

Massachusetts Farmers' Markets: Contributions to Farmer Income and Food Access

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Dissertation Defense

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Overview

- History of Farmers Markets in the U.S.
- Study 1: A profile of farmers' markets in Massachusetts - benefits to farmers
- Study 2: Benefits of farmers' markets to low income populations, specifically WIC recipients
- Study 3: Benefits of farmers' markets to low income populations, specifically SNAP participants
- What have we learned from these inquiries?

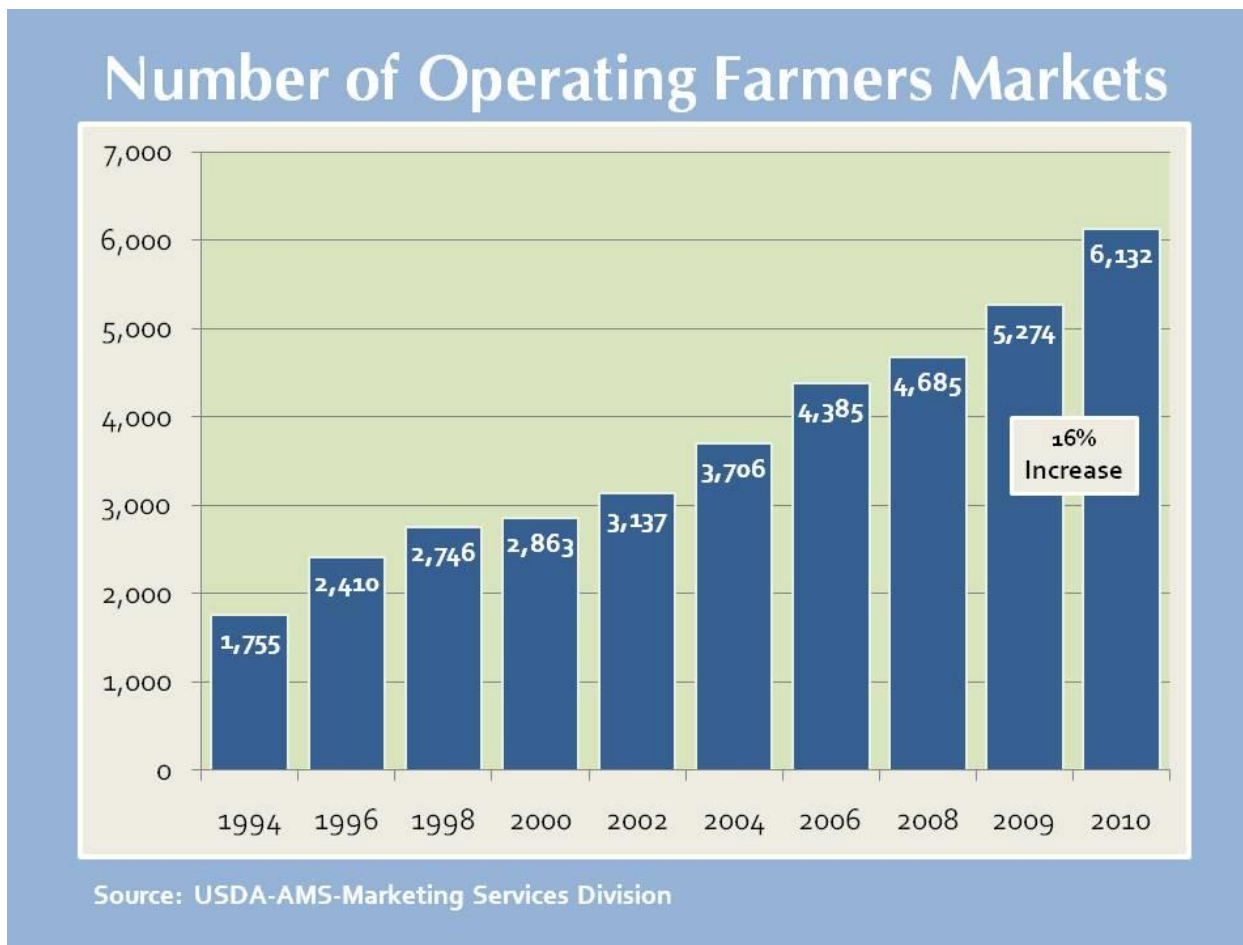


History of Farmers' Markets

- Common in town centers as a way to sell goods to residents
- Reduced popularity as technology advanced cold storage and transportation
- Hit lowest levels in 1950s and 1960s as the prevalence of supermarkets increased



History of Farmers' Markets





Study 1: Influences on vendor sales at Massachusetts farmers' markets





Objectives

1. Establish a descriptive profile of Massachusetts farmers' markets
2. Establish a descriptive profile of market managers in Massachusetts
3. Assess market and manager characteristics that influence vendor sales



Methodology

- Surveys to farmers who sell at markets: N=365 (55% response rate)
- Surveys to farmers who *do not* sell at markets: N=385 (50% response rate)
- Surveys to 2009 market managers: N=202 (54% response rate)



Analysis

- Descriptive statistics to determine:
 - Benefits and challenges to selling at markets
 - Market characteristics
 - Manager characteristics
- Correlations to determine which market and/ or manager characteristics were associated with vendor sales



Analysis

- Multivariate linear regression to assess the influence of market and manager characteristics on vendor sales:

$$\begin{aligned} \text{AverageVendorSales} = & \beta_0 + \beta_1 (\text{Age}) + \beta_2 (\text{Gender}) + \beta_3 \\ & (\text{Race}) + \beta_4 (\text{Educ}) + \beta_5 (\text{Paid}) + \beta_6 (\text{YrsExp}) + \beta_7 \\ & (\text{PriorExp}) + \beta_8 (\text{Months}) + \beta_9 (\text{Day}) + \beta_{10} (\text{Time}) + \beta_{11} \\ & (\text{YrsOp}) + \beta_{12} (\text{Products}) + \beta_{13} (\text{Entertainment}) + \beta_{14} \\ & (\text{VendorFee}) + e \end{aligned}$$



Characteristics of Mass Farmers' Markets 2009 (N=110)

Characteristic	Mean	Minimum	Maximum
Weeks of operation	19	8	28
Years of operation	10	1	38
Customers per week	573	25	3,000
Number of product categories available	7	2	10
Seasonal fee	\$264	\$0	\$720
Number of vendors	15	1	40



Reasons for Selling at Markets

1. Earn income
2. Sense of community
3. Sell surplus products

Challenges to Selling at Markets

1. Poor weather
2. Expense of staff
3. Vendor competition
4. Insufficient customers



Income

- \$250 net sales was the minimum necessary for profitability
- The average vendor earned \$528 per market day (\$43 to \$3,750)
- Vendors were able to generate this minimum mean at 59% of Mass markets



Characteristics Associated with Vendor Sales

- Average number of customers
 - $R=0.534$ ($P=<0.001$)
- Years experience as market manager
 - $R= 0.401$ ($P=<0.001$)



Multivariate Linear Regression Market and Manager Characteristics Predictive of Vendor Sales

	Coefficient	Standard Error	P-Value
Age	-16.1	6.8	0.022
Years as Manager	49.9	17.7	0.007



Study 2: Special Supplemental Nutrition Program for Women, Infants and Children Cash Value Vouchers to Massachusetts Farmers' Markets

THIS DOCUMENT CONTAINS THE FOLLOWING SECURITY FEATURES: VOID PANTOGRAPH, MICROPRINTING, AND WATERMARK ON BACK

Commonwealth of Massachusetts
Massachusetts WIC Program

Participant Name	Member ID	Check #	First Use Date
WIC PARTICIPANT	0001234567	12345678	06/01/10

Amount: Food (No Substitutions)

\$6.00 MAXIMUM VALUE-FRESH, CANNED, FROZEN, FRUITS/VEGETABLES ONLY
INVALID IF CASHED FOR MORE THAN MAXIMUM VALUE, NO CASH EXCHANGE

Improper use of this check is subject to State and Federal prosecution.

Actual Purchase Price	Last Use Date
\$	06/30/10

Unauthorized Vendors May Not Accept This Check
Vendor must deposit within 60 days of "First Use Date"

I guarantee the correct price was written above



Objectives

1. Assess the impact of CVV on sales at farmers' markets
2. Assess the effect of the use of Cash Value Vouchers (CVV) on the use of markets by WIC participants



About WIC



- Farmers' Market Nutrition Program began in 1992
- Provides \$10-\$30 per season to use exclusively at farmers' markets
- In 2009, served 2.2 million participants; created \$20 million for farmers

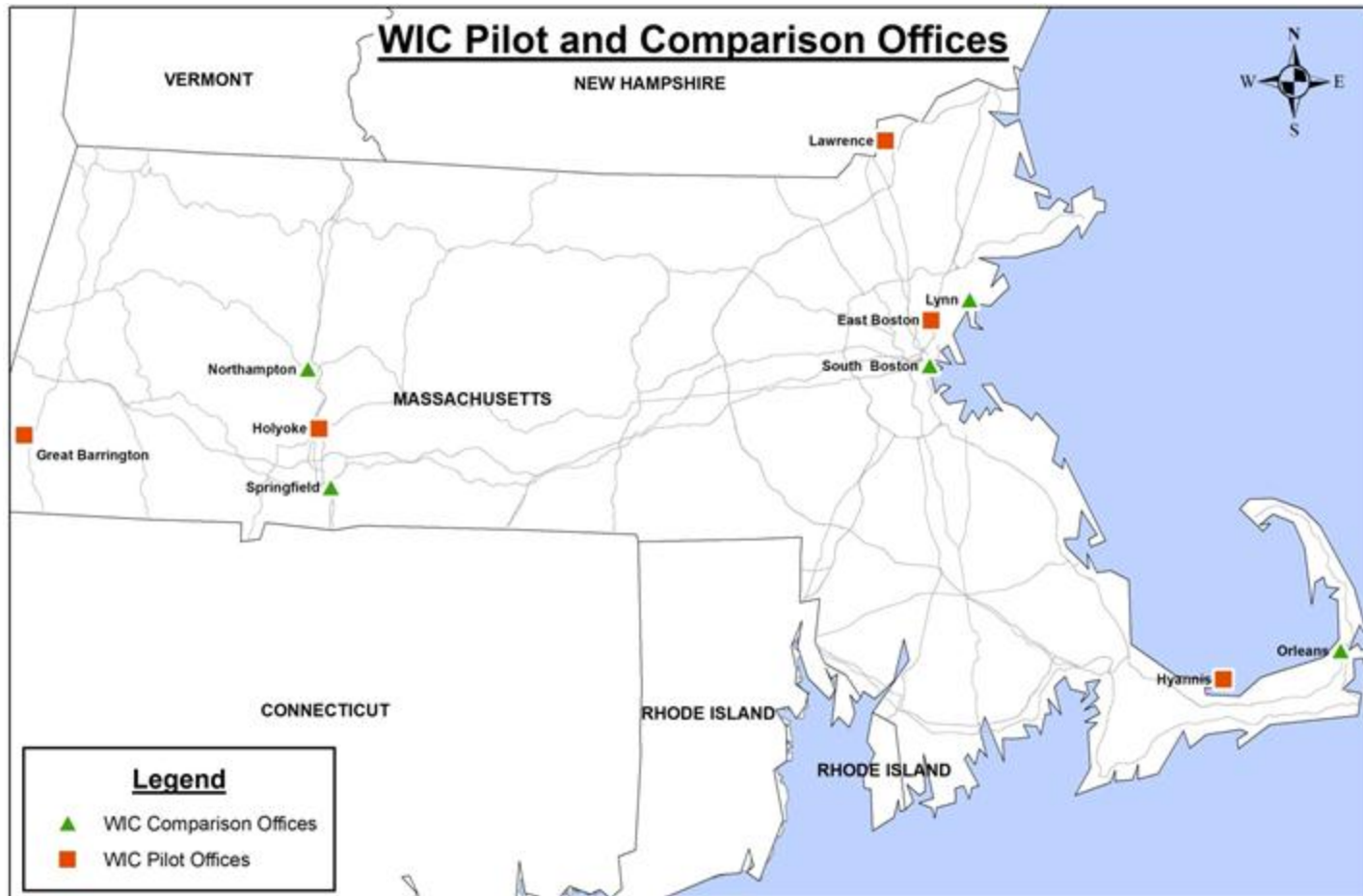


About WIC

- In 2009, new food packages were introduced, which included CVV:
 - can be used to purchase fresh, frozen or canned produce at any certified WIC retailer
 - distributed at \$6, \$8 or \$10 a month



Methodology





Methodology

- Surveyed participants at WIC offices in March 2010
 - Recalled shopping habits from summer 2009
- Surveyed participants at WIC offices in February 2011
 - Recalled shopping habits from summer 2010



Analysis

- Descriptive statistics to determine why WIC participants do or do not shop at farmers' markets
- T-tests to assess difference in use of farmers' markets by WIC participants:
 - Between 2009 and 2010
 - At pilot and comparison markets in 2010



Analysis

- Multivariate regression analysis was used to assess the factors that influenced use of farmers' markets by WIC participants

$$\text{Use of FM} = \beta_0 + \beta_1 (\text{Pilot}) + \beta_2 (\text{Age}) + \beta_3 (\text{Race}) + \beta_4 (\text{Educ}) + \beta_5 (\text{Groceries}) + \beta_6 (\text{Fruit \& Veg}) + \beta_7 (\text{CVV}) + e$$



Use of Farmers' Markets by WIC Participants

	Pilot (300)	2009 Comparison (259)	Pilot (279)	2010 Comparison (214)
Shop at Farmers' Markets	54%	51%	48%	45%
Do NOT Shop at Farmers' Markets	46%	49%	52%	55%



Reasons for shopping at farmers' markets

1. Quality
2. Variety
3. Support local farmers
4. Perceived produce is less expensive
5. Convenient location
6. To redeem FMNP coupons



Reasons WIC participants did not shop at farmers' markets

1. Did not know where a market was located
2. Inconvenient hours
3. Inconvenient locations
4. Products were expensive
5. Don't sell preferred foods



Factors that influenced use of farmers' markets

	Coefficient	Standard Error	P-Value
Age	0.015	0.003	<0.001
Spending on Fruits & Vegetables	0.041	0.019	0.034
Use of CVV	0.346	0.060	<0.001



Use of CVV at Farmers' Markets

- 109 participants reported use of CVV at markets
 - 62 from pilot sites
 - 47 from comparison sites
- No differences found in use of markets between pilot and comparison sites



Impact of CVV on Income

- CVV sales contributed \$7,787 to 21 vendors
- Average CVV sales were \$370
- Equivalent to 5% of the average vendor sales in the Northeast (\$6,676)



Study 3: A case study of Boston farmers' markets: Use by Supplemental Nutrition Assistance Program clients



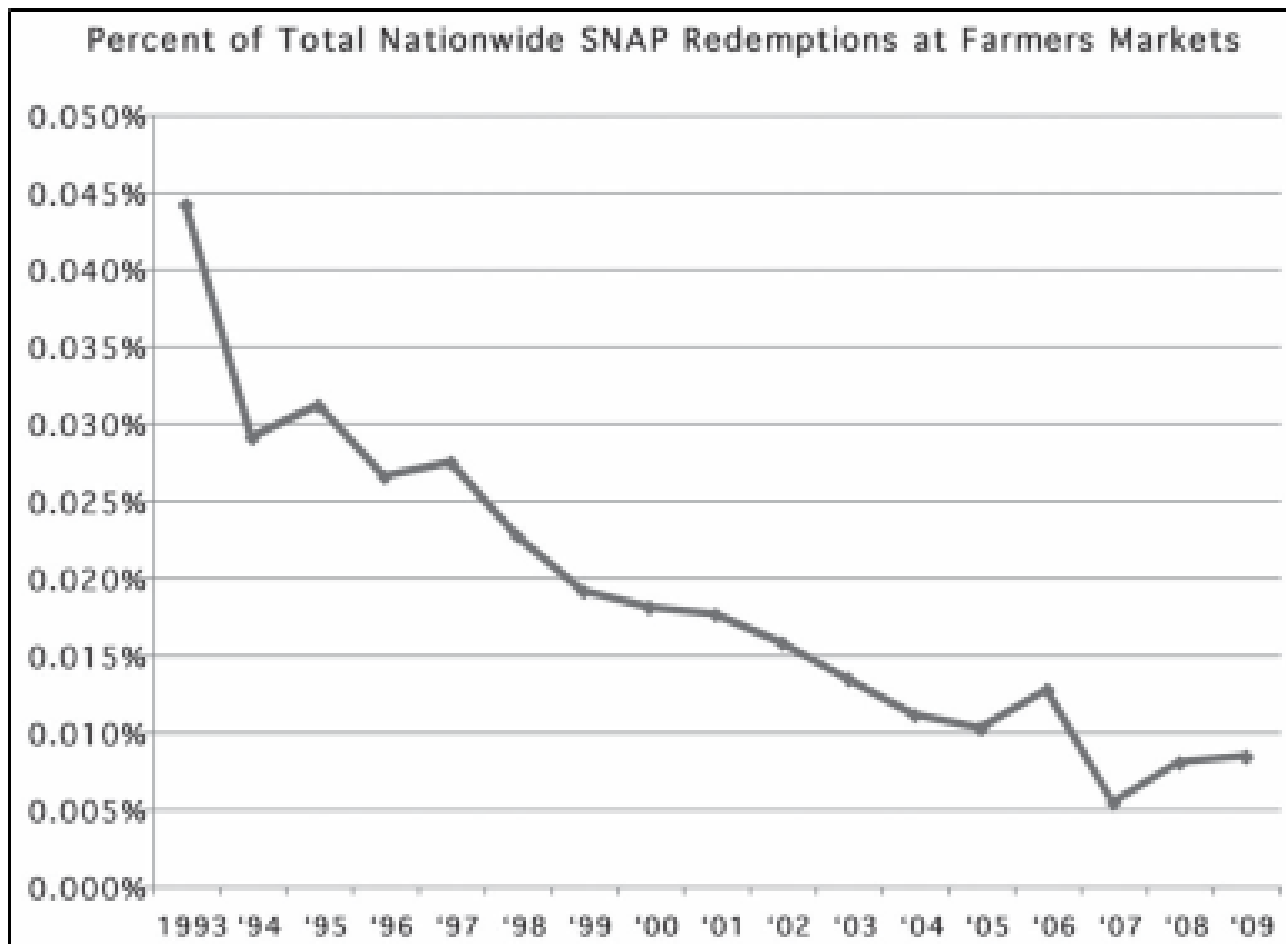


Objectives

1. Provide a profile of Boston farmers' market customers
2. Assess the use of farmers' markets by SNAP clients in Boston
3. Determine the relationship between income of market shoppers and market neighborhoods



SNAP at Farmers' Markets



Source: Briggs et al, 2010

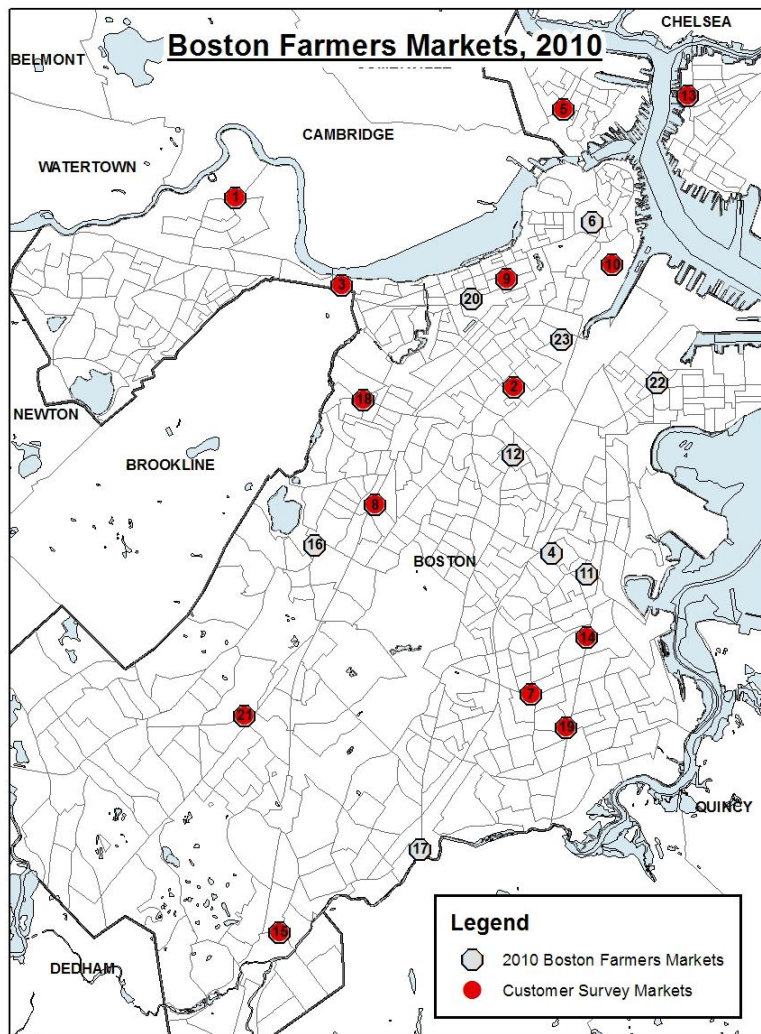


Boston Bounty Bucks

- Funded by Wholesome Wave Foundation and launched at 7 markets in 2008
- Provides dollar-for-dollar match up to \$10 for SNAP clients at farmers' markets
- Now funded by the Mayor's Fresh Food Fund



Methods



- Market manager survey: N=18
- Customer surveys at 14 farmers' markets: N=720
- GIS for income comparison



Analysis

- Descriptive statistics to determine customer demographics and shopping habits
- T-tests to assess differences in neighborhood and customer demographics



Comparison of Market Shopper Demographics with Boston Demographics

Education		Some high school	High school or GED	Some College	College	Masters +
	Market customers	2%	7%	14%	39%	38%
	Boston	17%	23%	19%	22%	20%
Race		White	Black	Asian	Latino	Other/ bi-racial
	Markets customers	71%	12%	5%	4%	8%
	Boston	51%	22%	8%	16%	4%
Gender		Male	Female			
	Market customers	27%	73%			
	Boston	48%	52%			
Age		<=24	25-44	45-65	>65	
	Market customers	13%	48%	34%	5%	
	Boston	34%	35%	21%	10%	



Income Comparison

- 2010 average household income in Boston: \$60,543
- 2010 average household income of Boston market shoppers: \$50,000-\$75,000
- Average shopper income less than or equal to neighborhood income at all but three markets



Customer Habits & Perceptions

- Average customer spent \$12.50 per visit
- Half visited a market at least once a week
- 95% found product quality better than the supermarket
- 70% found product selection better than the supermarket
- 44% found product price better than the supermarket



Use of SNAP at Boston Markets

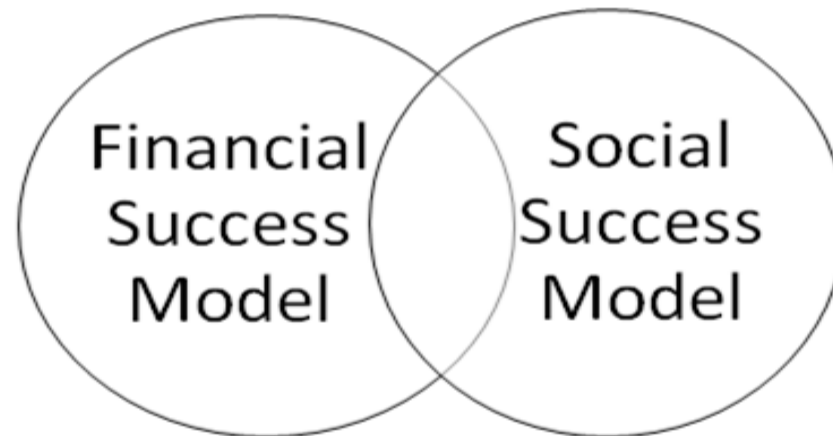
- Accepted at 18 out of 23 markets
- Average sales per market were \$2,779
- Total of \$40,880 spent at Boston markets
 - 0.10% of total SNAP dollars issued in market neighborhoods



Impact of SNAP on Vendor Income

- Combined SNAP and BBB spending was \$76,767 in 2010
- Average of \$556 per vendor
- 8% of total sales for the average vendor in the Northeast (\$6,676)

Study Implications





Future Research

1. What skills do market managers gain over time that lead them to create more successful markets?
2. Do incentive programs like BBB increase fruit and vegetable consumption?
3. What characteristics are associated with market closure?

Study Limitations

1. Update of WIC computers fell behind schedule and impacted the use of farmers' markets by participants
2. Unable to assess impact of SNAP and BBB on diet
3. Focused on low-income customers and did not assess benefits of markets for other customers

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- The girls from the PhD room



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Questions?

