

# Salud America!

The Robert Wood Johnson Foundation Research  
Network to Prevent Obesity Among Latino Children



## RESEARCH REVIEW

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## Making Healthy Food and Beverages the Affordable, Available, Desired Choices Among Latino Families

### Abstract

Even in one of the most affluent countries in the world, many families in the United States do not have access to healthy, affordable foods in their neighborhoods. In low-income communities, including many Latino neighborhoods, corner stores and fast food restaurants often outnumber and are utilized more often than supermarkets and farmers' markets, which is linked with inadequate consumption of healthy foods and overconsumption of unhealthy foods. Poorer diets play a role in the higher prevalence of adult and pediatric obesity found in lower-income families. Without improved access to health-promoting foods in low-income communities, obesity rates and resultant health care costs are likely to continue to rise.

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Healthy food financing initiatives increase access to healthy, affordable foods by offering new supermarkets and farmers' markets incentives to locate in underserved areas. These incentives can include tax credits, zoning incentives, equipment, financial support, legal aid, and/or technical assistance. Several government financing initiatives also encourage already-established corner stores to expand their inventory of healthy, affordable foods and subsidize healthy foods for low-income consumers. Separate programs promote and implement the use of food vouchers by low-income consumers shopping at farmers' markets.

This research review examines the relationship between healthy food financing initiatives and the accessibility, affordability, and desirability of healthy foods in underserved communities. Particular attention is given to investigating whether these initiatives are related to improved diet quality and reduced obesity among Latino children, leading to better future health outcomes for Latino families in low-income neighborhoods.

Emerging data indicate that healthy food financing initiatives and programs designed to promote consumption of healthy foods have yielded generally positive outcomes. Retail and financing initiatives increase purchasing power and direct access to fresh fruits and vegetables, lower-fat milk, and whole grains among federal food voucher beneficiaries, a large percentage of whom are Latino. The initiatives and programs are also associated with improving underserved Latino and other communities' overall access to and purchasing of affordable healthy foods in supermarkets, corner stores, and farmers' markets.

One significant barrier to healthy eating in low-income families is advertising of unhealthy foods and beverages to children and youth. Studies show that Spanish-speaking children and youth consume more media than other youth, and marketers have increased targeted advertising to this demographic in recent years. Regulation of marketing to children and increased promotion of healthy foods have been suggested as tactics to improve diet quality and decrease obesity rates in low-income households.

## Introduction

While a nationwide concern, obesity is especially prevalent among Latino children. Nearly 40 percent of U.S. Latino youths 2-19 years of age are overweight or obese compared with 28.5 percent of non-Latino white youths.<sup>1</sup> Obesity is linked to increased risk of developing type 2 diabetes, cardiovascular disease, asthma, liver disease, and cancer.<sup>2</sup> Given that Latinos are one of the fastest-growing U.S. populations, preventing and reducing obesity among Latinos will have an important impact on our nation's health.

Compared with other racial and ethnic groups, Latino children are more likely to live in poverty,<sup>3,4</sup> causing diet quality to suffer and increasing the risk for developing obesity.<sup>5</sup> Limited neighborhood access to affordable, healthy foods, such as fresh produce, whole grains, and low-fat dairy products—products that tend to be offered at affordable prices in higher-income neighborhoods—is an obstacle for lower-

income Latinos to have a healthy diet and body weight.<sup>6,7</sup> Regardless of income, Latino neighborhoods have fewer supermarkets in general and only one-third as many chain supermarkets as non-Latino neighborhoods.<sup>8</sup> These underserved Latino communities tend to have a greater concentration of convenience or corner stores with produce of poorer quality, limited selections of whole-grain products and low-fat dairy products, and higher prices.<sup>9</sup>

Predominantly Latino neighborhoods typically have Latino grocery stores (also called *bodegas* or *tiendas*). Although studies find that Latino grocery stores often offer a less expensive range of produce than nearby markets, they tend to have limited or more expensive selection of other healthy foods, such as low-fat dairy products or low-fat meats.<sup>10-12</sup>

In recent years, a number of food retail and financing initiatives on the local, state, and national levels have been developed and implemented in underserved communities, including Latino communities. These initiatives seek to improve the food environment in these neighborhoods by increasing access to affordable, healthy foods at stores and farmers' markets.<sup>13-15</sup> They also help to create jobs, bring in much-needed tax revenue, spur economic activity, and establish markets for our nation's farmers.<sup>15</sup>

The 2014 Farm Bill authorized \$125 million for the national Healthy Food Financing Initiative (HFFI), which provides funding and technical support for food retail projects across the United States through three agencies: the Treasury Department, the Department of Health and Human Services, and the Department of Agriculture.<sup>16</sup> The HFFI provides incentives to encourage supermarkets and farmers' markets to locate in underserved areas, including tax credits, zoning incentives, equipment, and financial, legal, or technical assistance. It also encourages already-established corner stores to expand their selection of healthy foods at affordable prices by subsidizing the equipment, training, procurement, and/or promotion needed to offer such foods. HFFI also provides subsidies to food retailers so that they can expand demand and purchasing power for healthy foods by low-income consumers.

Food retail and financing initiatives are relatively new ways to prevent obesity in Latino and underserved communities. Given the urgent need to halt and reverse the obesity epidemic in these groups, it is important to understand and monitor the relative contributions of these efforts to promote availability and access to healthy food, with the ultimate aim of improving body weight outcomes.

This review examines the relationships between supermarket availability, healthy food access, healthy food consumption, and obesity, with a focus on the Latino population. Ongoing financing initiatives and government programs to improve healthy food consumption in low-income neighborhoods are summarized and preliminarily evaluated. Finally, the role of advertising and media as a barrier to health improvements and obesity reduction in Latino families is discussed.

## Methodology

To gather peer-reviewed, published literature for this comprehensive research review, keyword searches were conducted in PubMed and Google Scholar, using these search terms in various combinations: “obesity,” “food deserts,” “low-income,” “Latinos,” “minorities,” “farmers’ markets,” “food financing initiative,” “grocery stores,” “healthy food,” “tiendas,” “bodegas,” “WIC,” “SNAP,” “healthy food financing initiative,” “corner stores,” and key food marketing terms. Searches were not limited to identifying only research conducted on children because much of a child’s diet is determined by the food purchases made by his or her adult caregivers.

Additionally, we conducted more targeted searches of specific food financing initiatives identified in initial database searches. Referenced policy briefs and reports accessed on the Internet were also used to help find other peer-reviewed articles or reports from reputable government agencies or national organizations, as well as to provide information otherwise unavailable from these sources. Search limits were confined to the English language. Searches were not restricted by date or study design.

We combined and condensed all the information collected from 74 journal articles or grey papers without making any assumptions that biased the selection of these articles and used the information gathered to inform conclusions and policy implications. We report all findings, including those where the evidence is mixed.

## Key Research Results

- Greater neighborhood access to supermarkets catering to underserved populations is linked to a lower prevalence of obesity in adults and/or children.
- Food retail and financing initiatives that introduce supermarkets into underserved communities have the potential to improve access to healthy foods and increase communities’ economic vitality.
- The evidence of increased access to healthy foods on diet quality in low-income neighborhoods is mixed for the general population. However, Latino populations are more likely to improve diet with increased access to healthy foods than the other populations.
- Revisions of the Women, Infants, and Children (WIC) and Supplemental Nutrition Assistance Program (SNAP) programs, both of which have large Latino involvement, are associated with increased availability and consumption of healthy foods.
- Food retail and financing initiatives that introduce farmers’ markets or subsidize their use by WIC or SNAP participants are associated with improved accessibility, affordability, quality, and sales of fresh produce in underserved communities. There is less evidence on initiatives’ impact on increasing consumption of healthy foods.
- Most healthy food financing initiatives that expand healthy food offerings at corner stores are associated with an increase in healthy food purchases or consumption.

- Desirability of healthy food consumption is challenged by heavy marketing of unhealthy foods to children, especially Spanish-speaking children.

## Studies Supporting Key Research Results

### **Greater neighborhood access to supermarkets catering to underserved populations is linked to a lower prevalence of obesity in adults and/or children.**

Evidence from systematic reviews, longitudinal and cross-sectional studies collectively show the relationship between greater access to supermarkets and lower prevalence of obesity.

Only two studies have analyzed the relationship between lack of local supermarket access and obesity over a period of time (2 years and 4 years). The data from these studies show mixed evidence in adults and children. One study reported that an increase in accessible supermarkets was associated with decreased BMI for adults who moved from rural to urban areas. Additionally, BMI and obesity in adults living in urban areas were positively correlated with neighborhood concentration of small grocery stores, which usually carry a higher proportion of unhealthy foods than supermarkets.<sup>17</sup> In a separate study, Shier et al. followed children from fifth to eighth grade and observed that the availability of supermarkets was not associated with a change in BMI in children.<sup>18</sup> Neither of these studies was restricted to or performed sub-analyses of underserved populations.

While longitudinal studies are limited in both number and application to underserved communities, several studies have explored the links between obesity and access to supermarkets in underserved populations using cross-sectional analysis, meaning that data from only one point in time is evaluated. While not able to show patterns over time between variables, these studies are able to provide links between access to supermarkets and obesity or diet quality.

Two systematic reviews found that greater accessibility to supermarkets was linked to a lower body mass index (BMI) or prevalence of overweight/obesity.<sup>19,20</sup> One of these studies specifically evaluated disadvantaged populations.<sup>20</sup> In a study of adolescents, the number of chain supermarkets in Latino neighborhoods was shown to inversely correlate with BMI.<sup>21</sup> Another study of predominantly Hispanic and African-American middle and high school students found that proximity to grocery stores near schools offering healthy food options, such as fresh fruits and vegetables and low-fat milk, was linked to a lower BMI score.<sup>22</sup>

### **Food retail and financing initiatives that introduce supermarkets into underserved communities have the potential to improve access to healthy foods and increase communities' economic vitality.**

The federal government's national HFFI has been allocating funding to foster the development of new grocery stores in underserved neighborhoods since 2011. From 2011 through 2014, this federal initiative provided grants to 75 organizations in more

than a dozen states carrying out a diversity of food access projects in underserved communities.<sup>23</sup> Three of these projects are focused on Latino communities, including the Latino Economic Development Center's project to develop a cooperative grocery store and two mobile grocery stores that will serve residents in a low-income neighborhood in Minneapolis and a longtime food desert. Each of the stores will contract with immigrant vegetable growers. The project is expected to create 38 new jobs.<sup>24</sup> The Hacienda Community Development Corporation was awarded a grant to construct the first Latino public market in Portland, Oregon, which will house 19 businesses, including shops that will specialize in fresh and healthy food. This program is expected to create 47 full-time jobs and to be a new outlet for healthy foods in the midst of a low-income food desert.<sup>24</sup> New York City's FRESH Program provides zoning and financial incentives to property owners, developers and grocery store operators in areas of the city currently underserved by grocery stores and populated with Latino and other ethnic communities. FRESH is expected to help create an estimated 15 new grocery stores and upgrade 10 existing stores, creating 1,100 new jobs.<sup>25</sup>

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The Pennsylvania Fresh Food Financing Initiative (PFFFI) created in 2004 is the nation's first statewide program to foster the development of supermarkets in underserved communities through grants and loans. PFFFI provides loans and grants for pre-development, acquisition, equipment, and construction costs for supermarkets locating in underserved areas. It also provides funding for start-up costs, such as employee recruitment and training. Between 2006 and 2010, the program approved funding for 88 projects across the state, creating or retaining more than 5,000 jobs and developing 1.67 million square feet of retail space. These projects are estimated to have improved access to healthy foods for a half million Pennsylvania residents.<sup>26</sup>

New York, Illinois, Louisiana, California, and other states have instituted healthy food financing initiatives similar to the program in Pennsylvania. Most of these initiatives are still in the planning or implementation stages, thus their impacts are not yet available in the peer-reviewed literature.<sup>14</sup> It is anticipated that these programs will improve access to healthy, affordable foods while stimulating the local economy.

**The evidence of increased access to healthy foods on diet quality in low-income neighborhoods is mixed for the general population. However, Latino populations are more likely to improve diet with increased access to healthy foods than other populations.**

Increased access to healthy foods in low income neighborhoods does not necessarily ensure that it will lead to improvements in residents' diets. Two studies of low-income neighborhoods that have reported findings without racial sub-analyses have shown that increased access to healthy foods does not affect diet quality in low-income neighborhoods. A national study using longitudinal data observed that proximity to a supermarket was not related to diet quality in low-income young to middle-aged adult populations.<sup>27</sup> In addition, the first controlled (one intervention neighborhood and one comparison neighborhood), longitudinal study of a PFFFI-

funded project found that exposure to a new neighborhood supermarket did not significantly affect daily fruit and vegetable intake or BMI of residents at six months. Even though the community actively indicated a preference for a new food supermarket during the planning and consultation stages, relatively few residents adopted the new supermarket as their primary food store.<sup>28</sup>

In contrast, another study observed that greater access to affordable, healthy foods is related to greater consumption of such foods in underserved communities due to larger shelf space devoted to healthy foods in grocery stores, subsidies on such items, or the introduction of farmers' markets.<sup>6</sup> Discrepancies between studies may be due to differences in the different low-income populations analyzed. Only 2 percent of the participants in the PFFFI-funded study were Latino, while 13% of participants in the positive study were Latino.<sup>6,28</sup>

Findings from two other studies that used 24-hour dietary recalls to evaluate food consumption suggest that when given incentives, such as WIC subsidies for healthy foods or access to fresh produce in their neighborhoods, low-income Latinos (especially new immigrant arrivals) are particularly likely to improve their diets.<sup>29,30</sup> The first study found that Latino mother-child dyads participating in WIC consume fewer calories from fat, added sugars, sodium, and sweetened beverages than African American mothers and children. Additionally, Latino mothers and children consume more vitamin A, calcium, whole grains, fruits and dairy.<sup>29</sup> The second study found that Latino children participating in WIC consume significantly less total and saturated fat, more dietary fiber, and have better overall diet quality than their African-American counterparts.<sup>30</sup>

Two cross-sectional studies specifically assessed the relationship between access to healthy food options and purchase/intake of fruits and vegetables, which is inversely correlated with BMI.<sup>31</sup> One study of Latino immigrant women in New York City reported that the presence of a farmers' market within the home neighborhood was linked to greater consumption of fruits and vegetables.<sup>32</sup> Another study focused on corner stores in Hartford, Connecticut, where nearly half of the customers were Latino and where more than half lived in an underserved neighborhood. In this study, 40% of participants were Latino. This study showed that the greater the variety of fruits or vegetables made available in the store, the more likely customers were to purchase them. Further, this study found that SNAP participants were nearly two times as likely to purchase fruit as those who didn't receive such food subsidies.<sup>33</sup>

In contrast, one cross-sectional study of 300 Latino and African-American women in Austin and Houston, Texas, found that of the presence of grocery stores and supermarkets in neighborhoods was not linked to the intake of fruits and vegetables. Instead, individuals' levels of stress in response to a wide range of variables were inversely related to fruit and vegetable intake in this study.<sup>34</sup> These findings suggest that the dietary habits of African-American and Latino women may be more significantly influenced by stress levels that affect the willingness of family providers to take the extra time to purchase and prepare fresh fruits and vegetables.

Collectively, these mixed findings suggest that building a store may be the first step toward increasing availability of healthy foods in underserved populations; to also alter dietary behavior, complementary strategies, such as reduced prices, coupons, advertising for healthy foods, and nutritional education programs (such as SNAP-Ed) may be needed.<sup>35</sup> Dietary improvement among low-income Latino communities seems to occur with increased accessibility to healthy foods alone, more so than in other populations.

**Revisions of the Women, Infants, and Children (WIC) and Supplemental Nutrition Assistance Program (SNAP) programs, both of which have large Latino involvement, are associated with increased availability and consumption of healthy foods.**

Research on the impacts of healthy food financing initiatives among SNAP and WIC participants is important because a large proportion of them are Latino, and/or belong to underserved populations. Latinos comprise 19 percent of SNAP and 32 percent of WIC participants,<sup>36,37</sup> and about 50 percent of U.S. Latino children are served by the WIC program.<sup>37</sup> In 2009, the U.S. government revised the “package” of food eligible for WIC food to include a wider variety of healthy foods, including whole grains, fruits and vegetables, and lower-fat milk. Three studies found that the new WIC food package significantly improved the availability and variety of healthy foods sold in WIC-authorized stores and, to a smaller degree, even non-WIC convenience and grocery stores.<sup>38-40</sup> One study showed that the WIC revisions made fresh vegetables more affordable in predominately Latino neighborhoods.<sup>41</sup>

*Approximately 19 percent of SNAP participants and 32 percent of WIC participants are Latinos.*

Using pre- and post-revision store inventories to assess how the new WIC food package affected access to healthy foods in convenience and grocery stores in the state of Connecticut, a study found that the supply of healthy foods increased by 39 percent in lower-income areas. Moreover, improved availability and variety of whole-grain products were responsible for a majority of the increase in the healthy food supply.<sup>38</sup>

Another cross-sectional study of small, WIC-authorized food stores in eight U.S. major cities found that after WIC was revised, store managers reported increases in their sales of new WIC-approved foods, such as whole-grain bread, low-fat milk, and white-corn and whole-wheat tortillas.<sup>40</sup> Although this study did not find changes in sales of processed fruits and vegetables, a pilot program implemented in New York State documented that the vegetable and fruit WIC vouchers were popular among stores that accepted them.<sup>42</sup>

The revised WIC food package also appears to be changing the diets of participating Latino and other children. A longitudinal study of Chicago children observed a significant decrease in fat consumption and increases in fruit intake and dietary fiber among participating Hispanic children in Chicago 18 months after the WIC package revisions.<sup>30</sup> A cross-sectional study, using a sample of California WIC participants, found an increase in whole grain foods, low-fat milk, and fruits and vegetables 6 months after the implementation of WIC revisions.<sup>43</sup> Another cross-sectional study

of children aged 2-4 in New York state found a 3 percent increase in consumption of low-fat or nonfat milk and steady increases in daily consumption of fruits, vegetables, and whole grains after the WIC revision was implemented. In the same study, the proportion of children aged 1-2 years and 2-4 years who were obese decreased by 6 and 3 percent, respectively.<sup>44</sup>

In contrast to WIC, SNAP benefits subsidize broad categories of foods and are not restricted to healthier options within those categories. Two cross-sectional studies and one short-term longitudinal study found that participation in SNAP does not appear to improve the nutritional quality of adult or children's diets.<sup>45-47</sup> There are conflicting findings on whether participation in SNAP makes children more likely to become obese.<sup>48</sup> One study found that Latino women participating in SNAP were 4.5 times more likely to have a child in the 85<sup>th</sup> percentile for weight than non-participants.<sup>49</sup> However, a different study found that participation in SNAP significantly reduces BMI percentile and the likelihood for being overweight/obese for boys and girls ages 5-11 and boys ages 12-18.<sup>50</sup>

**Food retail and financing initiatives that introduce farmers' markets or subsidize their use by WIC and SNAP participants are associated with improved accessibility, affordability, quality, and sales of fresh produce in underserved communities. There is less evidence on initiatives' impact on increasing consumption of healthy foods.**

In the past decade, the number of farmers' markets in the United States has more than doubled.<sup>51</sup> However, many of these markets had not previously been accessible to underserved and Latino populations. A number of food financing initiatives have increased the number of farmers' markets operating in underserved communities.<sup>52</sup> For example, through the activities of community groups, there are nearly a dozen farmers' markets in underserved neighborhoods in Oakland, California. Latinos comprise 25 percent of these communities.<sup>53</sup>

Similarly, the Y USA's Pioneering Healthier Communities initiative prompted the creation of the Activate West Michigan coalition, which established five farmers' markets in underserved African-American and Latino communities in urban Grand Rapids. One inner city farmers' market was held at a public school located in a Latino neighborhood. The community became actively involved, adding a celebration component to the market that included traditional music, games and educational activities. Community partners who spoke Spanish provided information on how to identify food services and other resources. The market was so successful at increasing knowledge of resources and building community that it has become an annual event, and it has expanded into other inner-city communities.<sup>54</sup>

Several studies have found that Latinos, especially Latina women, report wanting more fresh fruits and vegetables in their diet and a willingness to support farmers' markets introduced into their neighborhoods.<sup>32,55</sup> Three studies suggest that the introduction of farmers' markets may improve the eating habits of underserved Latinos and/or other underserved consumers.<sup>17,56,57</sup> Most of these surveys provided

descriptive information but did not use a comparison group, nor did they detail how much these initiatives improved food purchasing or eating habits. Nevertheless, one quantitative, longitudinal study using survey data found that two farm stands placed outside of two underserved community sites in Texas one day a week for 12 weeks led to a significant increase in participants' consumption of fruits and vegetables<sup>57</sup>. Nearly one-third of adult participants in this study were Latino, and about two-thirds had children.

In order to better accommodate low-income families at farmers' markets, the Consolidated and Further Continuing Appropriations Act of 2012 provided funding to help states provide wireless equipment to farmers' markets not yet accepting EBT cards. Between 2008 and 2012 there was a 400 percent increase in EBT card usage by SNAP participants, nearly 20% of whom are Latino, at farmers' markets nationwide.<sup>58</sup> One study of five farmers' markets in Arizona found that after the markets began accepting SNAP EBT cards, SNAP redemptions increased in 4 of the 5 markets, as did overall sales.<sup>59</sup> Similar increases in SNAP redemptions have been reported by other farmers' markets in other states after they began to accept EBTs, with one study of farmers' markets in New York City reporting SNAP sales that more than doubled following acceptance of EBTs.<sup>60</sup> In California, where 38 percent of the population is Latino, the "Healthy Purchase" pilot program enables SNAP recipients to use a portion of their benefits to purchase fresh produce with their Electronic Benefit Transfer (EBT) cards.<sup>61</sup>

After vendors at farmers' markets in lower-income regions of King County, Washington were offered subsidized EBT terminals for processing SNAP transactions, the number of market stalls accepting SNAP increased by nearly 80 percent. However, one study found that without financial support for wireless EBT terminals at farmers' markets, many vendors find the costs of equipment and fees too high to serve SNAP customers.<sup>62</sup>

To encourage more low-income families to patronize farmers' markets, five state-wide programs have been adopted that provide subsidies to SNAP participants to use at local farmers' markets. These initiatives appear to be effective at increasing consumption at farmers' markets; however, it is unclear if the increase is attributed to purchase of healthy foods or other, less healthy alternatives available at the farmers' markets. After New York City instituted its Health Bucks program, which offers \$2 for each \$5 spent using electronic benefit transfer (EBT) at a farmers' market, EBT sales significantly increased at farmers' markets offering the incentive (\$383 versus \$274) between 2006 and 2009, though it was not possible to link EBT sales to increased purchase of fruits and vegetables by SNAP participants because the markets also sell foods and goods other than fresh produce.<sup>63-65</sup>

A similarly structured healthy food financing program in Philadelphia initiated in 2009 found that users of the "Philly Food Bucks" provided to SNAP participants were more likely than non-users to be non-white and new to farmers' markets. Philly Food Bucks users also reported eating more fruits and vegetables since becoming customers at the markets. SNAP sales at farmers' markets in low-income areas more

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than tripled with the introduction of the Philly Food Bucks program. Although this was due in part to an increasing number of markets accepting SNAP during the study period, average SNAP sales per market more than doubled between 2009 and 2011.<sup>66</sup>

In downtown Rochester, New York, a similar program found that within a year of its implementation, EBT sales increased more than tenfold. EBT customers and participants of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) using the program reported that the quality of the farmers' market produce was better than the quality of produce at their usual store. Moreover, about two-thirds reported that the price of the farmers' market produce was either better or the same as that of produce at their local stores.<sup>67</sup>

In San Diego County, a program that gives coupons to WIC or SNAP recipients to be used at local farmers' markets increased participants' weekly spending on fruits and vegetables and consumption of fresh produce.<sup>68</sup> In the 22 percent Latino region of Hampden County, Mass., coupons were provided to SNAP recipients that doubled their purchasing power at farmers' markets. The use of the coupons also doubled the markets' SNAP sales. The program began in 2008 and has since expanded to more than 160 markets.<sup>69</sup> A rigorous evaluation of this program found that compared to non-participants, program participants spent more on targeted fruits and vegetables, and increased consumption of this produce boosted participant scores on the 2010 Healthy Eating Index.<sup>70</sup> A simulation study on the effects of reducing the cost of fruits and vegetables by 20 percent found that it is likely to result in a larger decrease in body mass index (BMI) among SNAP participants than non-participants of similar income levels.<sup>39</sup> In this study, between 10 and 14 percent of the SNAP participants were Latino.

Programs that provide greater access to and subsidies for farmers' markets appear to be highly effective at increasing consumption at farmers' markets in underserved communities. Additional studies are necessary to determine if these programs are effective at increasing consumption of fresh produce specifically.

**Most healthy food financing initiatives that expand healthy food offerings at corner stores are associated with an increase in healthy food purchases or consumption.**

Initial findings on the impact of initiatives aimed at expanding healthy foods in corner stores have been generally favorable, although most studies to date are not large and rigorous in their methods and analyses. Additionally, the majority of studies have not been conducted in areas with significant Latino populations.

Two reviews of several studies on corner store initiatives in areas with small numbers of Latinos found that most stores reported that the interventions were linked to increased sales of promoted healthy foods, including fruits and vegetables, low-fat milk, high-fiber cereals, and water.<sup>71,72</sup> A small, randomized, controlled study of *tiendas* in North Carolina that predominantly served recent immigrants from Mexico and Central America found a moderate increase in the amounts of fruits and

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vegetables in customers' diets four months after owners installed store equipment and trained employees and managers to promote fresh fruits and vegetables.<sup>73</sup>

The Healthy Bodega Initiative in New York City, which has a large proportion of Latinos, recruited more than 1,000 *bodegas* to increase their offerings of low-fat milk and fruits and vegetables and provided promotional and educational materials to entice consumers to purchase these healthy foods. Among participating *bodegas*, 45 percent had increases in sales of low-fat milk, 32 percent in fruit sales and 26 percent in vegetable sales.<sup>42</sup> The proportion of customers surveyed who purchased healthier promoted options increased from 5 to 16 percent.<sup>74</sup>

Some food financing initiatives have fostered collaborations of corner stores served by the same wholesaler. Leveraging collective purchasing power results in reduced costs for stores to receive fresher produce. One of these programs, which partners with farmers to provide fresh organic produce to corner stores on a weekly basis, was linked to a significant increase in fresh produce sales.<sup>75</sup> The Food Trust pioneered an innovative network of 40 corner stores in underserved Philadelphia neighborhoods that collaboratively buy fresh fruit and fresh fruit salads from the same local distributor.<sup>76</sup>

A majority of middle- and high-school students in low-income urban areas shop at corner stores. Most items they purchase are unhealthy snacks and beverages,<sup>77,78</sup> and two studies of corner store healthy food initiatives found no effect on the nutritional value of these youths' purchases. (Neither study had a Latino focus.) One randomized, controlled study conducted in Philadelphia reported that a healthy corner store intervention that prompted stores to carry healthier items and was accompanied by classroom-based nutritional education and marketing campaigns did not significantly change the calorie or nutritional content of corner store purchases by these students, nor did it alter their prevalence of obesity. Researchers noted that a reason for this might be increased cost of healthier food items compared with high-calorie snacks offered in corner stores. This study focused predominantly on African-American subjects, with less than 20% Latino participants.<sup>79</sup> Another study also conducted in Philadelphia found that an intervention to increase the stocking and promotion of healthy foods at corner stores also did not alter the calorie or nutritional contents of the diets of adolescents and adults who shopped there. This study did not analyze racial subpopulations.<sup>80</sup>

With the exception of the buying habits of teens, emerging evidence on the impact of healthy food financing initiatives targeting corner stores is encouraging. More rigorous, controlled studies are needed to strengthen the validity and applicability of these early findings across underserved and Latino communities. It is also important to note that just increasing fruit and vegetable offerings in stores or via farmers' markets may not prevent or reduce obesity, especially when these healthy items are offered alongside other energy-dense snack foods, as one study found.<sup>81</sup>

**Desirability of healthy food consumption is challenged by heavy marketing of unhealthy foods to children, especially Spanish-speaking children.**

Focus groups of Latino mothers have revealed that the most significant barrier to establishing healthy eating habits for their children is economic constraint.<sup>82</sup> Many Latino families experience intermittent or chronic food insecurity; however, food is usually given the highest priority. Because of financial constraints, lower-income Latino mothers' food purchases are driven almost exclusively by price.<sup>83</sup> Mothers have expressed that they commonly travel to several different locations to purchase specific items at the lowest prices available.<sup>82</sup> These practices demonstrate that Latino mothers' desire to provide healthy meals for their families and protect their children from food deprivation.<sup>83</sup>

In addition to economic constraints, a plethora of unhealthy food advertising to children and youths is a challenge for providing healthy meals to children of low-income families. The Institute of Medicine identified media as the most influential environmental factor affecting diets of youths.<sup>84</sup> Food marketing of both individual products and restaurants disproportionately focuses on promotion of unhealthy foods.<sup>84</sup> Studies show that expenditures on marketing to youth have increased by 50 percent since 2006.<sup>85</sup> In addition to television advertisements, marketers promote products using online/mobile advertising, viral marketing, and "advergaming."<sup>85,86</sup> One study showed that 82% of foods commonly marketed on television or the web are stocked in food stores.<sup>87</sup>

Eating outside of the home has become more popular in recent years, and several studies have evaluated the consequences on nutritional intake and weight gain. One systematic review, which included 20 cross-sectional studies and 8 prospective, cohort studies, found that eating outside of the home was positively associated with body weight in adults.<sup>88</sup> Another systematic review of 29 studies reported that children and young adults commonly consumed foods prepared outside of the home and that eating these foods was associated with lower intake of micronutrients.<sup>89</sup>

Latino youths are a fast-growing population that consume more media and have higher spending power than other youths.<sup>90,91</sup> As a result, marketers have purposefully implemented campaigns geared to Spanish-speaking youth. Two studies found that advertisements to Spanish-speaking youths are more likely to promote unhealthy foods than advertisements to English-speaking youths (82% vs 72.5% of advertisements, respectively).<sup>92,93</sup> These food marketing strategies influence diet by affecting food preferences, requests, consumption patterns, and nutritional knowledge.<sup>84,94-96</sup> Studies show Latino youths are known by marketers as "super-consumers" of soda, candy, and snacks.<sup>97</sup>

Self-regulation of marketing to children by food and beverage companies has not been effective at reducing promotion of unhealthy foods to children. In fact, ethnically-targeted marketing has increased.<sup>92,98</sup> Overwhelming evidence indicates that food marketing increases demand for and consumption of unhealthy foods. There is a need for additional research on the role of food and beverage marketing to Latino children and youth on the obesity epidemic in this population. Regulation of marketing to children and increased

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promotion of healthy foods have been suggested to improve diet quality and decrease obesity in low-income homes.<sup>99</sup>

## Conclusions and Policy Implications

### CONCLUSIONS

- A large portion of U.S. families lack access to healthy, affordable foods in their neighborhoods. Lack of access is especially prevalent in low-income communities, including Latino communities. In these neighborhoods, convenience stores and fast-food restaurants are widespread, but there is a scarcity of supermarkets and farmers' markets that can provide fresh and healthy food options.
- Healthy food financing initiatives are relatively recent, but promising at increasing the availability of healthy foods in low-income neighborhoods. These initiatives involve children and adults and are spread across highly diverse localities with different environments, social characteristics, and obesity rates. There is still insufficient evidence to determine the extent to which greater access to healthy foods in underserved communities reduces obesity and improves health outcomes.
- Access to, and purchases of, affordable healthy foods tends to improve when supermarkets or farmers' markets are introduced or when healthy food offerings in corner stores are expanded and promoted in Latino and underserved communities; these initiatives may also improve the diets of these consumers.
- Purchases of healthy food appear to increase when financial subsidies reduce the costs of healthy foods for underserved consumers. Evidence to date suggests that these interventions also help expand the number of retailers located in underserved communities.
- When the operational and technological capacity of farmers' markets is expanded to accept WIC or SNAP vouchers, the purchases of fresh fruits and vegetables increase among underserved communities.
- Extensive marketing of unhealthy foods and beverages to children and youth, especially Spanish-speaking youth, increases demand for and consumption of these foods. Industry self-regulation of marketing to children has not been effective at reducing promotion of unhealthy foods thus far.

### POLICY IMPLICATIONS

While the evidence about policies and practices that encourage the consumption of healthy foods and beverages is limited, several recommendations to local, state, and federal governments can be made based on the best evidence currently available:

- Encourage more supermarkets, farmers' markets or other sources of affordable healthy foods to operate in underserved communities through zoning, land-use planning, and community development efforts.

- Provide incentives for programs to increase the number of supermarkets or farmers' markets in underserved populations or expand healthy food offerings in corner stores. Legal, technical and financial support should be provided. The incentives can be grants or loans, tax credits, refrigeration for fresh fruits and vegetables, free publicity and marketing advice, or linkages to wholesale distributors.
- Continue, through the national Healthy Food Financing Initiative, to ensure consistent funding streams to the state and local level for sustained, increased access to healthy foods.
- Give vendors at farmer's markets financial and logistical support, including reimbursement for wireless or electronic technologies to enable them to accept EBT purchases. This will increase the share of farmers' markets that serve underserved populations nationwide.
- Provide financial incentives, such as coupons for healthy foods, to WIC or SNAP participants to encourage and enable greater purchases of them.
- Regulate marketing of unhealthy foods in media and within schools, public buildings, stores, restaurants, and outdoor advertising.

## FUTURE RESEARCH NEEDS

This review of the evidence indicates that researchers should conduct additional and more rigorously designed studies, such as experimental or quasi-experimental studies with less reliance on self-reported data whenever possible. Future research should examine the degree to which increased access to local healthy foods impacts dietary habits and obesity in Latino communities. Researchers also should:

- Identify other multilevel factors (for individuals, at homes, in neighborhoods, counties and cities), that contribute to obesity and health outcomes. Such factors include stressors, lack of time or interest in preparing healthy foods, prices for healthy foods that far exceed those for unhealthy alternatives, and the influence of fast-food in Latino populations.
- Document the distinct places where people from underserved communities shop for food, and the quality, price and display of foods available there. Primary data collection efforts are critically needed to deepen our understanding of these issues and their impact on body weight and health outcomes in Latino communities, rather than relying on data developed for other purposes. This research should consider whether participants' grocery shopping is limited to stores within the immediate neighborhood, or whether shopping is done at stores close to worksites and other areas.
- Evaluate demonstration projects by collecting data on sales, prices, access, purchasing and consumption of healthy foods. In addition, establish the program's baseline investment and, over time, calculate the return on investment in terms of both health and economic benefits so as to better leverage future funding. Funders should provide financial support and requirements for the collection of this information.

- Assess food use and preferences in homes and the influence of cooking skills and time on the amount of healthy foods incorporated into the diets of underserved Latino families.
- Investigate whether food hubs that aggregate locally produced foods and distribute them to individuals, retailers and other institutions in underserved neighborhoods can improve access to affordable healthy foods in these communities.
- Examine specific cultural factors in Latino and other underserved communities that might influence the effectiveness of various policies to improve access to affordable healthy foods, as well as assess what implementation strategies work best for these populations.
- Investigate the role of food and beverage marketing to Latino children and youth on the obesity epidemic in this population.

#### **ABOUT THE PROGRAM**

*Salud America!* The RWJF Research Network to Prevent Obesity Among Latino Children is a national program of the Robert Wood Johnson Foundation that develops multimedia communications to educate and motivate our national online network—kids and parents, teachers, academics, and community leaders—to take action to reduce Latino childhood obesity and build a culture of health. The network is directed by the Institute for Health Promotion Research at the University of Texas Health Science Center at San Antonio.

For more information, visit <http://www.communitycommons.org/salud-america>.

#### **ABOUT THIS RESEARCH REVIEW**

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