2 (1.6)	
Separated/divorced	1 (1.4)	2 (1.6)	
Single	18 (35.3)	23 (45.1)	
SNAP dollars received each month			.01
≤ \$249/month	12 (75.0)	4 (25.0)	
≥ \$250/month	11 (33.3)	22 (66.7)	

Some variable categories may contain missing values.  
FM, farmers' market; SD, standard deviation.

spreadsheet. Data were then checked for accuracy and completeness. If more than 10% of data were missing for any given participant, the entire survey was omitted from the final analysis.<sup>37</sup> Once complete, the dataset was de-identified and imported into a statistical analysis software package for analysis (SPSS, IBM Corp.). Frequency distributions and measures of central tendency (means, standard deviations [SDs] and medians), were used to describe demographic characteristics of the study population and to compare FM and non-FM user groups. For statistical comparisons, FM groups were designated as users (ever been to a FM in the past year) or non-users (have not been in the past year). The Chi-square statistic

was applied to determine differences in frequencies of outcomes of interest of categorical variables between FM user status (user vs non-user groups). The independent sample t test was used to determine differences in continuous variables, such as age, between FM groups. The level of statistical significance was set at .05.

## RESULTS

### Demographics

Demographic characteristics of the sample population are presented in Table 1. The majority of the respondents were single (n=41, 80.4%), African American (n=47, 92.2%) women (n=50, 98.0%), with mean (± SD)

**Table 2. Internet use, health information-seeking and food-shopping behaviors among those who had been to a FM at least once in the past year and those who had not**

Variable	Have been to a FM, n=24	Never been to a FM, n=27	P
	n (%)		
Internet behaviors			
Access internet daily	18 (75.0)	23 (85.2)	.36
Access with smartphone	18 (75.0)	24 (88.9)	.20
Access from home computer	8 (33.3)	14 (51.9)	.18
Health information sources (select as many as apply)			
WIC	11 (45.8)	20 (74.1)	.04
Internet	12 (50.0)	16 (59.3)	.51
Family member	8 (33.3)	11 (40.7)	.56
How often do you shop for food in a grocery store, or a place like a grocery store?			
≤2 times a month	7 (29.2)	15 (56.6)	.06
3 or more times a month	17 (70.8)	12 (44.4)	.06
Where do you typically buy fresh produce (select as many as apply)			
Local grocery chain (eg, Rouses, Winn Dixie)	22 (91.7)	23 (85.2)	.47
WalMart	17 (70.8)	26 (96.3)	.01
Sam's, Costco	10 (41.7)	8 (29.6)	.37
Whole Foods	7 (29.2)	8 (29.6)	.97
Barriers to FM use			
Do you think that shopping at FMs costs more than shopping at regular grocery stores? ('Yes' response)	9 (37.5)	9 (33.3)	.75
Do you think that shopping at FMs is harder than shopping at regular grocery stores? ('Yes' response)	3 (12.5)	2 (7.4)	.54
Do problems with transportation keep you from going to FMs? ('Yes' response)	8 (33.3)	4 (14.8)	.12
FM awareness			
Have you ever seen any ads or promotional materials from FMs in New Orleans? ('Yes' response)	12 (50.0)	6 (22.2)	.04
Did you know that some FMs in New Orleans accept the Louisiana Purchase Card? ('Yes' response)	7 (29.2)	3 (11.1)	.06
Did you know that some FMs in New Orleans offer additional discounts when you use your Louisiana Purchase Card? ('Yes' response)	5 (20.8)	1 (3.7)	.11

FM, farmers' market

age  $32.5 \pm 11$  years of age (range 18 to 67). Slightly more than half ( $n=28$ , 54.9%) of the sample had completed most or all of high school with the remainder having completed some or all of college. All participants were at or below 200% of the federal poverty level based on household income and number of occupants. More than half of the respondents ( $n=27$ , 52.9%) had never been to a FM. Those who had never been to a FM were more likely to receive  $>\$250$  in SNAP benefits ( $\chi^2=7.5$ ,  $df=1$ ,  $P=.006$ ). The re-

mainder of the sample ( $n=24$ , 47.1%) had been to a FM at least once in the past year, 10 of which had been once a month or more. There were no differences in age, education and marital status between FM groups.

### Internet Use and Health Information Sources

The majority of all participants ( $n=41$ , 80.4%) reported accessing the internet on a daily basis. Approximately one-fifth of the participants ( $n=10$ ) accessed the internet once a

week or less. The most commonly cited methods for accessing the internet were smartphones ( $n=42$ , 82.4%) and computers located in the household ( $n=22$ , 43.1%). Nearly 85% ( $n=43$ ) used some form of social networking websites, the most common of which were Facebook ( $n=38$ , 74.5%) and Instagram ( $n=24$ , 47.1%). When FM user groups were compared, there were no differences in internet use, frequency or social media. The four most frequently cited sources of information about healthy eating habits

were WIC (n=31, 60.8%), the internet (n=28, 54.9%), a family member (n=19, 37.3%) and word-of-mouth (n=17, 33.3%). When FM user groups were compared, those who had never been to a FM were more likely to receive healthy eating information from WIC ( $P<.05$ ). (Table 2)

### Grocery Purchasing Behaviors

Participants were asked how often they shopped for food at a grocery store. For reporting purposes, response options were collapsed into two categories: two or fewer times per month and three or more times per month. Most participants (n=29, 56.9%) reported that they shopped for groceries at least three times a month. Those who had ever been to a FM made up a larger proportion of this subgroup (58.6% vs 41.4%), although this difference was non-significant ( $P=.058$ ).

Concerning where participants shopped for fresh produce, the most commonly reported purchase points were local grocery chains (n=45, 88.2%; eg, Rouses or Winn Dixie) and Wal-Mart (n=43, 84.3%), followed by Sam's Club and/or Coscto (n=18, 35.3%). Three participants said they typically bought produce at FMs. Those who had never been to a FM were more likely to purchase produce from Wal-Mart ( $P<.05$ ).

### Barriers and Awareness of Farmers' Market Purchasing Incentives

Most participants did not believe shopping at FMs was more expensive (n=33, 64.7%) or more difficult (n=46, 90.2%) than shopping at a regular grocery store; no differences in these beliefs were observed between

FM groups. Less than a fourth of the sample (n=12, 23.5%) felt that transportation issues were preventing them from shopping at FMs. A greater proportion of women who had been to a FM in the past year said transportation was a barrier to their FM use, although this result was not significant.

Of the 24 women who had been to a FM, seven had been to the Hollywood Market and Farm (HMF), located five blocks from the recruitment site. About a third of the sample (n=18, 35.3%) were aware of any FM advertisements or promotional materials that they might have seen. Those who had ever been to a FM were more than twice as likely to have seen some form of FM advertisement ( $P<.05$ ). Ten participants (19.6%) knew that many FMs accepted Louisiana SNAP electronic benefit transfer payments (Louisiana Purchase Card) as a form of payment. Of these, seven had been to a FM. Six participants were aware that some FMs offered an additional discount to SNAP participants, five of which were FM users. All but one of the participants who had been to a FM was satisfied with their FM purchase (data not shown).

## DISCUSSION

Farmers' market (FM) use in our study population was infrequent, with less than half SNAP participants having been to a FM no more than twice in the past year. This level of FM use is similar to that observed in three other FM studies of predominantly African American, low-income women in four distinct populations: two in North Carolina,<sup>20,37</sup> one in Wash-

ington DC,<sup>20</sup> and one in southern Florida.<sup>38</sup> In North Carolina, Jilcott Pitts et al (2015) and Racine and colleagues (2010) reported a FM use rate of 42.7% and 32.4% among study participants, respectively.<sup>20,37</sup> Racine et al also reported a 40% FM use in a sample of African American WIC participants in Washington, DC.<sup>20</sup> In southern Florida, Grin and colleagues reported a FM user rate of 35% of a mostly African American (63.2%) and Hispanic (35.1%) women enrolled

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in WIC.<sup>39</sup> Comparatively, a study in San Diego, California reported that 82% of a mostly Hispanic or Latino (49.5%) and Caucasian (18.0%) had never shopped at a FM (prior to intervention).<sup>39</sup> Collectively, these findings provide further evidence that the Healthy Roots For You pilot study must promote FM use by first considering cultural aspects of the target population, including communication channels and messages, sociodemographic factors and dietary habits.

Most of the participants in our study accessed the internet daily (93%)

primarily via smartphones (83%), regardless of age. Furthermore, more than half (54.9%) of our participants used the internet to gather information about healthful eating practices. These findings are supported by other studies of low-income African American women in urban areas where high rates of daily internet use with smartphones and health seeking behaviors were reported.<sup>32</sup> The use of smartphone apps to promote the consumption of locally grown produce and healthful eating and food purchasing behaviors has been growing in popularity in recent years.<sup>40-43</sup> A recent review article by Nour and colleagues found that many studies that used mobile phone technology to increase vegetable consumption were effective.<sup>44</sup>

We are unaware of any other FM studies that employ internet-based promotion tactics for increasing FM use among SNAP participants. Currently, there is no consensus on the effectiveness of app-based interventions on influencing dietary behaviors.<sup>45</sup> Regardless, as the research in this field advances, it is likely a well-designed, culturally appropriate app could be an effective means to improve FM use in this segment of the population. Additionally, we found that more of our participants obtained information regarding healthful eating behaviors from the WIC clinic than the internet. Expanding the content of existing WIC-related apps to include dietary recommendations to choose more fresh produce from FMs may be a viable alternative (or addition) to stand-alone apps promoting FM use.

Both FM users and non-users reported buying their produce from grocery chains and Wal-Mart. Only

four women in our sample listed FMs as a point of purchase for produce. This finding is supported by other studies of other low-income, minority populations that show frequent use of super-stores (eg, Wal-Mart) for produce purchases in urban areas; these areas have limited access to supermarkets or alternative healthful food options, such as farmers' markets and community gardens.<sup>46,47</sup> A recently published study of low-income African American and Latina women in Forsyth County, North Carolina reported that price, convenience, and a lack of acceptance of SNAP or WIC benefits influenced shoppers choosing a super-store vs a farmers' market.<sup>45</sup> In our study, most women did not believe FMs were more expensive or less convenient than groceries or supermarkets, regardless of whether or not they were FM users. However, very few of our participants were aware that FMs in the area accepted SNAP benefits and offered additional matching discounts, indicating that this factor could be particularly influential in this population. This lack of awareness appeared to be more of a deciding factor to not shop at FMs rather than the cost alone of fresh produce. As most participants received nutrition information from WIC and the internet, we believe that promotional methodology that combines internet-based mobile technology and existing services (eg, WIC) would be a viable strategy to improve farmers' market use in low-income populations. Ensuring that participants are aware that FMs accept electronic benefit transfer payments should be a key factor in promotional materials.

Our study is limited by several

factors. The results are based on self-report survey data. Actual purchasing behaviors were not objectively obtained. Also, the small sample size may have limited our ability to generalize to the larger population. Despite these limitations, this study demonstrates the potential utility of internet-based programming to influence FM usage and purchasing behaviors among SNAP participants.

## CONCLUSION

Future research to improve FM use should invariably include community partners to inform program activities for urban populations, coupled with objective measures of FM purchasing using SNAP funds, such as the type and quantity of produce purchased. Our current findings highlight the need for expanded efforts to both discount the cost of purchasing fresh fruits and vegetables in urban venues and utilization of internet-based activities to raise awareness of both financial and health benefits. Moving forward, these concepts will be emphasized in our pilot program and we hope that others doing similar work will find this information useful to their own endeavors.

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## CONFLICT OF INTEREST

No conflicts of interest to report.

## AUTHOR CONTRIBUTIONS

Research concept and design: Nuss, Skizim, Sothern; Acquisition of data: Nuss, Skizim; Data analysis and interpretation: Nuss, Skizim, Afaneh, Miele; Manuscript

draft: Nuss, Skizim, Afaneh, Sothorn; Statistical expertise: Nuss; Acquisition of funding: Nuss, Skizim, Miele, Sothorn; Administrative: Nuss, Afaneh, Skizim; Supervision: Nuss, Skizim, Sothorn

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