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SNAP-based incentive programs at farmer's markets: Adaptation considerations for Temporary Assistance for Needy Families (TANF) recipients

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Abstract

Objective—To describe the design, implementation, and consumer response to a coupon-style intervention aimed to increase Supplemental Nutrition Assistance Program (SNAP) use at a farmers' market (FM) among Temporary Assistance for Needy Families (TANF) participants.

Design—Quasi-experimental trial to evaluate redemption response to two coupon interventions; baseline surveys characterized coupon redeemers and non-redeemers.

Setting—Urban

Participants—TANF recipients assigned to either a plain (n=124) or targeted marketing coupon intervention (n=130).

Intervention(s)—Both groups received 10, \$2 coupons to double fruit and vegetable SNAP purchases at the FM. Targeted marketing group also received an oral presentation designed to reduce perceived barriers to FM use.

Main Outcome Measure(s)—Coupon redemption

Analysis—T-tests and Chi-squared/Fisher's exact tests were used to examine associations between redeemers and non-redeemers, while logistic regression was used to adjust for the intervention.

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Results—No male and few female participants redeemed coupons (6.3%). Among women, those with vegetable preparation knowledge were three times more likely to redeem coupons than those with little/no knowledge, OR=3.8, 95% CI [1.03, 13.77].

Conclusions and Implications—Stand-alone coupon incentive programs may not be a high-reach strategy for encouraging FM use among the TANF population. Complementary strategies to build vegetable preparation knowledge and skills are needed.

Keywords

farmers' markets; coupons; Supplemental Nutrition Assistance Program; Temporary Assistance for Needy Families; SNAP-based incentive programs; food supply (MeSH); food assistance (MeSH); motivation (MeSH)

INTRODUCTION

Compared with other income groups, the 1 in 7 low-income Americans who participate in the Supplemental Nutrition Assistance Program (SNAP) have the highest disparities in fruit and vegetable (F/V) intake.¹ Accessibility barriers, such as limited availability of affordable produce, coupled with individual factors, such as low education, likely contribute to these suboptimal intakes.¹ Inadequate F/V intake may negatively contribute to chronic disease burden in this population,¹ with potential effects ranging from metabolic dysfunction² to all-cause mortality.³ Thus, programs designed to improve F/V access, and thereby F/V intake, are fundamental for shaping the overall health of SNAP participants. Farmers' markets (FMs) offer one potential bridge for linking consumers to fresh F/Vs, and many communities are choosing to implement programs that financially incentivize FM use among SNAP consumers.⁴ However, little is known about how different low-income population segments respond to these programs, including those accessing the Temporary Assistance for Needy Families (TANF) program.

Farmers' markets that accept Electronic Benefits Transfer (EBT) payments, including SNAP and WIC cards, have grown substantially in recent years.⁵ Financial incentive programs further reduce or eliminate the financial cost of FM purchases, including the WIC Farmers' Market Nutrition Program (FMNP), the Senior Farmers' Market Nutrition Program (SFMNP), and, more recently, "Double Up Food Bucks" (DUFb) programs, which typically match SNAP purchases at FMs dollar-for-dollar. Program participants often achieve significant gains in F/V intake,⁶ and report willingness to try new F/V.⁷ For current FM consumers who receive some form of federal nutrition benefits, incentives are often reported as an important factor in their decision to shop at FMs.⁸ However, participation rates in these incentive programs vary widely across communities.

The need for research on how to best tailor FM outreach strategies for low-income subpopulations, including racial and ethnic minorities, has been identified.⁹ TANF participants comprise one such population, which includes 1.7 million low-income households each year, translating to over 1 million adults and 3 million children.¹⁰ While 85% of TANF participants receive SNAP and 73% receive WIC,¹¹ participant demographics may present additional barriers to FM use beyond those experienced by the general SNAP or

WIC populations, including higher rates of very low-education, female-headed households, and high minority participation rates.¹⁰

Consumer decisions to use FM incentive programs may be partly influenced by individual-level characteristics within the target population. Personal factors that influence the reach of FM financial incentive programs have been less explored, yet are highly relevant for the design of high-impact programs.¹² Those studies exploring individual-level factors have been primarily cross-sectional and focus mostly on the WIC population. Findings suggest maternal vegetable intake, but not fruit intake, is associated with FM use among WIC participants.¹³ Additionally, past program voucher use, higher daily F/V intake,¹⁴ education level, perceived benefits of eating F/V, and perceived dietary quality influence utilization of the FMNP.¹⁵

No published studies have evaluated consumer response to FM financial incentive programs among the TANF population, nor have the behavioral factors of predisposing, enabling, and reinforcing constructs¹⁶ been simultaneously explored to describe those personal characteristics and external factors that may influence program reach. Additional knowledge is needed to advance the design of programs that bridge equitable FM access. Thus, this study aimed to identify how individual-level predisposing, enabling, and reinforcing factors influenced response to a FM incentive intervention program created for SNAP-TANF recipients in Tulsa, Oklahoma, designed to boost SNAP transactions in partnership with a FM experiencing low SNAP participation rates.

METHODS

This quasi-experimental study examined whether TANF recipients would spend SNAP benefits at a local FM when provided with incentive coupons designed to double SNAP benefits up to \$20, while also seeking to identify individual-level characteristics associated with coupon redemption. Two coupon interventions were initially compared: 1) basic information about the FM followed by plain coupon distribution versus 2) a tailored, targeted marketing coupon intervention. The intervention was developed in community partnership with a local FM that had invested in EBT machines to increase FM access for low-income consumers, yet was experiencing very low SNAP transaction rates. The University of Oklahoma Institutional Review Board approved this study.

Study Population and Recruitment Sites

The study population was TANF recipients ($N = 284$) aged 18 and older who were directly recruited from 2 Department of Human Services (DHS) offices during TANF orientation classes and 4 community sites during TANF-sponsored GED classes. A member of the research team appeared onsite and invited all class participants to join the study. Due to the logistics of presenting intervention information to classes, it was not possible to assign the intervention (plain or targeted marketing coupon) at the individual level; therefore, the intervention was assigned to an entire class. The distance from these recruitment sites to the FM ranged from 2–9 miles ($M = 4.5$).

Factors Related to Coupon Redemption

After providing written informed consent, each participant completed a survey designed to evaluate predisposing, enabling, and reinforcing factors (as defined by Green and Kreuter's educational and ecological assessment phase for health promotion planning¹⁶) potentially related to F/V consumption and FM use (Table 1). The survey was developed using items from a study exploring FM use in the WIC population¹⁷ combined with researcher-developed items informed by previous interviews with TANF participants.¹⁸ Surveys were matched to each set of distributed coupons using a unique participant identifier to evaluate characteristics of redeemers.

Intervention

Consented TANF recipients were assigned by class to either the plain coupon or the targeted marketing coupon intervention between June and August 2011. Participants assigned to the plain coupon intervention ($n = 124$) received basic information about the market's location and operating hours, followed by distribution of coupons printed in black and white. Participants assigned to the targeted marketing intervention ($n = 130$) received a presentation that detailed information about the FM, including foods sold, step-by-step directions on making SNAP transactions, and common misperceptions about FM venues and products previously identified in formative research with the TANF population.¹⁸ Targeted marketing coupons were then distributed. These coupons were printed in color, double-sided, and included a map with the FM location and hours, a listing of products that could be purchased with SNAP, the SNAP logo, and photos of the market. Members of the targeted marketing group also received a free spice sample from a market vendor. Coupons for both groups were issued in \$2 increments (10 coupons per participant), which could be used to double the value of F/V SNAP purchases at the FM. Participants were informed and each coupon stated, "When you use your Access [EBT] card to purchase \$2 in eligible foods at [FM Name], you will receive an additional \$2 to spend at the market by presenting this coupon."

Statistical Analyses

While the initial study included both sexes, none of the men ($n = 24$) redeemed coupons, revealing an effect modification of coupon redemption by sex. Since the analyses of factors associated with coupon redemption among men were not possible and 6 other participants were missing sex data, the redemption analyses were limited to females ($n = 254$).

Demographics, tobacco use, and predisposing, enabling, and reinforcing factors were compared by intervention and redemption groups. T-tests were used to compare differences in means for normally distributed, continuous variables, such as mean age and the mean number of F/Vs consumed daily. Chi-squared tests of homogeneity were performed to examine differences in proportions among the intervention and control groups, and to examine categorical variable differences between redeemers and non-redeemers. For analyses of categorical variables with low expected cell counts (< 5), the Fisher's exact test was used. A Chi-squared test of homogeneity comparing redemption rates by intervention group revealed redemption rates were not significantly different by intervention group ($\chi^2[1, n = 254] 0.88; P = 0.35$); therefore, intervention groups were combined to examine factors associated with coupon redemption. To account for any effect of the intervention, an

intervention variable was included in logistic regression models to examine the relationships between coupon redemption and other factors while controlling for intervention. An alpha level of 0.05 was used to determine statistical significance. All statistical analyses were performed using SAS (version 9.3, SAS Institute Inc., Cary, NC, USA).

RESULTS

Overall sample characteristics

The mean age of female participants was 27.3 years ($SD = 6.1$), and less than one-third (30.2%) had any education beyond high school. Almost one-half (47.0%) of the women were African American, one-quarter (25.7%) were Caucasian, and 10.3% were Hispanic. The majority of the women in the study were single parents, with less than 1 in 6 (16.7%) being married or in a relationship. Participants were more likely to be smokers (45.5%) than the general population of Oklahoma women (24.3%).¹⁹

On average, the women reported an average intake of 3.8 servings of F/Vs per day ($SD = 2.8$). However, less than half (44.5%) were able to identify “5 or more” as the daily recommended serving for F/Vs. The majority thought it was important to include dark green vegetables with meals (79.8%), and most thought it was important to eat more F/Vs than their current intake (75.5%).

More than one-third of participants reported that fresh produce costs were too high (41.3%), and nearly one-third reported additional difficulty obtaining fresh produce (32.2%). Additionally, nearly half reported little knowledge of how to prepare fresh vegetables (45.9%), and many described vegetable preparation as bothersome (39.8%). The majority had not shopped at a FM in the past year (70.2%), but only a small percentage (14.2%) reported that they had no transportation to the FM.

The majority of participants reported that their family members like the taste of most fruits (90.9%) and vegetables (70.9%) either a lot or very much. One-quarter (24.5%) of participants reported their family or friends shopped at FMs.

Comparison of intervention groups

Demographics and behaviors—The 2 intervention groups did not differ by age, marital status, or single-parent households. However, more persons in the plain coupon group had post-secondary education. Race also differed by intervention group, with more Hispanics and fewer whites being assigned to the targeted marketing group. The 2 groups did not differ by smoking status or F/V consumption (Table 2).

Predisposing, enabling, and reinforcing factors—Most predisposing factors were similar across intervention groups. However, more participants in the plain coupon group thought it was important to eat more F/Vs, and more had better knowledge of FM products. There were no differences in enabling factors between intervention groups. Most reinforcing factors did not differ by intervention group; only a higher percentage of participants in the plain coupon group reported family or friend use of FMs than in the targeted marketing group (Table 2).

Coupon redemption by intervention group

Of the 254 female participants who received either type of coupon, only 16 redeemed the coupons (6.3%). Although redemption rates were slightly higher among those in the targeted-marketing intervention group (7.7% vs. 4.8%), this difference was not statistically significant ($p = 0.35$). Therefore, the intervention groups were combined to analyze factors associated with coupon redemption.

Factors associated with coupon redemption

Demographics—There were some statistically significant demographic differences among the participants who redeemed the coupons and those who did not (Table 3). The mean age of the TANF participants redeeming coupons ($M = 30.5$, $SD = 8.0$) was higher than the mean age of those who did not redeem ($M = 27.1$, $SD = 6.0$), $p = 0.04$. This difference remained statistically significant after adjusting for intervention, $OR = 1.10$, 95% CI [1.01, 1.20]. In addition, participants with higher education (11.8%) more likely redeemed coupons than did those with a high school diploma or less (4.0%), $p = 0.03$. This difference remained after adjusting for the intervention, $OR = 4.26$, 95% CI [1.41, 12.90]. Although Hispanics (19.2%) more likely redeemed coupons than whites (6.2%), African Americans (1.7%), or other races (11.6%), $p = 0.002$, this difference did not remain statistically significant after adjustment for the intervention. Similarly, a higher percentage of those who were married or in a relationship (14.3%) redeemed coupons than those not in a relationship (4.8%), $p = 0.03$, but this difference was no longer significant after adjustment (Table 3).

Health behaviors—There were no differences in self-reported baseline smoking or F/V intake between coupon redeemers and non-redeemers (Table 3). The average reported intake of F/Vs was higher among redeemers ($M = 4.2$, $SD = 3.8$ servings per day) than among non-redeemers ($M = 3.8$, $SD = 2.8$ servings per day), but this difference was not statistically significant, $p = 0.73$. Likewise, a greater proportion of non-smokers redeemed (8.0%) compared to smokers (4.4%), but this difference was not statistically significant, $p = 0.24$ (Table 3).

Predisposing factors—Most predisposing factors were similar between redemption groups (Table 4). Although more participants who thought they should eat 5 servings of F/Vs each day redeemed coupons than those who did not think they should eat 5 servings per day, this difference was no longer significant after adjustment for the intervention. Similarly, more of those who desired to eat more F/Vs redeemed coupons than those who were satisfied with current intake levels; however, this difference was not statistically significant after adjustment. There were also no significant differences by redemption group regarding bothersome attitudes toward fresh vegetable preparation, knowledge of what food products are available at FMs, past experience shopping at FMs, or perceptions about the taste and safety of FM foods.

Enabling factors/barriers—TANF women who reported substantial vegetable preparation knowledge were more than 3 times as likely to redeem coupons than those with little or no knowledge, even after adjusting for the intervention, $OR = 3.77$, 95% CI [1.03, 13.77] (Table 4). There were no significant differences in coupon redemption regarding costs

and difficulties obtaining fresh produce and participation in previous nutrition classes. While none of the participants who lacked transportation redeemed coupons, only 7.3% of those with transportation redeemed coupons.

Reinforcing factors—Although it was not statistically significant, TANF women with families who liked vegetables being served at meals were more likely to redeem coupons than those whose families did not respond positively, $p = 0.06$ (Table 4). There were also no statistically significant differences in coupon redemption by family taste preferences for fruits or vegetables or knowing people who shop at FMs.

DISCUSSION

This study examined demographic and F/V consumption-related behaviors associated with participation in a coupon-style financial incentive program designed to promote FM use among SNAP participants who are receiving TANF benefits. Our findings provide program planners with two overarching considerations for the development of interventions to promote FM use. First, low redemption rates indicate that a coupon-style financial incentive program may not be an effective strategy for the low-income subpopulation studied. Second, certain individual-level factors were associated with coupon redemption. These factors should be considered in future FM program planning efforts. Additionally, program planners should consider how market location and other structural factors may influence the overall success of incentive programs.

As a marketing strategy, coupons are used as promotional tools to incentivize a purchase, and although research shows that coupons lead to repeat purchases, overall coupon redemption rates are very low in the general population.²⁰ The low redemption rate in our study suggests that subtle differences in the perceived value of coupons, vouchers, and other economic incentives, such as discounts, may greatly influence participation rates depending on the target population. For example, selection of FM coupons to reduce F/V cost and expand buying power may result in lower redemption rates compared with vouchers for free product among low-income, low-education populations, even though both interventions are designed to reduce economic barriers to FM use. The value of coupons may be discounted compared with a voucher, especially among resource-limited or financially illiterate populations. Very low-income consumers (<130% of the poverty level) allocate a very small proportion of total food budgets to F/V purchases,²¹ and thus may not respond to incentive programs that match purchases. In the present study, the overall coupon redemption rate among participants was underwhelming (6.3%). However, the redemption rate in the present study was higher than rates observed in the general population for direct mail coupons (4.4%) and coupons that are personally handed out in-stores along with a product sample (4.6%).²⁰ In a voucher incentive study that provided \$5 vouchers for up to \$20 in free FM produce without any requirement for SNAP benefits spending, 38% of participants redeemed the vouchers.²² Thus, one possible strategy for increasing reach of FM financial incentive programs could include a combined strategy using 2 incentives: initial vouchers for free FM product, followed by coupons for redemption at subsequent visits.

For program planners working with diverse populations, racial differences in coupon redemption patterns should also be considered. Even though coupons for low fruit and vegetable spenders have resulted in increased sales of produce, three-quarters (75%) of coupon users in the U.S. identify as white.²³ Thus, a coupon-based intervention to promote FM use may not be effective for a largely minority population. Additionally, low confidence in coupon use may be related to the low coupon redemption observed among blacks in the present study.²⁴ Although the coupons used in the current study offered a similar monetary value as the DUFb program, which has been successful among blacks in Michigan,²⁵ participants in the DUFb program do not have to present a physical coupon to get the benefit. Similarly, WIC vouchers differ from coupons because the voucher recipient does not need to spend any personal dollars upfront. Therefore, program planners working with racially and educationally diverse populations may need to consider these nuances before selecting a financial incentive for encouraging behavior change.

The TANF population is mostly comprised of young families that are often single female-headed, which have needs that may differ from the general SNAP population, such as the need for one-stop shopping for food and other family essentials, such as diapers. This difference is underscored by the significant difference in older age for coupon redeemers in our study compared with non-redeemers. Similarly, the majority of DUFb participants also tend to be over the age of 35.²⁵ Therefore, for program planners working with young adult, very low-income, and low-education populations, complementary activities are likely needed to enhance the reach of FM economic incentive programs. In the present study, those participants who reported skills in fresh vegetable preparation were more likely to redeem coupons. Previous research found that vouchers combined with education are more effective for boosting FM participation than education or vouchers alone in the WIC population.¹⁷ Thus, developers of both coupon and voucher-type incentive programs may have greater success if participants also receive tailored vegetable preparation skill-development activities. Combination strategies may help overcome some of the barriers to coupon redemption observed in the present study.

Market location may also affect use of incentives, due to transportation or social barriers. While most participants reported having transportation to the FM, the market location was located near an affluent retail shopping area, which may have deterred participation. FM offering incentives at federally-qualified health centers²⁶ or other familiar settings may be more successful than FM operating in unfamiliar parts of town. A recent systematic review indicated that exclusionary social spaces and lack of social diversity among market vendors and shoppers are important social barriers that influence use among minorities and persons new to shopping at FMs.⁹ Additionally, FMs provide added value by offering consumers an opportunity to connect with others in their community.⁹ It is possible the FM location in the present study did not offer this added value. Even with incentives, other structural barriers, such as a single market-operated point-of-sale terminal, may have deterred participants from using the market.²⁷

There were some limitations, including very low redemption rates, which made it difficult to assess factors associated with coupon incentive redemption in multiple variable models. Additionally, since no men redeemed coupons, it was not possible to assess factors

associated with redemption among males. This limits the generalizability of our findings to female TANF participants, who comprise the vast majority of adult TANF beneficiaries. In addition, not all individual-level and structural factors, such as confidence in coupon use, shopping time constraints, market hours of operation, or residential proximity to FMs, which may be important factors related to coupon redemption, were assessed due to research restrictions. Choosing a farmers' market with very low SNAP participation could have hampered coupon redemption if low SNAP participation is due to an unwelcoming atmosphere or other environmental factors. Additionally, certain enabling factors for F/V intake, such as home kitchen and cooking supplies, were not assessed. Moreover, assessment of dietary intake was limited to self-reported servings of F/Vs, which is not an overall marker of dietary quality and may not be representative of true F/V intake. While most survey items were used in previous published research among low-income populations with young children,¹⁷ these items have not been validated as an instrument to comprehensively assess all predisposing, enabling, and reinforcing factors that may influence FM use. Finally, we evaluated participants' responses to a coupon-based financial incentive intervention, which may elicit different responses compared to other financial incentive interventions, such as vouchers or discounts, especially in this low income, racially diverse population. Demographic imbalances in age, race, and education between plain and targeted marketing groups may have resulted in a false conclusion that there was no difference between these interventions.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The present study and past research suggests that FM use partly hinges on two separate enabling factors: 1) one's skillset for preparing fresh F/Vs and 2) accessibility of FMs as a resource for these foods.¹⁸ When promoting FMs to clients, community nutrition practitioners should be aware of multi-level factors that influence consumer decisions to use FMs. Financial incentive interventions that do not additionally address individual-level factors, such as F/V knowledge and skills, as well as structural factors that influence accessibility, such as location and hours of operation, will likely not achieve high reach among very low-income families with limited resources. Furthermore, the decisions to acquire, store, prepare, and eat fresh produce, in addition to the use of FMs as a resource for these foods, are likely the product of a larger food choice process model that is driven by past life course experiences and personal, social, and other contextual influences.²⁸ While many successful case studies support the continuation of FM incentive programs for other disparate populations, such as WIC⁶ recipients, the general SNAP population,⁷ and low-income persons with chronic disease,²⁹ more research is needed to identify targeted strategies for engaging other low-income population segments not currently taking advantage of these programs.

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TABLE 1

Potential Predisposing, Enabling, and Reinforcing Factors Related to Farmer's Market Use

Factor	Definition	Variables
Predisposing (e.g., knowledge, attitudes, beliefs, values and confidence)	Predisposing factors are any characteristics of a person or population that motivates behavior prior to or during the occurrence of that behavior.	<ul style="list-style-type: none"> • Baseline fruit and vegetable intake (self-report) • Knowledge of daily fruit and vegetable serving recommendations • Perceived health importance of serving dark green vegetable vegetables with meals • Desire to eat more fruits/vegetables • Bothersome attitude toward vegetable preparation • Knowledge that FM exists • Knowledge of foods available at farmers' market • Beliefs about organic fruit and vegetable taste compared to non-organic • Beliefs about safety of FM foods • Past use of FMs
Enabling (e.g., availability, accessibility, policies, and skills)	Enabling factors are those characteristics of the environment that facilitate action and any skill or resource required to attain specific behavior.	<ul style="list-style-type: none"> • Costs of F/Vs in area • Ease of obtaining F/Vs in area • Knowledge of fresh vegetable preparation • Previous F/V preparation class • Available transportation to FM
Reinforcing (e.g., family and peer attitudes)	Reinforcing factors are rewards or punishments following or anticipated as a consequence of a behavior. They serve to strengthen the motivation for behavior.	<ul style="list-style-type: none"> • Family preference for fruits • Family preference for vegetables • Family response to vegetables at meals • Family or friends use FMs

Factors and definitions from: Green, L. W., & Kreuter, M. W. (1999). *Health program planning: An educational and ecological approach* (3rd ed.). Mountain View, CA: Mayfield Publishing Company. A portion of variables used are adapted from: Anderson, J. V., Bybee, D. I., Brown, R. M., McLean, D. F., Garcia, E. M., Breer, M. L., & Schillo, B. A. (2001). 5 a day fruit and vegetable intervention improves consumption in a low income population. *J Am Diet Assoc*, 101(2), 195–202. doi:10.1016/s0002-8223(01)00052-9

TABLE 2

Demographic, Predisposing, Enabling, and Reinforcing Factors Possibly Related to Urban Farmers' Market (FM) Use among Temporary Assistance for Needy Families (TANF) Recipients by Intervention Group, Oklahoma, 2011

Category	Factor	Target Marketing (n=130) % (n)	Plain Coupon (n=124) % (n)	p-value
Demographics				
Mean age (years)		28.0 (SD=7.2)	26.7 (SD=4.9)	0.0915
Race/Ethnicity	Caucasian	20.2 (26)	31.5 (39)	0.0013
	African American	44.2 (57)	50.0 (62)	
	Hispanic	17.1 (22)	3.2 (4)	
	Other	18.6 (24)	15.3 (19)	
Education	Some college or more	20.9 (27)	39.8 (49)	0.0011
Marital status	Married/relationship	16.4 (21)	17.1 (21)	0.8875
Household	Single parent	63.9 (76)	73.9 (82)	0.1019
Health Behaviors				
Smoking	Current smoker	43.9 (58)	47.2 (57)	0.5974
Fruit/Vegetable intake	Mean # daily servings	3.7 (SD=2.5)	3.9 (SD=3.1)	0.5888
Predisposing Factors				
Knowledge of daily fruit and vegetable serving recommendations	5 servings	42.3 (55)	46.8 (58)	0.4740
Perceived health importance of serving dark green vegetables with meals	Important to include with meals	77.5 (100)	82.1 (101)	0.3642
Desire to eat more fruits/vegetables	Important to eat more	69.8 (90)	81.5 (101)	0.0308
Bothersome attitude toward vegetable preparation	A lot/much bother	39.4 (50)	40.3 (50)	0.8775
Knowledge that FM exists	Yes	46.1 (59)	46.0 (57)	0.9840
Knowledge of foods available at farmers' market	Knew FM sell fruits, vegetables & meats	23.9 (31)	36.3 (45)	0.0304
Beliefs about organic fruit and vegetable taste compared to non-organic	Same or better than non-organic foods	78.1 (96)	74.2 (89)	0.4778
Beliefs about safety of FM foods	As safe or more safe than grocery	96.1 (122)	95.8 (115)	0.9271
Past use of FMs	Never	72.7 (93)	67.7 (84)	0.3936
Enabling Factors				
Cost of fresh fruits vegetables in area	Too expensive	39.1 (50)	43.6 (54)	0.4696
Ease of obtaining fresh fruits/vegetables in area	Hard/very hard to get	28.9 (37)	35.5 (44)	0.2637
Knowledge of fresh vegetable preparation	Little or no knowledge	46.5 (60)	45.2 (56)	0.8294
Previous fruit/veg prep class	Yes	77.3 (99)	77.2 (95)	0.9837
Available transportation to FM	Yes	86.2 (112)	85.5 (106)	0.8784
Reinforcing factors				
Family preference for fruits	A lot/very much	90.0 (117)	91.9 (113)	0.6051
Family preference for vegetables	A lot/very much	74.4 (96)	69.4 (86)	0.3702
Family response to vegetables at meals	Likes a lot or very much	67.7 (88)	63.7 (79)	0.5038
Family or friends use FMs	Yes	18.6 (24)	30.7 (38)	0.0260

* **Bold** indicates statistical significance ($p < 0.05$)

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TABLE 3

Percent of Temporary Assistance for Needy Families (TANF) Women Redeeming Farmers' Market Coupons at an Urban Farmers' Market by Demographics and Smoking Status, Oklahoma, 2011

Category	Factor	Redemption % (n)	X ² p-value ^a	Odds ratio (95% CI) ^b
Demographics				
Race/Ethnicity	Caucasian	6.2 (4)	0.0023 ^c	1.0 ^d
	African American	1.7 (2)		0.27 (0.05, 1.50)
	Hispanic	19.2 (5)		2.96 (0.63, 14.04)
	Other	11.6 (5)		2.18 (0.54, 8.77)
Education	Some college or more	11.8 (9)	0.0252 ^c	4.26 (1.41, 12.90)
	High school or less	4.0 (7)		1.0 ^d
Marital status	Married/relationship	14.3 (6)	0.0334 ^c	2.67 (0.86, 8.32)
	Divorced/separated/widowed	4.8 (10)		1.0 ^d
Household	Single parent	5.1 (8)	0.3769 ^c	0.69 (0.22, 2.21)
	Not single adult	8.3 (6)		1.0 ^d
Health Behaviors				
Smoking	Current smoker	4.4 (5)	0.2384	0.60 (0.20, 1.81)
	Not a current smoker	8.0 (11)		1.0 ^d

Bold indicates statistical significance (p<0.05)

^aChi-squared test of homogeneity.

^bORs adjusted for the intervention group assignment

^cFisher's exact test was used for these X² analyses with expected counts less than 5

^dReference group

TABLE 4

Percent of Temporary Assistance for Needy Families (TANF) Women Redeeming Farmers' Market Coupons at an Urban Farmers' Market by Predisposing, Enabling, and Reinforcing Factors, Oklahoma, 2011

Category	Factor	Redemption % (n)	X ² p-value ^a	Odds ratio (95% CI) ^b
Predisposing Factors				
Knowledge of daily F/V recommendations	5 servings	9.7 (11)	0.0437 ^c	2.61 (0.86, 7.90)
	< 5 servings	3.6 (5)		1.0 ^d
Perceived health importance of serving dark green vegetables	Important	7.0 (14)	0.5382 ^c	1.63 (0.35, 7.53)
	Not important	3.9 (2)		1.0 ^d
Desire to eat more F/Vs	Important to eat more	7.9 (15)	0.1289 ^c	4.76 (0.61, 37.33)
	Not important to eat more	1.6 (1)		1.0 ^d
Bothersome attitude toward vegetable preparation	Not much/a little bother	4.6 (7)	0.271	0.56 (0.20, 1.61)
	A lot/much bother	8.0 (8)		1.0 ^d
Knowledge that FM exists	Yes	6.9 (8)	0.7421	0.95 (0.33, 2.70)
	No	5.9 (8)		1.0 ^d
Knowledge of foods available at FMs	Knew FM sell F/V & meats	6.6 (5)	1.000 ^c	0.89 (0.27, 2.90)
	Little/no knowledge	6.2 (11)		1.0 ^d
Taste of organic F/Vs compared to non-organic	Organic tastes same/better	6.0 (11)	0.5438 ^c	0.76 (0.23, 2.49)
	Organic tastes not as good	8.6 (5)		1.0 ^d
Perceived safety of FM foods	FM as safe/more safe than grocery	5.9 (14)	0.1306 ^c	0.25 (0.05, 1.32)
	FM not as safe as grocery	20.0 (2)		1.0 ^d
Past use of FMs	At least once in last year	9.3 (7)	0.1525 ^c	2.34 (0.81, 6.77)
	Never	4.5 (8)		1.0 ^d
Enabling Factors				
Cost of fresh F/Vs in area	Not too expensive	4.7 (7)	0.3278	0.59 (0.20, 1.69)
	Too expensive	7.7 (8)		1.0 ^d
Ease of obtaining fresh F/Vs in area	Easy to get in area	4.7 (8)	0.2560 ^c	0.52 (0.18, 1.49)
	Hard/very hard to get	8.6 (7)		1.0 ^d
Knowledge of fresh vegetable preparation	A lot or much knowledge	9.5 (13)	0.0246 ^c	3.77 (1.03, 13.77)
	Little or no knowledge	2.6 (3)		1.0 ^d
Completed previous F/V prep class	Yes	6.7 (13)	1.000 ^c	1.08 (0.29, 4.00)
	No	5.3 (3)		1.0 ^d
Reinforcing factors				
Family preference for fruits	A lot/very much	6.5 (15)	1.000 ^c	1.40 (0.17, 11.27)
	Not much/little	4.4 (1)		1.0 ^d
Family preference for vegetables	A lot/very much	7.7 (14)	0.2486 ^c	2.65 (0.58, 12.14)
	Not much/little	2.8 (2)		1.0 ^d

Category	Factor	Redemption % (n)	X ² p-value ^a	Odds ratio (95% CI) ^b
Family response to vegetables at meals	Likes a lot or very much	8.4 (14)	0.0582	3.55 (0.78, 16.18)
	Not much/little	2.3 (2)		1.0 ^d
Family or friends use FMs	Yes	9.7 (6)	0.2327 ^c	2.16 (0.72, 6.43)
	No	5.2 (10)		1.0 ^d

F/Vs = Fruits and vegetables; FM = Farmers' Markets.

Bold indicates statistical significance (p<0.05)

^aChi-squared test of homogeneity.

^bORs adjusted for the intervention group assignment

^cFisher's exact test was used for these X² analyses with expected counts less than 5

^dReference group.