



Systematic Review of Factors Influencing Farmers' Market Use Overall and among Low-Income Populations



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ABSTRACT

Background Recent evidence indicates a widening gap in fruit and vegetable (F/V) consumption between high- and low-income Americans. This gap is related, in part, to decreased access to food retailers that sell fresh F/V in low-income communities. Farmers' markets are identified as a strategy for improving F/V consumption by increasing access to these foods.

Objectives The aim of this systematic review was to examine literature published from 1994 to 2014 to identify facilitators and barriers of farmers' markets use, particularly among low-income consumers.

Design Peer-reviewed literature was identified in Ebsco Host (Academic Search Complete). Inclusion criteria for abstract review was primary research focused on farmers' market use identifying 87 studies for full-text review. Full-text review identified articles focused on facilitators and/or barriers of farmers' market use resulting in 49 articles. At least two reviewers completed review of all articles.

Results Of the 49 articles, 39% specified inclusion of low-income consumers and fewer than 15% focused on racial and ethnic minorities. Few studies were guided by theory and/or used standardized metrics. Results indicate farmers' market use is influenced by multiple economic, service delivery, spatial-temporal, social, and personal factors. Among studies that included low-income populations (n=19), key barriers to farmers' market use were perceptions that food assistance benefits were not accepted, belief that food variety at farmers' markets was limited, lack of access to transportation, lack of racial/ethnic diversity in the market space, and mismatch between markets and personal lifestyles. There is wide variation in study design and reporting standards and infrequent use of standardized measures limiting comparisons across studies.

Conclusions There is a need to establish valid and reliable metrics and reporting standards for evaluating farmers' markets. Findings may inform interventions, programs, and policies to promote farmers' market use.

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DURING THE PAST 2 DECADES, THE NUMBER OF farmers' markets in the United States has grown dramatically from 1,755 in 1994 to 8,268 in 2014.¹ Prior research has illuminated the variety of

farmers' market models in existence, which range from farm stands with as few as one farmer selling produce to multi-vendor farmers' markets selling food for wholesale.² Regardless of the model, farmers' markets represent an alternative compared with conventional food retail by offering an opportunity for consumers and producers to directly interact in food procurement transactions that focus on accessing farm-produced products such as fresh fruits and vegetables (F/V).

From a public health perspective, farmers' markets have been identified as a recommended environment-related intervention approach for two reasons. First, there is evidence that farmers' market use is associated with improved F/V consumption³⁻⁶ and these improvements are similar to those achieved through behavior-based dietary

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interventions.⁷ F/V consumption among Americans is persistently low,⁸ and consumption patterns are substantially worse for low-income Americans.⁹ Improving F/V consumption is associated with reduced risk for obesity^{10,11} and most chronic diseases,^{12–15} including cardiovascular diseases,^{16–18} cancers,^{19–23} and underlying metabolic dysregulation.^{24–27} Farmers' markets as environment-related interventions to improve diet may play a pivotal role for population health promotion.²⁸

A second reason driving public health interest in farmers' markets is related to increased awareness of structural barriers to accessing F/V, particularly in low-income communities.²⁹ Farmers' markets are emerging in these so-called food deserts as an immediate response to improve spatial access to healthy foods because the development of conventional food retailers such as supermarkets and grocers requires substantial investments that may not be realized in the short term.^{5,30–36} Farmers' markets have the potential to foster healthy diet by improving access to nutritious foods.

The purpose of our work was to conduct a systematic review of published literature to examine the following research question: Among low-income populations, compared with middle- and high-income populations, what are the barriers and facilitators of farmers' market use? This question was guided by evidence suggesting low-income individuals are disproportionately affected by food access barriers that result in increasingly disparate diet quality.^{29,37} Thus, low-income populations have the potential to achieve greater benefits from farmers' markets.

METHODS

The systematic review protocol was developed by the lead author in consultation with a library sciences expert and with feedback from five coauthors. The protocol involved three distinct stages. First, peer-reviewed articles published in full text between 1994 and 2014 were identified using Ebsco Host (Academic Search Complete) with the search term *farmers market** as the subject. This was conducted in September 2014 and again in January 2015. This resulted in identification of 954 articles with 282 remaining after duplicates were removed.

Second, 282 abstracts were screened by two reviewers. Inclusion criteria for abstract screening included available in English; focused on the United States and other high-income countries³⁸; contained primary analysis of qualitative or quantitative data; and addressed reasons for using farmers' markets, farmers' market characteristics, or barriers or facilitators to farmers' market use. Discrepancies between reviewers were discussed by a six-member research team and decided upon collectively. Abstract screening resulted in identification of 87 articles for full-text review.

Third, eligibility review involved evaluation of all 87 articles by two reviewers following an iterative training process to ensure review procedures were systematic. Inclusion criteria for full-text review included that the article met initial screening inclusion criteria from stage two and focused on barriers and/or facilitators of farmers' market use. This resulted in removal of 38 articles. For all included articles (n=49), information about the study aims and approach, study population demographic characteristics, and factors related to use of farmers' markets were extracted and

compared for accuracy. Given the diversity of research approaches and reporting standards among studies included in this review, systematic assessment of bias within each individual study was examined by highlighting variability in reporting trends related to study details that influence selection and sampling bias (see Table 1). Factors related to farmers' market use were categorized based on an existing framework of nutritious food access that includes five domains: economic (ie, cost and prices), spatial-temporal (ie, location and transportation), service delivery (ie, food quality/variety and customer service), social (ie, social interaction and cultural foodways), and personal factors (ie, personal behaviors or attitudes).³⁹ This involved systematic coding of all articles to identify barriers and facilitators of farmers' market use related to each of the five domains of nutritious food access. An "other" category was established for use during the evaluation of articles; however, all barriers and facilitators identified in the literature fit into one of the five domains of nutritious food access. Discrepancies between reviewers were discussed by a three-member research team and decided upon collectively. Articles were stratified by year of publication, national context (within the United States vs outside the United States), and by inclusion of low-income populations in their samples to examine trends. Figure 1 provides an illustration of the process used in the selection of articles for the systematic review based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses approach.

RESULTS

Variety and Rigor of Existing Farmers' Market Research

The 49 articles were published in a variety of journals, indicating an interdisciplinary interest in the topic of farmers' market use. The disciplines represented included nutrition, health, agriculture, consumer sciences, community development, sociology, environmental sciences, and parks and recreation. The articles were based on analysis of quantitative research (n=30), qualitative research (n=10), and mixed methods research (n=9). A summary of the 49 articles is provided in Table 1.

Data in the articles were collected between 1997 and 2013, although 11 studies did not report dates of data collection. Most of the articles (65%) were focused on populations in the United States with the majority examining Southeastern (n=13), Midwestern (n=7), and Western (n=5) regions of the country. Two studies included cross-national comparisons. Those from outside the United States focused on populations from Europe (ie, United Kingdom, Italy, Belgium, Ireland, Sweden, and Czech Republic) (n=11), Canada (n=5), and New Zealand (n=1). Most of the articles (82%) included farmers' market shoppers as the target population. Study populations included less often were farmers' market vendors or staff, general population, primary food shoppers not using farmers' markets, and food assistance recipients. The median sample size for these studies was 179 (range=12 to 3,250). The wide range in sample size is indicative of the different study designs employed, with qualitative studies including smaller sample sizes compared with quantitative studies. Geographic characteristics of the study context were reported in 80% of the studies with most (n=18) occurring in at least two

Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49)

									Factors Influencing FM Use by Domain	
			Study Context		Participant Characteristic					
Author(s)	Year	Data collection approach ^a	Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
US-based studies (n=34)										
Eastwood ⁶⁵	2000	Quantitative	Southeast	NS ^c	FM shoppers (n=544), general population (n=930)	Middle, high	Yes	White	ECON ^d SD ^e SOC ^f PER ^g	ECON
Andreatta and Wickliffe ⁶⁸	2002	Mixed	Southeast	Urban	FM shoppers (n=463), FM vendors/staff (n=69)	NS	NS	NS	ECON SD SOC	SD ST ^h
Govindasamy and colleagues ⁶⁶	2002	Quantitative	Mid-Atlantic	Suburban	FM shoppers (n=344)	Middle, high	Yes	White	ECON SD SOC	ECON SD ST
Brown ⁵⁹	2003	Quantitative	Mountain Plains	Urban, Rural, Suburban	Food shoppers (n=544)	Low, middle, high	Yes	White	ECON SD	
Velasquez and colleagues ⁷⁸	2005	Quantitative	Midwest	Urban, Rural	FM shoppers (n=60)	NS	Yes	NS	ECON SD ST SOC	ECON
Wolf and colleagues ⁷³	2005	Quantitative	Western	Urban, Suburban	FM and food shoppers (n=336)	Middle, high	Yes	NS	ECON SD ST SOC PER	SD
Suarez-Balcazar and colleagues ³⁵	2006	Quantitative	Midwest	Urban	FM shoppers (n=64)	Low, middle	Yes	African American	ECON SD	SD
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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Hunt ⁴⁹	2007	Quant Quantitative	Northeast	Urban, Rural, Suburban	FM shoppers (n=216), FM vendors/staff (n=81)	Middle, high	NS	NS	ECON SD SOC	
Baker and colleagues ⁷⁹	2009	Quantitative	Northeast	Rural, Suburban	FM shoppers (n=245)	Middle, high	Yes	NS	ECON SD ST SOC	
Toler and colleagues ⁶⁴	2009	Quantitative	Southwest	NS	FM shoppers (n=51), food shoppers (n=51)	Middle	Yes	NS	ECON SD SOC	
Zepeda ⁶¹	2009	Quantitative	Nationwide	Urban, Rural, Suburban	Food shoppers (956)	Low, middle, high	Yes	White	ECON SD PER	
Colasanti and colleagues ⁵¹	2010	Mixed	Midwest	Urban, Rural	Food shoppers (n=1,016)	Low	NS	White	ECON SD ST SOC	ECON SD ST SOC
Detre and colleagues ⁸⁴	2010	Quantitative	Southwest	Urban	Food shoppers (n=3,250)	NS	Yes	NS	SD ST SOC PER	SD ST SOC PER
Racine and colleagues ⁸¹	2010	Quantitative	Southeast, Mid-Atlantic	Urban	Food assistance recipients (n=179)	Low	Yes	African American	PER	SD ST

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Alkon and McCullen ⁷⁵	2011	Mixed	Western	Urban	FM shopper (n=100), FM vendors/staff (n=31)	NS	NS	White	ECON SD SOC PER	ECON SD SOC
Alonso and O'Neill ⁵⁰	2011	Quantitative	Southeast	Urban, Rural	FM shoppers (n=356)	NS	Yes	NS	ECON SD ST SOC PER	ECON SD ST
Alonso and O'Neill ⁸³	2011	Quantitative	Southeast	Urban, Rural	FM shoppers (n=356)	NS	Yes	NS	SD SOC PER	
Farmer and colleagues ⁶⁰	2011	Qualitative	Midwest	Urban, Suburban	FM shoppers (n=8), Food shoppers (n=17)	Low, middle, high	Yes	White	ECON SD SOC PER	ECON SD ST
Flamm ⁵²	2011	Mixed	Midwest	Rural	Food pantry shoppers (n=9), FM vendors/staff (n=11)	Low	NS	NS	ECON SD SOC	ECON SD
Freedman and colleagues ⁵³	2011	Mixed	Southeast	Urban	FM shoppers (n=251)	Low	Yes	African American	ECON SD ST SOC	

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Gwin and Lev ⁷⁶	2011	Mixed	Western	NS	FM shoppers (n=1,108)	NS	NS	NS		ECON SD ST
Inda and colleagues ⁵⁵	2011	Quantitative	Western	NS	FM shoppers (n=558), FM vendors (n=28), general population (n=227)	Low	NS	Native Hawaiian	ECON ST	ECON SD
Middleton and Smith ⁴⁴	2011	Quantitative	Midwest	Urban, Rural, Suburban	FM shoppers (n=184)	Low, middle, high	Yes	White	SD SOC PER	ST
Ruelas and colleagues ³³	2011	Quantitative	Western	Urban	FM shoppers (n=415)	Low	Yes	Latina	ECON SD ST PER	ECON SD ST
Vecchio ⁷²	2011	Mixed	Mid-Atlantic, Europe (Italy)	Urban	FM shoppers (field observations across 10 mo), FM vendors/staff (n=12)	NS	Yes	NS	ECON SD SOC	SD
Gao and colleagues ⁸²	2012	Quantitative	Southeast	Urban, Suburban	FM shoppers (n=124), FM manager/staff (n=3)	Middle	Yes	White	SD SOC PER	SOC

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Leone and colleagues ⁶³	2012	Quantitative	Southeast	Urban, Rural	Food assistance recipients (n=341)	Low	Yes	White	ECON SD ST	SD
Hicks and Lambert-Pennington ⁵⁴	2013	Mixed	Southeast	Urban	FM shoppers (n=113)	Low	NS	NS	ECON SD ST SOC	ECON SD PER
Sadler and colleagues ⁸⁰	2013	Quantitative	Midwest, Canada	Urban	FM shoppers (n=895)	Low	Yes	NS	SD ST SOC	
Alia and colleagues ⁶²	2014	Quantitative	Southeast	Rural	FM shoppers and FM vendors/staff (61 field observations across 18 wk)	Low	NS	African American	ECON SD SOC	ECON SD
Larchet ⁴⁷	2014	Qualitative	Southeast	Urban	FM shoppers (n=22)	Middle, high	NS	White		ECON SOC
McGuirt and colleagues ⁵⁶	2014	Qualitative	Southeast	Urban, Rural	Low-income population (n=37)	Low	Yes	African American	ECON ST	SD ST PER
Misyak and colleagues ⁵⁸	2014	Quantitative	Mid-Atlantic	NS	Nutrition staff (n=52)	Low	Yes	NS	ECON SD SOC	ECON SD ST SOC

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Pitts and colleagues ⁸⁹	2014	Quantitative	Southeast	Rural	FM shoppers (n=170), food shoppers (n=258)	NS	Yes	White	SD	SD ST SOC
Non-US-based studies (n=15)										
Vannoppen and colleagues ⁶⁷	2001	Qualitative	Europe (Belgium)	Urban	FM shoppers (n=100)	NS	Yes	NS	ECN SD SOC PER	
Bentley and colleagues ⁶⁹	2003	Quantitative	United Kingdom	Urban	FM shoppers (n=132), FM vendors/staff (n=14)	NS	Yes	NS	ECON SD ST	ECON SD
Worsfold and colleagues ⁸⁸	2004	Mixed	United Kingdom	NS	FM shoppers (n=50), FM vendors/staff (n=50)	NS	NS	NS	SD	
Kirwan and colleagues ⁷⁰	2004	Qualitative	United Kingdom	Urban, Rural, Suburban	FM shoppers (n=37), FM vendors/staff (n=40)	NS	NS	NS	ECON SD SOC PER	SD
Feagan and colleagues ⁵⁷	2004	Quantitative	Canada	NS	FM shoppers (n=146)	Low, middle	NS	NS	ECON SD SOC PER	
Moore ⁹⁰	2006	Qualitative	Europe (Ireland)	NS	FM shoppers (n=70)	NS	NS	NS	SD SOC PER	

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers' market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Smithers and colleagues ⁷¹	2008	Qualitative	Canada	Urban, Rural, Suburban	FM shoppers (n=237), FM vendors/staff (n=84)	NS	Yes	NS	ECON SD ST SOC PER	SD
Feagan and Morris ⁴⁸	2009	Quantitative	Canada	NS	FM shoppers (n=149)	Low, middle	Yes	NS	ECON SD SOC PER	
Svenfelt and Carlsson-Kanyama ⁸⁷	2010	Qualitative	Europe (Sweden)	Urban	FM shoppers (n=31)	NS	Yes	NS	SD SOC PER	SD
McEachern and colleagues ⁷⁷	2010	Qualitative	United Kingdom	Urban	Food shoppers (n=15)	NS	NS	NS	SD SOC	ECON SD
Carey and colleagues ⁴³	2011	Quantitative	United Kingdom	Urban, Rural	FM shoppers (n=159)	NS	Yes	NS	SD; PER	
Murphy ⁴⁵	2011	Quantitative	New Zealand	Urban, Rural, Suburban	FM shoppers (n=252), food shoppers (n=257)	Middle, high	Yes	NS	ECON SD SOC PER	ECON SD ST
Pascucci and colleagues ⁸⁵	2011	Quantitative	Europe (Italy)	NS	FM shoppers (n=430)	NS	Yes	NS	SD ST SOC PER	

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Table 1. Summary of articles published from 1994 to 2014 included in systematic review that focused on factors influencing farmers’ market (FM) use (N=49) (*continued*)

Author(s)	Year	Data collection approach ^a	Study Context		Participant Characteristic				Factors Influencing FM Use by Domain	
			Study location ^b	Geographic area	Target population(s) (sample size)	Income level	Sex, majority female	Majority race or ethnicity	Facilitators	Barriers
Spilkova and colleagues ⁸⁶	2013	Mixed	Europe (Czech Republic)	Urban	FM shoppers (n=424), FM vendors/staff (n=13)	NS	Yes	NS	SD ST SOC PER	PER
Dodds and colleagues ⁷⁴	2014	Quantitative	Canada	Urban	FM shoppers (n=300)	High	Yes	White	SD ST SOC PER	ECON SD ST

^aFor the data collection approaches, quantitative methods included surveys and dot surveys; qualitative methods included focus groups, ethnographic data, and interviews; and mixed methods included a combination of both qualitative and quantitative methods.

^bStudy locations were determined as Western=Alaska, Hawaii, Washington, Oregon, California, Idaho, Nevada, and Arizona (n=5); Mountain Plains=Montana, Wyoming, Utah, Colorado, Kansas, Nebraska, North Dakota, South Dakota, Iowa, and Missouri (n=1); Southwest=New Mexico, Oklahoma, Texas, Arkansas, and Louisiana (n=2); Midwest=Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio (n=7); Southeast=Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, and Florida (n=13); Mid-Atlantic=Pennsylvania, West Virginia, Virginia, New Jersey, Delaware, Maryland, and Washington, DC (n=4); Northeast=Maine, New Hampshire, Vermont, New York, Massachusetts, Rhode Island, and Connecticut (n=2); and Nationwide=across the United States (n=1).

^cNS=not specified.

^dECON=economic.

^eSD=service delivery.

^fSOC=social.

^gPER=personal factors influencing FM use.

^hST=spatial-temporal.

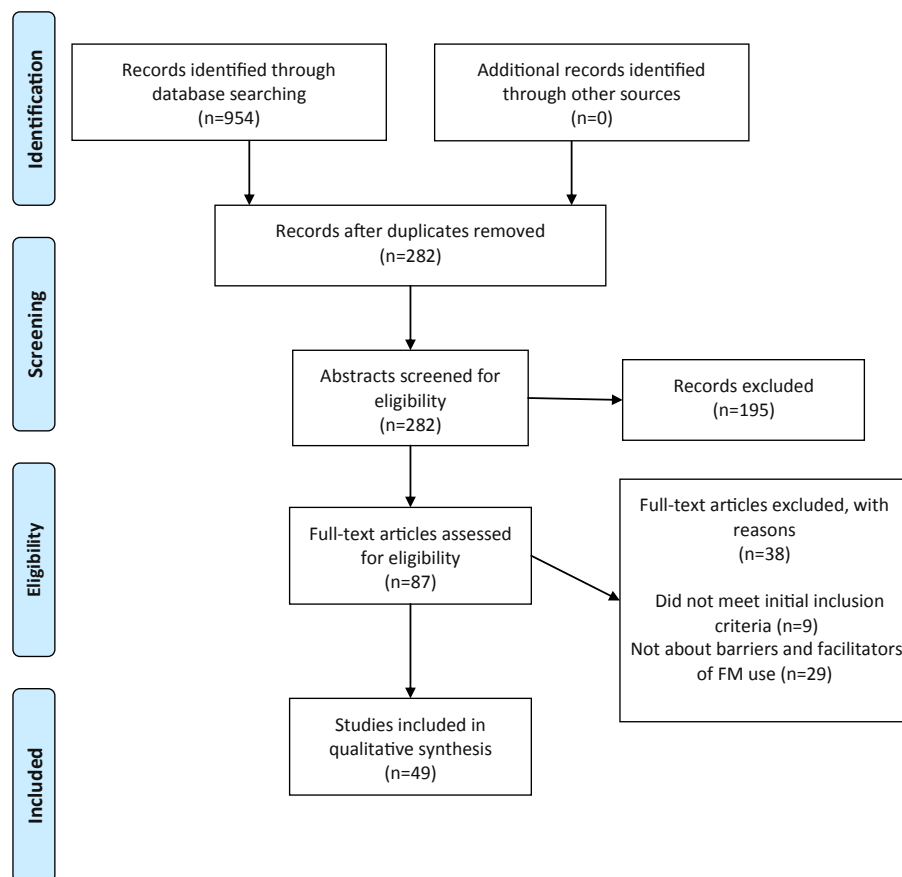


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram for systematic review of articles published from 1994 to 2014 that focused on barriers and facilitators of farmers' market (FM) use.

geographic areas (eg, rural and urban). Among those conducted in only one geographic area, more occurred in urban areas ($n=17$) compared with rural ($n=3$) or suburban ($n=1$).

Information about the sample characteristics was reported inconsistently in the articles. Economic status of the study populations was reported in 59% of the articles, resulting in 20 studies where income of participants was not specified. Among those where income of the study population was specified ($n=29$), low-income populations were included in 19 studies (12 of these studies focused exclusively on low-income consumers; seven focused on two or more income categories, including low-income). Ten studies focused exclusively on middle- and high-income populations. No studies that included multiple income levels stratified their results by income. Sex was reported in 69% of the studies with all of these reporting women as the majority sex of participants. Race or ethnicity of the study participants was reported least frequently in 41% of the studies. Among articles reporting race or ethnicity, participants were identified as being majority white ($n=13$), black or African American ($n=5$), Native Hawaiian ($n=1$), or Latino ($n=1$).

Analysis of publications by year, stratified by US-based vs non-US-based research, revealed a substantial increase in publications in the United States over time (increasing from four studies in 2000-2004 to 23 studies in 2010-2014) coinciding with the increase in farmers' market availability in the United States.¹ Among US-based studies, the

proportion that included low-income populations increased over time from 25% for studies published during the period between 2000 and 2004 compared with 60.9% published during the period between 2010 and 2014. This same trend was not evident in studies based outside the United States; however, in general, few non-US-based studies specified income level of participants regardless of time. Analysis of the number of facilitators and barriers to farmers' market use found in the studies by the five domains of nutritious food access (ie, economic, service delivery, spatial-temporal, social, and personal) revealed an overall trend among the 49 studies of facilitators being more commonly identified than barriers. However, in US-based studies, there was an increase in the proportion of barriers identified over time rising from 33.3% in published articles appearing between 2000 and 2004 to 43.1% in published articles appearing between 2009 and 2014 coinciding with increases in the number of studies that included low-income populations in their samples.

Overall, there was very limited use of common methods and metrics to assess factors associated with farmers' market use. Six studies reported on the psychometric properties of the measures used in their analysis.⁴⁰⁻⁴⁵ Three studies reported their analysis was guided by existing behavioral theory,^{40,43,44} and all of these used the theory of planned behavior.⁴⁶ A few studies based their analysis on theory related to social embeddedness and social capital.⁴⁷⁻⁵⁰

Factors Influencing Use of Farmers' Markets

For each article, factors associated with farmers' market use were examined. Findings in the articles were coded into one of five factors based on an existing framework of nutritious food access (ie, economic, service delivery, spatial, social, and personal).³⁹ These five factors accounted for all of the barriers and facilitators of farmers' market use found in the literature. Findings are presented for each factor. The results first focus on the articles that included low-income populations in their sample (n=19) and then on the remaining articles that included high- and middle-income populations or unspecified income (n=30). Table 2 provides a summary of the findings.

Economic Facilitators and Barriers

Low Income. Among articles that included low-income populations, economic factors served as both facilitators and barriers of farmers' market use. Prices at markets were more frequently cited as being fair and a good value.^{33,35,48,51-61} In contrast, six studies found prices at farmers' markets to be too high or not competitive with other food stores.^{33,51,52,58,60,62} The ability to use food assistance benefits, such as Supplemental Nutrition Assistance Program (SNAP) benefits, facilitated the use of farmers' markets.^{54,63} In contrast, not accepting food assistance benefits was a barrier.^{51,52,54,55,60,63} In addition, the acceptance of cash-only for payments at markets was a barrier to use.^{51,60} Economic facilitators to farmers' market use that were identified less frequently included the informality of the economic space that allowed for bartering and deal-making⁶² and the availability of discounts, incentive, and coupon programs to augment food prices.⁵³

Middle and High Income, Nonspecified Income. Similar to articles that included low-income populations, the articles focused on higher-income and nonspecified-income populations found food prices at markets to be both a facilitator and barrier to market use. Food prices were identified as both being fair and reasonable^{50,64-73} and too expensive.^{45,47,50,65,66,69,74-78} Price was identified as not being a concern related to farmers' market use in six studies,^{45,49,50,70,78,79} whereas no low-income studies reported this finding. Acceptance of food assistance benefits at farmers' markets was not identified as a key factor related to market use among any of the studies of middle- to high-income or nonspecified-income populations.

Service Delivery Facilitators and Barriers

Low Income. A number of service delivery factors related to farmers' market use among low-income populations were identified through our systematic review. The most common were positive perceptions of the quality, freshness, healthfulness, and taste of foods available at farmers' markets.^{33,35,44,48,50-54,57-59,61,80} Only two studies found the quality of food at farmers' markets to be poor or undesirable.^{56,62} In addition, perceptions of the variety of products available at farmers' markets, including locally grown, organic, and specialty foods, were identified more frequently as a facilitator of farmers' market use.^{33,48,52-54,58-61,80} However, five studies found lack of variety of products to be a barrier for farmers' market use, identifying the need for

greater seasonal selections, ethnic food options, F/V choices, eggs, meat, dairy, prepared foods, and nonfood items.^{33,35,51,54,58}

The systematic review found that markets were more often perceived to be clean and safe spaces for food purchasing.^{33,35,51,58} However, two studies reported markets to be unclean and dilapidated.^{51,54} Market design and the outdoor shopping space were found to be barriers to farmers' market use, highlighting the challenges of dealing with a crowded space; figuring out the spatial design; managing weather variability (ie, too hot in summer and cold in winter); and shifting shopping away from a traditional, indoor food retailers.^{54,55,58,81} Hours and seasons of operation were more frequently cited as barriers of market use.^{51,54,60,62} Marketing strategies to promote farmers' market were identified as effective yet lacking with many people not being aware of farmers' market locations and logistics.^{51,52,63}

Middle and High Income, Nonspecified Income. Articles focused on middle- and high-income and unspecified-income populations concurred with the belief that farmers' markets offer high quality^{43,45,49,50,64-74,77-79,82-88} and a wide variety of foods.^{43,49,50,65-69,72-74,78,79,82,86-89} Although product variety was generally seen as a facilitator, seven studies illuminated limited food variety was a barrier to farmers' market use.^{50,68,72,75-77,87} Moreover, not being able to do all food shopping in one space was identified as a barrier to farmers' market use.^{69,73,77} In this sample, farmers' markets were more frequently identified as being clean and safe,^{43,67,69,73,78,87} although two studies reported market cleanliness was a barrier.^{68,76}

In contrast to the low-income articles, hours and seasons of operation were more frequently identified as a barrier to farmers' market use.^{50,68,73,74,77,84,87,89} Furthermore, this sample more frequently reported positive perceptions of farmers as vendors^{67,73,75,87,88} and good customer service^{45,50,67,90} as facilitators of farmers' market use. Kirwan⁷⁰ reported that including nonfarmer vendors (ie, people who resell farm-grown products) devalued the farmers' market space.

Spatial Facilitators and Barriers

Low Income. A convenient location was the most frequently identified spatial facilitator of farmers' market use among studies that included low-income populations.^{33,53-56,63,80} Alternatively, an inconvenient location was identified as a barrier.^{44,51,56,58,60} Hicks and colleagues⁷⁰ found that most farmers' market shoppers lived within 1 mile of the market and local residents had greater odds of being repeat shoppers than people living farther away.⁵⁴ In four studies, transportation factors were important facilitators of farmers' market use among the low-income sample, including having access to personal transportation, locating the market near a bus stop, and having access to parking at the market. However, lack of access to transportation was identified as a barrier to farmers' market use.^{58,81}

Middle and High Income, Nonspecified Income. Location of the farmers' market was identified as a facilitator^{50,69,71,73,74,78,79,84-86} and a barrier^{45,66,68,74,76,89} to farmers'

Table 2. Facilitators and barriers related to farmers' market (FM) use based on systematic review of peer-reviewed literature published during the period from 1994 to 2014 (N=49)

Domain	Factors influencing FM use	Percentage of Studies Identifying Each Facilitator or Barrier	
		Overall (N=49)	Studies including low-income populations (n=19)
Economic facilitators	Fair prices, good value ^{33,35,48,51-61,64-66,73}	36.7	73.6
	Price not a concern ^{45,49,50,70,78-79}	12.2	0.0
	Discounts, coupons, incentives ^{45,53,75}	6.1	5.2
	Food assistance benefits accepted ^{54,63}	4.1	10.5
	Bartering, deal-making, giveaways ⁶²	2.0	5.3
Economic barriers	FM prices too high, not competitive with other stores ^{33,45,47,50-52,58,60,62,65,66,69,74,75-78}	30.6	31.5
	Food assistance benefits not accepted ^{51,52,54,55,60,63}	12.2	31.5
	Cash-only FM ^{51,60}	4.1	10.5
Service delivery facilitators	Food quality, freshness, taste ^{33,35,43-45,48-54,57-61,64-66,72-74,77-80,88}	69.4	73.6
	Product variety ^{33,43,48,49,52-54,58-61,65-69,72-74,78-80,82,83,86-89}	57.1	52.6
	Clean and safe ^{33,35,43,51,58,67,69,73,78,87,88}	22.4	21.1
	Good customer service ^{45,50,54,62,67,90}	12.2	10.5
	Positive view of farmers as vendors ^{58,67,73,75,87,88}	12.2	5.3
	Hours of operation ^{33,63,68}	6.1	10.5
	Effective marketing ^{51,63,89}	6.1	10.5
	Taste-testing opportunities ⁶²	2.0	5.3
	Inconvenient hours and season of operation ^{50,51,54,60,62,68,73,74,77,84,87,89}	24.5	21.1
Service delivery barriers	Lack of food variety ^{33,35,50,51,54,58,68,72,75-77,87}	24.5	26.3
	Discomfort with FM design, outdoor shopping venue ^{45,50,54,55,58,71,73,81,84,89}	20.4	21.1
	Poor marketing, lack of awareness of FM ^{45,51,52,63,66,74}	12.2	15.8
	Poor food quality ^{45,56,62,68,70,71}	12.2	10.5
	Unclean, dilapidated space ^{51,54,68,76}	8.2	10.5
	Cannot do 1-stop shopping ^{69,73,77}	6.1	0.0
	Not enough vendors ^{35,50}	4.1	5.3
	Nonfarmer vendors, resellers ⁷⁰	2.0	0.0
	Convenient FM location, near home or other stores ^{33,50,51,53-56,63,69,71,73,74,78-80,84-86}	36.7	42.1
Spatial-temporal facilitators	Access to transportation ^{53,54,63,74}	8.2	15.9
	Parking available at FM ^{33,54}	4.1	10.5
	FM near bus stop ⁵⁴	2.0	5.3
Spatial-temporal barriers	Inconvenient location, located far away from home or other stores ^{44,45,51,56,58,60,65,66,68,74,76,81,89}	26.5	31.5
	Limited or no parking at FM ^{33,45,50,66}	8.2	5.3
	Lack of access to transportation ^{58,81,84}	6.1	10.5

(continued on next page)

Table 2. Facilitators and barriers related to farmers' market (FM) use based on systematic review of peer-reviewed literature published during the period from 1994 to 2014 (N=49) (*continued*)

Domain	Factors influencing FM use	Percentage of Studies Identifying Each Facilitator or Barrier	
		Overall (N = 49)	Studies including low-income populations (n = 19)
Social facilitators	Camaraderie ^{48,50,57,60,62,67,70,71,73,74,75,79,80,82,83,85,86}	36.7	26.3
	Farmer-consumer relationship ^{45,48-52,54,57,62,64,66-71,74,75,78,83,87}	42.9	31.6
	Support local economy, farmers ^{45,49,57,58,60,64-66,68,70-72,75,79,82-84,87}	36.7	15.9
	Alternative social space ^{33,49,57,67-70,72,75,82,83,86,90}	26.5	10.5
	Social shopping with friends, family ^{44,50,53,62,74,77,80,90}	16.3	21.1
	Entertainment, celebrations, music ^{62,73,75,78}	8.2	5.3
	Engagement with market operations as volunteer, supporter ^{53,70}	4.1	5.3
	Access culturally relevant foods and resources ^{33,67}	4.1	5.3
Social barriers	Exclusionary social space, unwelcoming ^{47,51,58,75}	8.2	10.5
	Lack of racial/ethnic diversity of vendors, farmers, shoppers ^{51,54,58,75}	8.2	15.8
	Lack of farmer—consumer relationships ^{54,82,84}	6.1	5.3
Personal facilitators	Education exchange related to food procurement and preparation ^{33,50,53,60,62,65,70,71,86,87}	20.4	21.1
	Perceived health benefits of FM foods ^{33,45,57,60,61,65,75,83}	16.3	21.1
	Environmental consciousness ^{61,74,82,85,86,90}	12.2	5.3
	Personal motivations for FM ^{43,44,48,67,86}	10.2	10.5
	Healthy eating identity ^{61,73,74,81}	8.2	10.5
	Cooking behaviors ^{61,84}	4.1	5.3
	Consciousness-raising about food inequities ⁷⁵	2.0	0.0
Personal barriers	FM does not fit into lifestyle or food shopping routine ^{54,56,86}	6.1	10.5
	Unfamiliar with shopping space ⁵⁶	2.0	5.3
	Lack of resources in home for preparation of fresh foods ⁸⁴	2.0	0.0

market use among the studies that included populations with middle or high and nonspecified income. A convenient location included a combination of where the farmers' market was situated (eg, near home, easy to see if you are driving by) and whether other shopping could be completed near the farmers' markets. Lack of accessible parking was identified as a barrier to farmers' market use.^{45,50,66}

Social Facilitators and Barriers

Low Income. Compared with the higher-income sample, fewer social facilitators of farmers' market use were

identified among the low-income sample. Social aspects that facilitated farmers' market use were opportunities to foster relationships among consumers and farmers' market vendors and staff,^{48,51,52,54,57,62} camaraderie gained through regular interaction with customers in the market space,^{48,57,60,62,80} the chance to engage in a social shopping experience with friends and family,^{44,53,62,80} and the opportunity to support the local economy.^{57,58,60} Other social facilitators reported infrequently included engagement in market operations as a volunteer, entertainment at the market, and access to culturally relevant food products.

In general, there were few social barriers identified in our systematic review. Among the low-income sample, the most common social barrier was a perception that the market was an exclusive social space and was unwelcoming to outsiders. For example, Colasanti and colleagues⁵¹ found that “Latina women often felt disrespected by vendors and thought vendors and other customers were distrustful of or openly annoyed with their children, especially compared to white kids.” Misyak and colleagues⁵⁸ reported perceptions that farmers’ market customers were often impolite. Three studies identified lack of racial diversity among the vendors as a barrier to farmers’ market use noting this influenced vendor–customer interactions, particularly among racial and ethnic minorities shopping at farmers’ markets.^{51,54,58}

Middle and High Income, Nonspecified Income. In contrast to the low-income sample, a key social facilitator of farmers’ market use among the higher-income and non-specified income sample was the chance to support the local economy by shopping at the market.^{45,49,64–66,68,70–72,75,79,82–84,87} This provided an opportunity for consumers to achieve a social good by supporting local farmers and the broader local economy. In addition, 11 studies highlighted the value of the farmers’ market as an alternative social space and a context for engagement rather than simply for food shopping.^{49,67–70,72,75,82,83,86,90} In contrast, only two low-income studies emphasized this facilitator of farmers’ market use.

Fifteen studies identified farmer–consumer relationships as a key social facilitator of farmers’ market use.^{45,49,50,64,66–71,74,75,78,83,87} Alkon and McCullen,⁷⁵ for instance, reported individuals were motivated by having a connection to the “hand that grows their food.” Alonso and O’Neill⁸³ provided an example of trust and rapport established between farmers and customers describing an instance when a customer left his or her purchased squash at the farmers’ market and the farmer put the produce in a refrigerator until the consumer returned a few days later, at which point the vendor replaced the old produce with new. Among studies focused on higher-income populations, there was strong support in the literature that farmers’ markets provide a social context that promotes camaraderie.^{49,50,67,70,71,73–75,79,82,83,85,86} For instance, Hunt⁴⁹ described this camaraderie as the chance to meet up with people you know, revealing a deep level of connectedness to the social space. Additional social facilitators included the chance to engage with family and friends during the shopping experience^{50,74,77,90} and participate in entertainment at the market.^{73,75,78}

Similar to the low-income sample, social barriers to farmers’ market use included a belief that these were exclusionary spaces, in part because of limited diversity at the market. Two studies highlighted that the diversity of farmers’ market vendors and staff influenced use patterns. Alkon and colleagues⁷⁵ identified the inclusion of youth in market operations as a facilitator, whereas the absence of nonwhite farm laborers in the farmers’ market space was identified as a barrier. Alkon and colleagues⁷⁵ found that the lack of ethnic and racial diversity of the vendors created a “white imaginary” of farm life that masks the role of people of color and other laborers. In a similar vein,

Larchet⁴⁷ stated farmers’ markets “failed to reach beyond the middle class white people.” There was a perception of an “insider ambiance” where those who are “in” feel more comfortable shopping at farmers’ markets while those who were “new” to the market were not made to feel comfortable.⁷⁵

Personal Facilitators and Barriers

Low Income. Key personal facilitators of farmers’ market use was the opportunity to access information and resources related to food procurement and preparation.^{33,53,60,62} Perceptions that the foods available at farmers’ markets provided personal health benefits was another facilitator among the low-income sample.^{33,57,60,61} Personal barriers to farmers’ market use were related to a mismatch between this food retail outlet and one’s lifestyle or food shopping routines or habits.^{54,56} For instance, Hicks and colleagues⁵⁴ found decreased odds of being a frequent farmers’ market shopper if an individual went out to eat three or more times per week.

Middle and High Income, Nonspecified Income. Similar to the low-income sample, the higher-income and non-specified income sample found that educational exchange^{50,65,70,71,86,87} and a belief in the health benefits of farmers’ market products^{45,65,75,83} to be personal facilitators of farmers’ market use. Environmental consciousness was a personal facilitator of farmers’ market use in five studies that included higher-income populations^{74,82,85,86,90} vs only one study that included low-income populations.⁶¹

DISCUSSION

The results of this systematic review provide guidance for future research, policy, and practice to increase use of farmers’ markets as a strategy to promote healthy diet. Findings highlight the emergence of an interdisciplinary body of research focused on farmers’ markets that has grown in number during the past 20 years. This growth in research parallels the growth of farmers’ markets across the United States during this same time frame. Perhaps due to the interdisciplinary nature of this topic or to the unconventional nature of farmers’ markets as spaces for food retail, there was very limited use of common methods or metrics in the existing research. This limits broader understandings of factors that may influence farmers’ market use. Moreover, findings reveal existing research on farmers’ market use may not be adequately capturing the perspectives of specific subpopulations. Notably, fewer than 15% of the studies identified in this systematic review focused on racial and ethnic minority populations. Only 39% specified inclusion of low-income populations in their samples, although more recent US-based studies were more likely to include low-income populations in their samples. Future research targeting these subpopulations is needed to inform farmers’ market intervention strategies aimed at promoting health equity.

Results of the systematic review highlight agreement related to facilitators and barriers of farmers’ market use and introduce areas for further examination. Among the articles that included low-income populations there was evidence that prices at farmers’ markets were more frequently considered to be fair and reasonable, food quality was

considered to be very good, and food variety was considered to be satisfactory. In addition, farmers' markets represented spaces for accessing information and resources about food procurement and preparation and supported access to foods perceived to be healthy. Location of the farmers' market was identified as being important with a convenient location facilitating—and an inconvenient location impeding—use. Among articles that included low-income populations, barriers to farmers' market use included challenges related to figuring out or adapting to the outdoor farmers' market design, inconvenient or inaccessible hours of operation, transportation challenges, and a mismatch between the farmers' market food retail space and personal lifestyles or food shopping habits. In contrast to the studies that included low-income populations, those that included higher income populations reported greater levels of social benefits from farmers' market use such as camaraderie, social interaction with farmers and customers, and a sense that the farmers' market served as an alternative social space for engagement. In addition, studies that included higher-income populations were more likely to report support of the local economy and environment-related consciousness as facilitators of farmers' market use compared with the low-income sample. Finally, there was evidence in the literature that farmers' markets may be unwelcoming, exclusionary, and even discriminatory spaces particularly for people of color and of lower income.

Findings extend existing understandings of farmers' markets as environment-based interventions to promote F/V consumption. Prior literature reviews have focused on defining the farmers' market space and highlighting the social and community values underpinning markets, which may make them more amenable than traditional food retailers to engaging in efforts to address public health concerns related to diet.^{2,59,91} Findings of this systematic review corroborate existing studies that suggests this field of research is relatively unstandardized not only in terms of the definitions used for farmers' markets, but also for the methods used to study these environment-based interventions.^{2,91-93} Two prior literature reviews examined the influence of farmers' markets on diet finding some positive trends while also calling for the need for more rigorous research to examine effects.^{92,93} The results of the present analysis build on these research endeavors by offering guidance for improving the reach and adoption of farmers' markets.

Limitations of the Systematic Review

One of the strengths of this systematic review is the inclusion of a variety of studies representing diverse disciplines and methods. This strength also represents a weakness of the review because it was not always possible to ascertain study details from each full-text article due to omissions by the authors related to study design, context, population, and/or methods. Lack of standardization in research methods across the articles limited systematic comparisons on specific measures.

Implications to Enhance Use of Farmers' Markets

Findings from this systematic review offer guidance for targeting levers that may enhance use of farmers' markets especially among low-income consumers (see [Figure 2](#)). These levers are organized along the ecology spectrum and

focus on structural, organizational, and community levels of change. These levers build on the facilitators and barriers of farmers' market use identified in the systematic review, and may support multilevel approaches to increase farmers' market use.

Structural levers to promote farmers' market use may target local, state, or national government. Levers include implementation of incentives to locate farmers' markets near where people live in general, but also in food desert contexts, in particular; to establish farmers' markets near other stores to promote "one-stop" shopping experiences for consumers; to support the development and maintenance of public transportation near farmers' market locations; and to establish zoning requirements to include parking close to farmers' markets. The federal Healthy Food Financing Initiative is providing some support to communities to incentivize healthy food retail such as farmers' markets.⁹⁴ In addition, governments may support subsidy programs to incentivize production of F/V grown for sale at farmers' markets to facilitate competitive prices at markets compared with other local food stores.

Organizational levers to promote farmers' market use may target the farmers' market itself. Levers to promote use, particularly among low-income populations, focus on establishing markets with the goal of having greater diversity among both the vendor and customer bases. Strategies to increase diversity among vendors may focus resources to build capacity among emerging farmers who may become market vendors; reduce the costs for vendors to participate in farmers' markets through provision of resources needed for market operation such as tables, tents, and cooperative market stands; and offer flexible schedules for vendors to take part. To increase diversity among consumers, markets may engage in more targeted outreach and use of marketing materials in multiple languages to promote awareness about the market, especially among underrepresented groups; establish vendor policies to ensure the quality and variety of foods sold in markets in low-income communities is high; and implement activities to make the market more welcoming to new customers (eg, first-time shoppers receive a complimentary reusable shopping bag and market tour). The market setup, including location and hours of operation, are another lever that may be pulled to promote farmers' market use. Market models that include more hours of operation on more days per week may make it easier to habituate farmers' market use. An additional lever is related to acceptance of food assistance benefits and healthy food incentives at farmers' markets. Currently, fewer than one-fourth of all farmers' markets in the United States accept SNAP through electronic benefit transfer system.⁹⁵ Due to the legislation passed in the 2014 Farm Bill, there is increasing support for healthy food incentive programs that match SNAP benefits used to purchase F/V.⁹⁶ The Produce Perks Program in Cleveland, OH, is one exemplar of a healthy food incentive program that provides a dollar-for-dollar match up to \$10 for using SNAP benefits to purchase food at a farmers' market.⁹⁷ The matching incentive funds can only be used to purchase F/V. Finally, farmers' markets may enhance programming to attract more customers through activities related to advertising and communications, inclusion of nutrition and food preparation education onsite, taste-testing events to encourage consumers to try new items, implementation of sale and coupon programs, and integration

Lever	Actors	Strategy
Structural	<ul style="list-style-type: none"> Local, state, and federal government 	<ul style="list-style-type: none"> Locate FMs near residential areas and retail districts Maintain and enhance connections between public transit and FMs Zoning requirements that include parking for FMs Subsidies to fruit and vegetable producers to grow foods to sell at FMs
Organizational	<ul style="list-style-type: none"> FM management and leadership 	<ul style="list-style-type: none"> Increase diversity among vendors and customers Support new and beginning farmers from underrepresented groups by removing barriers to entry into market Develop targeted promotion and outreach to new audiences Accept Supplemental Nutrition Assistance Program benefits and offer Supplemental Nutrition Assistance Program and other food assistance incentives Enhance educational programming and social events at FMs to promote health, cooking, and arts and culture
Community	<ul style="list-style-type: none"> FMs Community-based organizations Local food policy coalitions 	<ul style="list-style-type: none"> Use buy local campaigns Create opportunities for consumers to meet farmers and promote vendors from underrepresented racial and ethnic groups Raise awareness about food insecurity and food access challenges Enhance feeling of community ownership of FM

Figure 2. Levers for improving farmers' market (FM) use among low-income consumers based on findings from systematic narrative review of 49 published studies.

of social events in the market space—especially those targeting children and families.

Community levers to promote farmers' market use target the area in which the farmers' market is located. First, farmers' market use may be facilitated through increased awareness of local food and farming activities. There is growing momentum for "buy local" campaigns that may contribute to farmers' market use. Farmers' markets may establish opportunities for consumers to get to know the farmers, ensuring that the "face of the farmer" is representative of the diversity of the community. An additional community lever is to raise awareness about food insecurity and food access challenges, which may be supported by a local healthy food policy coalition or food justice coalition and used to mobilize broad-scale community responses to support improved access to farmers' markets for community members. Community levers may target social norms among residents related to farmers' market use especially among

those for whom farmers' market use is not normative. Finally, farmers' market use may be motivated by enhancing ownership of the farmers' market space among community residents through a wide range of volunteer opportunities, inclusion on market advisory boards, loyalty programs, and establishment of community days or community booths at the market space.

CONCLUSIONS

For farmers' markets to foster population health benefits, they must reach all segments of the public. Findings offer guidance for improving the reach and adoption of farmers' markets, especially among low-income population groups who may have limited access to other healthy food retailers.²⁹ Results provide direction for the development, implementation, and evaluation of multilevel intervention strategies aimed at improving farmers' market use.

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