

UCLA

UCLA Previously Published Works

Title

Lessons learned from implementing the Supplemental Nutrition Assistance Program Education Small Corner Store Project in Los Angeles County

Permalink

<https://escholarship.org/uc/item/6067p7kn>

Authors

Robles, Brenda
Barragan, Noel
Smith, Brenda
[et al.](#)

Publication Date

2019-12-01

DOI

10.1016/j.pmedr.2019.100997

Peer reviewed



Lessons learned from implementing the Supplemental Nutrition Assistance Program Education Small Corner Store Project in Los Angeles County

Brenda Robles^{a,*}, Noel Barragan^a, Brenda Smith^{a,1}, Julia Caldwell^a, Dipa Shah^a, Tony Kuo^{b,c,d}

^a Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, Los Angeles, CA 90010, USA

^b Department of Epidemiology, UCLA Fielding School of Public Health, Los Angeles, CA 90095, USA

^c Department of Family Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA 90024, USA

^d Population Health Program, UCLA Clinical and Translational Science Institute, Los Angeles, CA 90095, USA

ARTICLE INFO

Keywords:

Supplemental Nutrition Assistance
Program Education
Obesity prevention
Corner store conversions
Project implementation
Project assessment

ABSTRACT

As part of the federal Supplemental Nutrition Assistance Program Education (SNAP-Ed) in Los Angeles County (LAC), corner store conversions (CSCs) were an integral part of a broader, more coordinated effort to improve nutrition and to prevent obesity in low-income populations. To date, little is known about this experience in LAC. The present study addresses this gap by describing lessons learned from implementing the SNAP-Ed *Small Corner Store Project* (SCSP) in this region. The project, which began in 2013, sought to scale CSCs in underserved communities of LAC, employing behavioral economics (e.g., prominently displaying healthy foods at checkout aisles or using in-store signage to promote healthy options) to encourage patron selection of healthier food items. Results from an assessment of the SCSP suggest that for CSCs to do well, careful considerations should be given to factors such as time (e.g., amount of staff time dedicated to the effort), staff capacity (e.g., # staff available to assist), and available resources that can be leveraged (e.g., support from community-based organizations). For some stores, inadequate food distribution or a lack of capital improvement infrastructure (e.g., refrigeration for fresh produce/storage of excess food that can be repurposed) were key barriers that required additional funding. Although local efforts that incentivize small businesses to undergo CSCs may initially nudge store owners to participate, increasing overall consumer demand for healthier food products (i.e., so as to help maintain sales volume) remains a key to sustaining store conversions long after SNAP-Ed resources are gone.

1. Introduction

The idea that food environments shape what people eat is not a new concept. Yet, it has taken on greater meaning during the past two decades, as obesity prevalence in the United States (U.S.) has reached epidemic proportions (Wang & Beydoun, 2007; Flegal et al., 2016; Ogden et al., 2016). Current research has assessed the relationship between food environment quality and dietary behaviors; it has implicated poor food environments in steering individuals to overconsume foods of minimal nutritional value (Black et al., 2014; Swinburn et al., 2015). This may, in part, explain why program planners and implementers alike are increasingly looking to improve people's ability to

select/purchase healthy foods through nutrition-focused *policy, systems, and environmental change* interventions (PSEs) (Bunnell et al., 2012; Lyn et al., 2013). Collectively, these PSEs represent an innovative approach for addressing underlying socio-ecologic factors that can impede healthy eating and increase the risk of obesity among underserved populations in the U.S.

A popular PSE among philanthropic organizations, health departments, and other funders of nutrition-focused initiatives – including the United States Department of Agriculture (USDA) – has been the neighborhood “corner store conversions” (CSCs) (United States Department of Agriculture, 2016; Robert Wood Johnson Foundation, 2019). Also known as the “healthy corner store programs”, CSCs

Abbreviations: CDPH, California Department of Public Health; CSCs, Corner store conversions; CX3, *Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention*; DPH, Los Angeles County Department of Public Health; LAC, Los Angeles County; LHD, Local health department; PSEs, Policy, systems, and environmental change interventions; SCSP, Small Corner Store Project in Los Angeles County; SNAP-Ed, Supplemental Nutrition Assistance Program Education; U.S., United States; USDA, United States Department of Agriculture

* Corresponding author at: Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, 3530 Wilshire Blvd, 8th floor, Los Angeles, CA 90010, USA.

E-mail address: brrobles@ph.lacounty.gov (B. Robles).

¹ Affiliation at the time of the project.

<https://doi.org/10.1016/j.pmedr.2019.100997>

Received 18 June 2019; Received in revised form 5 September 2019; Accepted 23 September 2019

Available online 22 October 2019

2211-3355/© 2019 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

typically involve an entity (e.g., redevelopment agency or non-profit) partnering with small corner store owners to stock healthier foods (e.g., fresh produce) in their stores, utilizing in-store product placement or marketing to nudge patrons towards selecting healthier options. Other strategies that are commonly employed in this conversion process include: engaging patrons or community groups to raise awareness of and support for CSC activities; training store owners on the application of behavioral economics (i.e., principles or nudging techniques that are meant to subtly influence patron choice or purchasing behavior); structural modifications of stores to increase visibility of healthy foods; and use of pricing incentives to increase affordability of healthier items (Gittelsohn et al., 2012). While CSCs can vary in scope and reach, they fundamentally seek to address the same problem of “food deserts”, “food swamps”, and/or limited access to healthy foods in underserved areas of municipalities (Ortega et al., 2015; Albert et al., 2017; Kim et al., 2017).

In an effort to improve nutrition and reduce obesity locally, the Los Angeles County Department of Public Health (DPH) integrated CSCs as part of a broader, more coordinated approach to scaling nutrition-focused interventions in Los Angeles County (LAC) under the United States Department of Agriculture’s (USDA’s) Supplemental Nutrition Assistance Program Education (SNAP-Ed). Little is currently known about this experience, or about the lessons learned in LAC that can be extrapolated or applied to other CSC projects in the U.S.

The present study addresses this gap in public health practice by describing lessons learned from the implementation of SNAP-Ed’s *Small Corner Store Project* (SCSP) in LAC. The project, which began in 2013, sought to scale CSCs across several underserved communities in the county. Its implications are discussed within the context of SNAP-Ed planning and programming in this article.

2. Methods

2.1. SNAP-Ed context

The primary goal of SNAP-Ed is to help program-eligible populations make healthier food and other lifestyle choices so their risk of obesity can be reduced. Using USDA funding administered through a contract from the California Department of Social Services, the California Department of Public Health (CDPH) has strategically distributed SNAP-Ed resources across the state to do just that. CDPH employed a local health department (LHD) model in nearly 50 counties to deliver nutrition education and implement complementary PSEs that are considered best practices for obesity prevention. In California, SNAP-Ed eligibility is determined based on census tract-level income. Eligible tracts are those where at least 50% of the households live at or below 185% of the Federal Poverty Level. In LAC, DPH is the lead local agency or LHD that implements SNAP-Ed activities, including the SCSP.

2.2. The Small Corner Store Project

The SCSP was one of several program efforts included in DPH’s work plan for the 2013–2016 SNAP-Ed funding cycle. Small corner stores were considered project eligible if they were located in a SNAP-Ed qualifying census tract and if the store owner(s) agreed to participate in the conversion process. Although not required, an additional consideration was whether or not the store had a working relationship with a nearby community organization or organizations that was/were funded by DPH to implement other nutrition-focused PSEs. In total, SCSP staff engaged 13 small corner stores for this project. They were all located in low-income areas across LAC. About 15 additional stores were considered for the Project, but they were not selected because they did not meet the program inclusion criteria: i.e., did not have enough households that qualified for SNAP-Ed or owners who expressed interest.

Upon connecting with eligible stores, SCSP staff collaborated with

each owner to develop an action plan that identified opportunities for initiating CSC strategies. Store owners chose from a menu of strategies that included: (a) placement and pricing interventions that were based on principles of behavioral economics; and/or (b) health education/health promotion messaging (e.g., including the use of signage) that were tailored to the in-store conditions of the participating stores. Along with store owner feedback, CSC strategies were considered, selected and executed based on feasibility, the needs of the surrounding neighborhood, and access to local partners (e.g., community-based organizations [CBOs], schools) that can assist with the conversion process. Throughout the conversion, staff provided tailored technical assistance to each store owner.

2.3. Assessment of the Small Corner Store Project

To better understand the project implementation process and to document progress, SCSP staff coordinated their assessment activities using in-house DPH evaluators and an external evaluation vendor to support the data collection. Mixed qualitative and quantitative methods were used to collect data/information from the 13 stores that agreed to participate in the SCSP.

In total, four types of assessments were conducted: (i) key informant interviews with SCSP staff (one-time data collection); (ii) a landscape analysis based on the information from the *Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention* (CX3) scorecard (baseline and follow-up assessments were completed at least six months apart; range: seven-18 months apart); (iii) environmental scans of participating stores (one-time data collection); and (iv) intercept surveys of store patrons (one-time data collection). All assessments were performed during 2014–2015. Details about each type of assessment are provided below.

All protocols and materials for the project assessments were reviewed and approved by the DPH Institutional Review Board and/or by the University of California, Los Angeles Office of the Human Research Protection Program prior to fieldwork.

2.4. Key informant interviews

DPH evaluators conducted interviews with the SCSP team lead and with the Project’s assistant analyst to help identify key phases of implementation, including the corresponding objectives and programmatic activities that were instituted. Contextual information about each store (e.g., store partners, facilitators/barriers to conversion) was gathered using these interviews. Each interview was carried out in person and lasted approximately 30 min. A semi-structured script consisting of questions pertaining to project context/background and implementation experiences was employed to help guide the interview process. As an example, to capture context/background, both interviewees were asked: a) What is your role in the project?; b) When did you first start working with this corner store?; and c) Please describe the community this store serves. For project implementation, the same interviewees were asked: a) How did you go about implementing store changes; b) What were the facilitators and barriers to implementing the selected strategies?; and c) What were the final results of the process? Responses to all interview questions were electronically typed and collated digitally. The same two DPH evaluators who conducted the interviews analyzed the transcripts using deductive coding techniques. Final themes from the interviews were identified based on consensus between the two evaluators, with a third evaluator who was available to review in case there was a disagreement.

2.5. Landscape analysis using CX3 scorecard results

As part of the 2013–2016 SNAP-Ed funding cycle, DPH was required to participate in CDPH’s CX3 Project, which collected data on healthy diet and physical activity promotion activities in target census tracts.

Detailed methodology of how CX3 assessments were carried out is described elsewhere (Jewell et al., 2019).

For the purposes of the SCSP, DPH evaluators leveraged this required data collection to better understand the landscape of the Project's participating stores. Specifically, CX3 scorecard results — based on assessment data collected by DPH staff (raters) which were later submitted to and analyzed by CDPH — were used to track CSC changes over two timepoints. The CX3 scorecard captured information about: (a) the availability of products stocked; (b) marketing and promotion in the target community; (c) acceptance and promotion of food assistance among eligible households (e.g., Special Supplemental Nutrition Program for Women, Infants, and Children); and (d) other pertinent information about a store's surrounding neighborhood (e.g., external store appearance and safety). The scorecard consisted of multiple dimensions with corresponding items, each of which received assigned points from a rater. A final score accounting for all activities was summed, with higher scores indicating better corner store environments. The maximum score possible was 100. When feasible, CX3 scorecard assessments were conducted at baseline and as a follow-up at each of the 13 participating corner stores. Please note: several stores did not receive a baseline nor a follow-up assessment due to changes in store ownership and/or to store owner reluctance to fully participate in CX3 or implement the selected CSC strategies.

2.6. Environmental scans of corner stores

A more thorough environmental scan that documented the in-store food and near-store environment was performed to augment information obtained from the CX3 scorecard in 12 of the 13 participating corner stores; one store was not assessed due to store owner reluctance to participate in the full scan. In contrast to CX3 assessments, which broadly documented the extent to which healthy products were stocked, marketed and promoted using a point rating system, the environmental scan captured more detailed information about small corner store attributes. Staff from the external evaluation vendor conducted these scans using a tool they developed internally. The scan tool captured the following: (a) type of store environment (e.g., convenience store, carniceria/meat market/butcher shop, variety); (b) percentage of shelf space allocated to different types of fresh fruit and vegetables, low nutrient density foods (e.g., chips, candies, cookies, breads/pastries), and sugar-sweetened beverages; (c) number and types of advertisements placed inside and/or outside of the store; and (d) number of unique varieties of fruits and vegetables that were available to store patrons.

2.7. Corner store patron survey

From September to December 2014, a cross-sectional, intercept survey was also conducted to better understand corner store patron characteristics. This assessment was carried out by the contracted external evaluation vendor. While not all 13 stores completed all of the SCSP activities due to a variety of reasons (given above), all of them did agree to let staff from the evaluation vendor administer the survey in front of their store locations.

The six-page survey instrument, available in both English and Spanish, asked patrons about their: (a) food purchasing behaviors at the corner store and at other stores; (b) perceptions/attitudes regarding the availability of products; (c) awareness/perceptions of marketing messaging in the store; and (d) socio-demographic characteristics. Due to the unique nature of the SCSP, most of the survey questions were internally developed and pre-tested for wording clarity, comprehension, and sensitivity. Response options were closed-ended and included dichotomous, multiple choice, or Likert scales.

During the course of the four-month data collection period, intercepting of prospective survey respondents took place Monday through Sunday during morning and afternoon shifts. The days and frequency of

intercepting varied by store site. To recruit patrons, interviewers approached them as they exited the store. Only those who agreed to take the survey and met the eligibility criteria were administered the survey. To be eligible, respondents had to be ≥ 18 years of age and speak English or Spanish. Each survey (interview) took approximately 10–12 min to complete. Upon completion, a T-shirt, hat, or bag was given as an incentive for participation.

Survey data were descriptively analyzed using the SAS version 9.4 statistical software package (SAS Institute Inc., Cary, North Carolina). The analysis generated outputs for such variables as the total number of survey respondents and the percentages of respondents by characteristic of interest (e.g., socio-demographics, food purchasing behaviors).

3. Results

3.1. Level of program participation

A total of 13 corner stores participated in the SCSP. All of them were offered a menu of in-store strategies to choose from. They were also offered technical assistance, which were tailored to assist store owners with the different steps required by the conversion process. Despite having access to SNAP-Ed support (i.e., technical assistance from SCSP staff), only six of the 13 participating stores were able to complete all of the activities and assessments (46% of total). Three others enrolled and implemented their selected CSC strategies (23% of total), but were unable to complete all of the assessments. And the remaining four enrolled in the project only (31% of the total) — i.e., they did not implement any strategy nor complete any assessment.

3.2. Implementation process

Qualitative data from the key informant interviews offered a “snapshot” of the five implementation phases utilized by the SCSP (see Table 1). These phases and corresponding objectives included: *Exploratory* (Phase 1) — to develop a menu of SNAP-Ed approved CSC strategies; *Selection* (Phase 2) — to identify and engage corner store owners to participate in the SCSP; *Assessment* (Phase 3) — to determine store capacity and readiness to participate; *Implementation* (Phase 4) — to collaborate with participating corner store owners to select and implement CSC strategies in their stores; and *Sustainability* (Phase 5) — to monitor and sustain selected CSC strategies in each of the stores that implemented them.

Table 2 documents facilitators and barriers to SCSP implementation by each of the five phases. While no major barriers were identified in Phase 1 (Exploratory, several were documented for each of the other four phases). The most notable ones occurred in Phase 4 — *Implementation*. For example, inadequate access to capital improvement infrastructure (e.g., refrigeration to store fresh fruits and vegetables) and neighborhood safety were identified as major challenges that impeded the completion of CSCs in some of the target locations. The intent of documenting these lessons learned by each phase was to identify and capture where along the conversion process can program planners and implementers can work on or make changes, so as to optimize CSC efficiency without incurring further costs or generating unintended consequences. For some of these barriers, such as neighborhood safety, future research should explore their roles in mediating CSC success or failure.

3.3. Store environment and changes in CX3 scorecard results

Overall, most of the participating corner stores were classified as convenience stores; the owners were key actors in the conversion process; and the most common CSC strategy implemented was the display of USDA's *MyPlate* and/or *Electronic Benefit Transfer* signage.

The store environment scans showed high variation in the percentage of shelf space dedicated to healthy-unhealthy foods and beverages

Table 1
Key programmatic phases and associated activities for the Small Corner Store Project in Los Angeles County, 2013–2016 Supplemental Nutrition Assistance Program Education funding cycle.

	Phase 1: Exploratory	Phase 2: Selection	Phase 3: Assessment	Phase 4: Implementation	Phase 5: Sustainability
Objective	Develop an evidence-based healthy retail program	Identify and engage corner stores owners and relevant partners to participate in the Small Corner Store Project (SCSP)	Determine store capacity and readiness to participate in the SCSP	Collaborate with participating store owners to implement selected healthy corner store conversion strategies	Monitor and maintain selected healthy corner store changes after the corner store conversion has been completed
Activities	<ul style="list-style-type: none"> Review research about other national programs. Connect with experts in this subject area (e.g., via webinars). Identify behavioral economics strategies applicable to the corner store conversion process. Develop a menu of policy, systems, and environmental change interventions that target corner stores. 	<ul style="list-style-type: none"> Identify geographic areas where 50% of the population is at or below 185% Federal Poverty Level. “Cold call” or conduct onsite introduction visits with eligible store owners who have been referred to the SCSP. Plan for a follow-up visit to conduct an in-store assessment. Identify and outreach to local community-based organizations already working on healthy retail efforts to explore partnership opportunities. 	<ul style="list-style-type: none"> Conduct <i>Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention</i> (CX3) assessment. Collaborate with store owners to identify corner store conversion strategy priorities. Develop an action plan for strategy implementation. 	<ul style="list-style-type: none"> Work with each participating corner store and any partnering community organizations to execute the store’s action plan, which could include the following: <ul style="list-style-type: none"> Rearranging food items in the store to better promote healthy choices (e.g., move water to eye level; remove candy from point of sale); Implementing price/signage strategies; Installing wall murals; Developing partnerships and strategies to provide store with easy access to fresh produce (fruits and vegetables), and/or Hosting a grand opening event to engage the community and showcase changes. 	<ul style="list-style-type: none"> Provide ongoing in-store training to keep store staff/employees at participating stores engaged in maintaining the changes that were implemented during the conversion process.

across the 12 stores that took part in the environmental scans. On average, the percentage of shelf space for fruits and vegetables was only 13.6%, whereas it was higher for junk food (23.8%) and for sugar-sweetened beverages (15.6%). On average, there were 14 varieties of fresh fruits and vegetables available inside the stores; this number ranged from zero to 33. There was also high variability in the number of interior and/or exterior store advertisements across the different stores. For example, two of the stores had 30 or more indoor/outdoor advertisements that promoted alcohol products, while others had only one or no such ads on display.

CX3 results showed that, of the six stores that received both a baseline and a follow-up assessment, there were, on average, a 34% improvement in the CX3 scores. The baseline scores ranged from 16.5 to 60.5, whereas the follow-up scores ranged from 26.5 to 79.5. Data for these assessments are presented in [Table 3](#).

3.4. Patrons who shopped at participating corner stores

Approximately 3517 patrons were approached for the intercept survey, which was conducted at all 13 participating store locations. Of those who were screened eligible, 772 participated in the survey. After accounting for missing or unusable data, the final analysis sample comprised 765 respondents. [Table 4](#) presents key results from the intercept survey. Overall, the majority of respondents were between the ages of 18 and 45 years (56.9%) and 46 and 65 years (35.0%); Hispanic/Latino (74.0%); had less than a high school education (44.6%); employed (51.0%); and were born outside of the United States (64.7%). More than half (61.6%) reported walking to the store and buying sweetened beverages there (70.8%). Nearly one-third (31.5%) shopped at the store a few times a week.

4. Discussion

Results from the project assessments of the SCSP suggest that the process of converting a small corner store to a retail environment that sells and markets healthier foods can be a complex progression, filled with a number of challenges, including the length of time it takes for a LHD to build relationships with store owners and the inherent difficulties of procuring and transporting affordable fresh fruits and vegetables to low-income neighborhoods. Other notable lessons or take-aways from this LAC experience include the following.

First, the selected CSC strategies that were implemented at participating stores varied, requiring provision of site-specific technical assistance that became more labor-intensive than first expected. Many participating stores required individualized rather than standard advice or support, significantly adding to the time commitments of the SCSP staff who were providing ongoing technical assistance.

Second, key informant interview results suggest that the timing of start-up and investments of resources – including building the trust and relationships needed to scale CSC strategies – were frequently a mismatch along the project’s timeline. In particular, start-up technical assistance and funding were often available at a time when the stores lacked the readiness, personnel, or equipment to carry out the CSC strategies, and/or vice versa. This aspect of implementation has been described in other studies of CSCs ([Gittelsohn et al., 2014](#); [Ortega et al., 2015](#)).

Third, the CSC process can be highly sensitive to operational barriers. For example, completion of the conversion often came down to logistics and costs. While it was feasible to coach store owners to become a champion for the conversion, this encouragement/investment of mentorship was generally not sufficient to ensure their ongoing participation in CSCs. Lack of funding to support capital improvements such as refrigeration for fresh produce remained a major barrier that store owners could not easily overcome. This experience in LAC is echoed in Ortega et al.’s study of CSCs (2015) in which the investigators concluded that having financial support for capital improvement was

Table 2
 Lessons learned: Facilitators and barriers to corner store conversions by implementation phase, *Small Corner-Store Project*, Los Angeles County, 2013–2016 Supplemental Nutrition Assistance Program Education funding cycle.

	Facilitators	Barriers
Phase 1: Exploratory Phase 2: Selection	<ul style="list-style-type: none"> • None identified. • Store owners' motivation to promote health among the communities they serve. • Store owners' pre-existing relationships with local student groups focused on improving the health and wellness of their community (e.g., collaborating with student groups to host health-related community events). • Store owners' pre-existing partnerships with community-based organizations (CBOs) that sought to promote healthy eating among Los Angeles County residents (e.g., participating in the CBOs' healthy food purchasing cooperative pilot). • Consistent communication between SCSF staff and store owners cultivated trust; this encouraged the latter group to participate in the SCSF. • Verbal commitment from store owners to implement corner store conversions (CSCs) enabled SCSF staff to more easily identify and recruit stores into the project. 	<ul style="list-style-type: none"> • None identified. • Store owners' distrust of government system and/or DPH motives discouraged store owners from participating in the <i>Small Corner-Store Project</i> (SCSP). • Difficulties getting in contact with store owners limited the number of stores that could be recruited for the SCSF.
Phase 3: Assessment	<ul style="list-style-type: none"> • Community demand for healthier foods and/or involvement to increase access to healthier options resulted in greater buy-in among store owners to implement CSC strategies. • Store owners' involvement with local student groups and CBOs helped foster and strengthen relationships with SCSF staff and store owners participating in the SCSF. • Store owners' perceived ownership of changes taking place in their stores expedited execution of their CSC strategies. • Store owners' pre-existing partnerships with external CBOs facilitated capital improvement investments in their stores (e.g., replacing or gaining access to refrigeration units); this allowed for implementation of CSC strategies related to capital improvement. • Adequate number of functioning refrigeration units helped to extend shelf life of fruits and vegetables (i.e., mitigate store loss of profits/revenues); this led to greater buy-in among store owners to implement CSC strategies. 	<ul style="list-style-type: none"> • Length of time necessary to build relationships with store owners prevented SCSF staff from recruiting stores to conduct pertinent program assessments necessary to inform each store's action plan. • Limited staff to conduct pertinent evaluation activities (e.g., key informant interviews with store owners, <i>Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention</i> [CX3] store landscape assessments) limited SCSF staff's ability to work with store owners to develop tailored action plans. • Few community champions or CBOs seeking to promote health in the community resulted in reduced buy-in among store owners to implement CSC strategies. • Limited SCSF staff to provide tailored technical assistance resulted in reduced buy-in among store owners to implement CSC strategies. • SNAP-Ed spending restrictions created challenges for purchasing equipment necessary to support implementation of CSC strategies (e.g., refrigeration units for storing fresh fruits and vegetables). • Difficulties in procuring affordable fresh fruits and vegetables (e.g., distance necessary to retrieve produce, price and time barriers) discouraged store owners from implementing CSC strategies. • Neighborhood safety concerns led to a perception that sale of fresh fruits and vegetables is not a community priority; this led to reduced buy-in among store owners to implement CSC strategies. • Store owners' perception that patrons prefer to purchase more unhealthy products at small corner stores (e.g., alcohol, junk food) led to reduced buy-in among store owners to implement CSC strategies. • Concerns about revenue loss if fresh fruits and vegetables are not quickly sold led to reduced buy-in among store owners to implement CSC strategies. • Variation in agreements/contracts between corner stores and vendors resulted in reduced buy-in among store owners to implement CSC strategies. • Lack of a system to track sales at point of purchase made it difficult for SCSF to evaluate the conversion progress and to work with store owners to more efficiently implement CSC strategies.
Phase 4: Implementation	<ul style="list-style-type: none"> • Store owners' perceived community demand for healthier food options encouraged them to sustain CSC strategies. • Store owners' perceived ownership of the CSC strategies taking place in their stores increased their buy-in to sustain the changes after Supplemental Nutrition Assistance Program Education resources are gone. 	<ul style="list-style-type: none"> • Limited SCSF staff and staff time to provide ongoing technical assistance discouraged store owners from implementing and maintaining CSC strategies in their stores. • Frequent store owner/point of contact turnover resulted in a repeated need to restart the CSC process for several stores.
Phase 5: Sustainability		

Table 3 (continued)

Store Characteristics		Small Corner Store Conversion Activities (A) ²										Program Assessment Results			
Type(s) ¹	Partners ²	A1 ^a	A2 ^b	A3 ^c	A4 ^d	A5 ^e	A6 ^f	A7 ^g	A8 ^h	A9 ⁱ	A10 ^j	CX3 Scorecard ³ (Scores)	% Shelf Space ¹	# Interior or Exterior Ads ¹	# F + V ¹
Store 10	Convenience Carniceria	-Store owner										Not available	F + V: 34.9% Junk: 34.8% F + V: 0 Junk: 0 SSBs: 29.3%	Alcohol: 0 SSBs: 3 Water: 0 F + V: 0 Junk: 0	7
Store 11	Convenience	-Store owners -CBO										Not available	F + V: 0.0% Junk: 57.4% F + V: 0 SSBs: 26.0%	Alcohol: 0 SSBs: 0 Water: 1 F + V: 0 Junk: 5	0
Store 12	Convenience Liquor Carniceria Variety	-Store owner										Not available	F + V: 4.6% Junk: 12.3% F + V: 0 SSBs: 14.9%	Alcohol: 34 SSBs: 5 Water: 0 F + V: 0 Junk: 5	29
Store 13	Convenience Carniceria Variety	-Store owner										Not available	F + V: 26.4% Junk: 4.2% SSBs: 10.5%	Alcohol: 1 SSBs: 4 Water: 0 F + V: 4 Junk: 0	30

Abbreviations:

CBO = community-based organization.
 CX3 = California Department of Public Health's *Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention* assessment tool and data collection.
 F + V = fruits and vegetables.
 Junk = junk food.
 HS = high school.
 SSBs = sugar-sweetened beverages.

Data Sources:
 1 Store environment scans.
 2 Key informant interviews with staff.
 3 *Communities of Excellence in Nutrition, Physical Activity and Obesity Prevention* (CX3) scorecard.

Corner Store Conversion Activities:

- ^a Display of *MyPlate*/electronic benefit transfer (EBT) healthy marketing signage (e.g., wobblers).
- ^b Display of price signage that includes healthy tips.
- ^c Product re-arrangement/placement to highlight healthier items.
- ^d Utilization of fruit baskets to highlight produce.
- ^e Installation of murals to attract a customer base.
- ^f Store cleanup/painting.
- ^g Partnering with community-based organizations to offer store owners with capital improvement/infrastructure resources (e.g., refrigeration to store produce).
- ^h Connecting store owners with produce distributor.
- ⁱ Offering DPH and contracted staff training about delivering nutrition education.
- ^j Hosting grand opening/community events with partners (i.e., students).

Table 4
Respondent characteristics from intercept surveys of patrons who shopped at the 13 corner stores that participated in the *Small Corner Store Project*, Los Angeles County, 2013–2016 Supplemental Nutrition Assistance Program Education funding cycle.

Characteristics	n (%)
Total	765 (100)
Socio-demographics	
<i>Age (years)</i>	
18–45	435 (56.9)
46–65	268 (35.0)
66 +	58 (7.6)
<i>Race/ethnicity</i>	
Black	75 (9.8)
Hispanic/Latino	566 (74.0)
White	36 (4.7)
Asian	23 (3.0)
Other	38 (5.0)
<i>Education</i>	
Less than high school	341 (44.6)
High school graduate or GED	249 (32.5)
Associate degree	82 (10.7)
Bachelor or graduate degree	67 (8.8)
<i>Employment</i>	
Employed	390 (51.0)
Unemployed/underemployed	228 (29.8)
Retired/disabled	111 (14.5)
Other	7 (0.92)
<i>Nativity</i>	
Born in the U.S.	245 (32.0)
Born outside the U.S.	495 (64.7)
Food Purchasing Behaviors	
<i>“How often do you go to a grocery store or market to purchase food including prepared foods?”</i>	
2 or more times per week	399 (52.2)
1 time per week	267 (34.9)
< 1 time per week	94 (12.3)
<i>“On average, how much do you spend on food and beverages each week? Please think of all the foods and beverages that you buy from any store or market in a week”</i>	
\$50 or less	109 (14.2)
\$51–\$99	253 (33.1)
\$100–\$199	307 (40.1)
\$200–\$299	71 (9.3)
\$300 or more	19 (2.5)
<i>“How often do you shop at this store?”</i>	
At least once a day	167 (21.8)
A few times a week	241 (31.5)
Once a week	140 (18.3)
Once in a while	166 (21.7)
First time at this store	44 (5.8)
<i>How do you usually get to and from this store?”</i>	
Drive	191 (25.0)
Carpool	4 (0.5)
Bus/public transportation	59 (7.7)
Bike	33 (4.3)
Walk	471 (61.6)
<i>“Do you buy fruits and vegetables at this store?”</i>	
Yes	417 (54.5)
No	333 (43.5)
<i>“Why don’t you buy fruits and vegetables at < this store > ?”</i>	
Buys elsewhere	78 (10.2)
Not available	63 (8.2)
Too expensive	27 (3.5)
Poor quality	36 (4.7)
No variety	30 (3.9)
Other	92 (12.0)
Not applicable	417 (54.5)
<i>“Do you buy sweetened beverages such as soda, sports drinks, punch, and other fruit drinks at < this store > ?”</i>	
Yes	542 (70.8)
No	213 (27.8)
<i>“Do you buy bottled water or water from a water-refill station at < this store > ?”</i>	
Yes	541 (70.7)
No	213 (27.8)

Table 4 (continued)

Characteristics	n (%)
Knowledge and Attitudes¹	
Respondent believed the following statements about the store:	
<i>Foods sold are generally expensive</i>	258 (33.7)
<i>Is convenient to shop at</i>	586 (76.6)
<i>Sells traditional ethnic food and ingredients</i>	523 (68.4)
<i>One can get information about nutrition and healthy eating (e.g. ads)</i>	278 (36.3)
<i>Is concerned with safety</i>	331 (43.3)
<i>Sells more unhealthy food than healthy foods</i>	279 (36.5)
Respondent agreed with following statements:	
<i>“What you eat can make a difference in your chances of getting heart disease or cancer”</i>	651 (85.1)
<i>“A way to prevent obesity is to eat smaller portions of food”</i>	645 (84.3)
<i>“A way to prevent obesity and diabetes is to not drink sweetened beverages such as soda, sports drinks, punch and other fruit drinks”</i>	686 (89.7)

Note: Number of cases and percentage may not add up to the total or 100%, respectively, due to rounding and missing information; NA = not applicable.

¹ Other response options not reported include “no” and “don’t know.”

imperative for achieving conversion success.

Finally, market factors such as higher pricing of healthier foods or a lack of demand for fresh produce represented additional barriers that were frequently difficult to mitigate. For instance, without favorable city policies that incentivize or subsidize the conversion process, many stores, even with good intentions, were unlikely to sustain their converted features over time, in fear of revenue losses. Similarly, without social norm change or a better understanding of what patrons expect from the corner stores they shop at, the business conditions that are needed to support higher sales volume of healthier food products were unlikely to emerge. In many parts of LAC, shopping at corner stores is simply about convenience. This is affirmed by the SCSP patron survey, which showed that more than 75% of the respondents agreed with the statement that they shopped at a particular corner store more for convenience than for any other reason (Table 4). Recent studies have described similar observations and experiences among small food stores in Arizona, Baltimore, Delaware, Minnesota, and North Carolina (Karpyn et al., 2018; Ross et al., 2018).

5. Conclusions

Lessons from the SCSP highlight the complexity of implementing CSCs in LAC. Even under the banner of a larger federal initiative such as SNAP-Ed, the conversion process remained difficult to carry out in the field. This is consistent with what has been documented in the literature. Results from other studies suggest that projects or programs of this kind often experience low implementation fidelity when they are scaled under real world conditions. This is mainly due to the fact that the infrastructure needed to sustain the supply and demand of healthier foods is generally lacking or is limited in its capacity under these conditions (Adams et al., 2012; Gittelsohn et al., 2012; Ortega et al., 2015; Ross et al., 2018; Karpyn et al., 2018). While CSCs offer an opportunity to meaningfully engage small business owners who are interested in providing their community with healthier options, ongoing technical support and significant investment of time and resources to implement conversion strategies (e.g., capital or physical improvements to attract patrons to the store, such as refrigeration, lighting, fixtures, paint, flooring, signage) are very much in demand/need in order to complete the process and to keep the program operational in the neighborhood. Future efforts to scale CSCs should carefully consider these and other business realities, and be prepared to find economic solutions that can appropriately be tailored to support small corner stores’ efforts to sustain and grow this type of food environment intervention in the community.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This project was supported in part by the United States Department of Agriculture's Supplemental Nutrition Assistance Program Education through a contract from the California Department of Public Health (#12-10170). The content of this paper is the responsibility of the authors and does not necessarily represent the official views of the United States Department of Agriculture, the Los Angeles County Department of Public Health, or other organizations mentioned in the text.

References

- Adams, J., Halligan, J., Burges Watson, D., Ryan, V., Penn, L., Adamson, A.J., White, M., 2012. The Change4Life convenience store programme to increase retail access to fresh fruit and vegetables: a mixed methods process evaluation. *PLoS One* 7 (6), e39431. <https://doi.org/10.1371/journal.pone.0039431>.
- Albert, S.L., Langellier, B.A., Sharif, M.Z., Chan-Golston, A.M., Prelip, M.L., Elena Garcia, R., Glik, D.C., Belin, T.R., Brookmeyer, R., Ortega, A.N., 2017. A corner store intervention to improve access to fruits and vegetables in two Latino communities. *Public Health Nutr.* 20 (12), 2249–2259. <https://doi.org/10.1017/S1368980017001008>.
- Black, C., Moon, G., Baird, J., 2014. Dietary inequalities: what is the evidence for the effect of the neighbourhood food environment? *Health Place* 27, 229–242. <https://doi.org/10.1016/j.healthplace.2013.09.015>.
- Bunnell, R., O'Neil, D., Soler, R., Payne, R., Giles, W.H., Collins, J., Bauer, U., Communities Putting Prevention to Work Program Group, 2012. Fifty communities putting prevention to work: accelerating chronic disease prevention through policy, systems and environmental change. *J. Community Health* 37 (5), 1081–1090. <https://doi.org/10.1007/s10900-012-9542-3>.
- Flegal, K.M., Kruszon-Moran, D., Carroll, M.D., Fryar, C.D., Ogden, C.L., 2016. Trends in obesity among adults in the United States, 2005 to 2014. *JAMA* 315 (21), 2284–2291. <https://doi.org/10.1001/jama.2016.6458>.
- Gittelsohn, J., Laska, M.N., Karpyn, A., Klingler, K., Ayala, G.X., 2014. Lessons learned from a small store programs to increase healthy food access. *Am. J. Health Behav.* 38 (2), 307–315. <https://doi.org/10.5993/AJHB.38.2.16>.
- Gittelsohn, J., Rowan, M., Gadhoke, P., 2012. Interventions in small food stores to change the food environment, improve diet, and reduce risk of chronic disease. *Prev. Chronic Dis.* 9, E59.
- Jewell, M.P., Lai, E.S., Thompson, J., Fox, M., Kuo, T., 2019. Higher pricing of fresh produce is more likely in SNAP-Ed eligible neighborhoods when adjacent non-program eligible neighborhoods are mixed income. *Prev. Med. Rep.* 14 (100817). <https://doi.org/10.1016/j.pmedr.2019.01.021>. eCollection 2019 Jun.
- Karpyn, A., DeWeese, R.S., Pelletier, J.E., Laska, M.N., Ohri-Vachaspati, P., Deahl-Greenlaw, A., Ughwanogho, O., Jilcott Pitts, S.B., 2018. Examining the feasibility of healthy minimum stocking standards for small food stores. *J. Acad. Nutr. Diet* 118 (9), 1655–1663. <https://doi.org/10.1016/j.jand.2017.12.006>.
- Kim, M., Budd, N., Batorsky, B., Krubiner, C., Manchikanti, S., Waldrop, G., Trude, A., Gittelsohn, J., 2017. Barriers to and facilitators of stocking healthy food options: viewpoints of Baltimore city small storeowners. *Ecol. Food Nutr.* 56 (1), 17–30. <https://doi.org/10.1080/03670244.2016.1246361>.
- Lyn, R., Aytur, S., Davis, T.A., Eyler, A.A., Evenson, K.R., Chriqui, J.F., Craddock, A.L., Goins, K.V., Litt, J., Brownson, R.C., 2013. Policy, systems, and environmental approaches for obesity prevention: a framework to local and state action. *J. Public Health Manag. Pract.* 19 (3 Suppl 1), S23–S33. <https://doi.org/10.1097/PHH.0b013e3182841709>.
- Ogden, C.L., Carroll, M.D., Lawman, H.G., Fryar, C.D., Kruszon-Moran, D., Kit, B.K., Flegal, K.M., 2016. Trends in obesity prevalence among children and adolescents in the United States, 1988–1994 through 2013–2014. *JAMA* 315 (21), 2292–2299. <https://doi.org/10.1001/jama.2016.6361>.
- Ortega, A.N., Albert, S.L., Sharif, M.Z., Langellier, B.A., Garcia, R.E., Glik, D.C., Brookmeyer, R., Chan-Golston, A.M., Friedlander, S., Prelip, M.L., 2015. Proyecto MercadoFRESCO: A multi-level, community-engaged corner store intervention in East Los Angeles and Boyle Heights. *J. Community Health* 40 (2), 347–356. <https://doi.org/10.1007/s10900-014-9941-8>.
- Robert Wood Johnson Foundation. (2019). Healthy food in convenience stores. County Health Rankings and Roadmaps. Available at: <http://www.countyhealthrankings.org/take-action-to-improve-health/what-works-for-health/policies/healthy-food-in-convenience-stores>. Accessed on May 2, 2019.
- Ross, A., Krishnan, N., Ruggiero, C., Kerrigan, D., Gittelsohn, J., 2018. A mixed methods assessment of the barriers and readiness for meeting the SNAP depth of stock requirements in Baltimore's small food stores. *Ecol. Food Nutr.* 57 (2), 94–108. <https://doi.org/10.1080/03670244.2017.1416362>.
- Swinburn, B., Kraak, V., Rutter, H., Vandevijvere, S., Lobstein, T., Sacks, G., Gomes, F., Marsh, T., Magnusson, R., 2015. Strengthening of accountability systems to create healthy food environments and reduce global obesity. *Lancet* 385 (9986), 2534–2545. [https://doi.org/10.1016/S0140-6736\(14\)61747-5](https://doi.org/10.1016/S0140-6736(14)61747-5).
- United States Department of Agriculture. (2016). Health Corner Stores: Making Corner Stores Healthier Places to Shop. Available at: <https://fns-prod.azureedge.net/sites/default/files/snap/Healthy-Corner-Stores-Guide.pdf>. Accessed on May 2, 2019.
- Wang, Y., Beydoun, M.A., 2007. The obesity epidemic in the United States – gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiol. Rev.* 29, 6–28.