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Strategies to Assess and Enhance the Community Food Environment[1]

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Introduction

The community food environment (CFE) refers to the areas where people shop for and consume food, including stores, markets, other food retail establishments, community and school food gardens and farms, institutional food service, and community-based food assistance programs (Caspi et al., 2012). CFEs can play a critical role in food and nutrition security (FNS) and diet-related health outcomes (Freedman et al., 2021). FNS refers to the ability of families and individuals to access nutritionally adequate, affordable, and culturally acceptable foods that are readily available in a socially acceptable way (Holben & Marshall, 2017; Simelane & Worth, 2020; USDA, 2022). To maintain health throughout the lifespan, the 2020–2025 *Dietary Guidelines for Americans* recommend a healthy dietary pattern, which includes nutrient-dense foods and beverages, and limits foods with added sugars, saturated fat, calories, and sodium. Goals to address FNS were presented at the 2022 White House Conference on Hunger, Nutrition, and Health, which demonstrated a focus on ending hunger (or providing food security), and improving nutrition outcomes to reduce diet-related diseases and disparities. More information about the conference can be found at https://health.gov/our-work/nutrition-physical-activity/white-house-conference-hunger-nutrition-and-health.

CFEs can play a critical role in helping community members access healthy foods more easily. Social, political, economic, and environmental factors influence FNS. Addressing the environmental factors to improve community FNS may help to support underserved neighborhoods and populations, create economic opportunities, and improve community health (Sadler et al., 2016). The purpose of this document is to enhance understanding of how CFEs are assessed and to present common strategies used by nonprofits, community organizations, Extension, and local and federal governments to improve CFEs. This document is intended to be used by local government officials, nonprofit and community organizations, policymakers, Extension agents, and the general public involved in food and community development.

Defining Community Food Environments

The community food environment (CFE), also sometimes called the "local food environment," refers to the built environment in a local area where people shop for and consume food (Morland, 2015). CFEs can be described by the characteristics below.

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- Places where food is typically obtained, including:
  - Food retail stores (grocery stores, convenience stores, supermarkets, super stores)
  - Alternative food sources (food trucks, fruit and vegetable stands, farmers markets, food gardens, and farms)
  - Restaurants
  - Institutional food service programs (schools, hospitals, work sites, other community organizations)
- Number, density, or ratio of places to obtain food in a given area
- Geographic locations and hours that foods are available in a given area
- Individual items sold or offered in stores or alternative sources (pantry items, fruits and vegetables, meat, dairy)
- Cost and quality of available foods
- Cultural identity that available foods support

Assessing Community Food Environments

Determining the geographic boundary of a CFE depends on the population it serves and its location in an urban, suburban, or rural area. Census tracts are county subdivisions with 1,200 to 8,000 residents. These are the standard units used to delineate the geographic boundary for a CFE (Karpyn et al., 2019). When doing an assessment, CFEs can also be delineated by region, county, city, town, zip code, neighborhood, or by centralizing a landmark, depending on the purpose of the assessment (Morland, 2015).

Large food retail establishments such as grocery stores or supermarkets offer products that can be considered both healthy and unhealthy. Nevertheless, researchers classify grocery stores, supermarkets, and fresh fruit and vegetable markets as *healthy* food retail. Convenience stores and fast-food restaurants are considered *unhealthy* food retail. This classification is used to measure the modified Retail Food Environment Index (mRFEI), which represents the relative density of healthy food retail establishments compared to the total number of food retail establishments in a given area (Mahendra et al., 2017). This measure was developed by the Centers for Disease Control and Prevention. More information about mRFEI can be found at https://www.cdc.gov/obesity/downloads/census-tract-level-state-maps-mrfei_TAG508.pdf.

The density of food retail establishments and their proximity to residents are measured using the United States Department of Agriculture (USDA) Food Access Research Atlas (https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/). This resource classifies census tracts by income level and food access status to determine target areas of need and intervention. Urban areas use the distance of 0.5 mile or 1 mile to the nearest food store as a proxy for food access, while rural areas define food access as having a food store within a 10-mile radius. Vehicle access is also considered part of these measures (Rhone et al., 2019). When more than 500 residents in a census tract are considered low-income and live beyond the defined accessible distance, the census tract is considered a low-income, low-access census tract (LILA) and is deemed a healthy food access priority area. For information about the types and characteristics of common food environment disparities, see the Ask IFAS publication, "Disparities in Community Food Environments."

Availability within the food store, home, restaurant, institutional, or worksite environment can be assessed using checklists, interviews and questionnaires, inventories, or market basket surveys (Lytle & Sokol, 2017). The Nutrition Environment Measures Survey (NEMS) and its iterations, including NEMS-Restaurant, NEMS-Store, NEMS-Corner Store, NEMS-Vending, NEMS-Grab and Go, and NEMS-Perceived, were developed by researchers at The University of Pennsylvania as an observational measure to assess community and consumer nutrition environments and the availability of healthy foods, including prices and quality. The nutrition environment refers to the availability of foods that are part of a healthy dietary pattern, whereas the community food environment includes all types of food. Tools, protocols, and trainings to use these measures can be found at https://nems-upenn.org/tools/.

Determining needs through consumer and community input can be done through community needs assessments using focus groups, community forums, listening sessions, surveys, or interviews (Sattanno et al., 2017). The USDA's Community Food Security Assessment Toolkit offers a useful overview of how to assess the community nutrition environment, while NEMS addresses specific food environments. To access the Community Food Security Assessment Toolkit, visit https://www.ers.usda.gov/publications/pub-details/?pubid=43179.

Supporting Community Food and Nutrition Security in CFEs

CFEs support community FNS by strategically addressing opportunities for improvement in healthy food availability, affordability, accessibility, and acceptability. Local governments, nonprofits, and community organizations address this by improving food availability through food retail and markets, increasing enrollment in food benefit programs and incentives for healthy food, and implementing policies such as menu labeling, marketing restrictions, and ingredient bans and taxes (Cohen, 2022). Grassroots and community-based movements and interventions may inform meaningful policies that address community need, reinforcing the importance of community involvement in healthy food access projects (Dubowitz et al., 2015).

To address healthy food access and improvements to the food environment in low-income, low-access areas, the USDA, the US Department of Health and Human Services, and the US Department of the Treasury established the Healthy Food Financing Initiative (HFFI) in 2011. The HFFI was officially integrated into the 2014 Farm Bill—the most comprehensive federal food and nutrition legislation in the US—and reauthorized in 2018 (Moran et al., 2020). The HFFI is a funding mechanism designed to develop and support new or existing healthy food retail and create jobs in underserved, low-income, low-access areas. The funds are provisioned through community development financial institutions, or CDFIs, which distribute small and large grants, loans, and technical assistance programs intended to incentivize and support food retail establishments to locate or expand in healthy food access priority areas (Morland et al., 2022). Funds can be used to support planning and development, pay for brick-and-mortar infrastructure and equipment, and provide assistance with trainings, marketing, and merchandising for a variety of healthy food access projects and innovations. For more information about the HFFI and ways to apply for funding, visit https://www.rd.usda.gov/about-rd/initiatives/healthy-food-financing-initiative.

Availability

Availability refers to healthy foods that are physically present in markets, grocery stores, restaurants, community gardens, nearby farms, or farm stands, and are in close proximity to where residents live or work (Story et al., 2008). Healthy food must first be available in the community food environment to assess its affordability, accessibility, and utilization.

Availability of healthy food is dependent on its production and distribution through community market system channels. Agricultural production is not supported through HFFI funding, but the USDA offers grants for urban agriculture and innovative production. To learn more about the types of urban agriculture and the foods it commonly produces, see the Ask IFAS publication, "What is urban agriculture?"

The HFFI supports the development of places where healthy foods are sold. The program is intended to "assist a variety of organizations, business models, and capital needs of ventures that process, distribute, aggregate, market, and sell healthy, fresh, and affordable foods to underserved communities and markets" (The Reinvestment Fund, 2022). In 2021, the HFFI supported over 90 small and medium-sized grocery retail projects, 80 alternative retail, local food systems, and supply chain infrastructure projects, and nearly 20 e-commerce and grocery delivery projects (The Reinvestment Fund, 2022). Projects ranged in scope and included reopening a closed grocery store with support from the local Department of Community and Economic Development, expanding wholesale aggregation operations, and developing cooperative mixed-used markets and kitchen incubators. Projects were developed to support healthy food access for refugees and immigrants, to reach isolated residents in rural areas through online aggregators and distributors, and to support Black farmers building new distribution channels to reach underserved residents. In 2020 and 2021, approximately 65% of projects were owned or led by community residents, women, people of color, and/or Indigenous people (The Reinvestment Fund, 2020; The Reinvestment Fund, 2021).

NEMS-Perceived (NEMS-P) is the only sub-survey of NEMS that is a respondent-based measure. NEMS-P evaluates community members' attitudes and awareness about the food environment to compare against the observational measures captured in NEMS-Store or NEMS-Corner Store, for example (Green & Glanz, 2015). It asks participants to reflect on their home food environment, food shopping behaviors, habits related to dining out, and personal reflections about food. High NEMS-P scores have been positively associated with residents' healthy dietary habits, although the evidence still remains somewhat weak (Yamaguchi et al., 2022).

To address increases in processed food consumption, cities around the world have implemented marketing and advertising restrictions of foods that exceed certain thresholds of calories, fats, sugar, or salt, and further restricted marketing of unhealthy foods to children (Taillie et al., 2019). Through

policies such as menu labeling, marketing restrictions, ingredient bans (e.g., *trans* fats or excess sodium), and sugar taxes, there may be a decrease in the availability of unhealthy foods in CFEs. However, the policies' effects on eating behavior are not well understood (Cohen, 2022).

Affordability

The price of healthy foods plays a significant role in its accessibility (Simelane & Worth, 2020). In areas where limited financial resources exist to purchase more expensive and perishable fresh foods, store owners may see little benefit in stocking them, especially when the store owners are responsible for any loss of profit due to the foods' perishability (Morland et al., 2022). However, strategies that address consumer resources to purchase healthy foods have been shown to incentivize store owners to stock those foods. For example, changes to the Women, Infants and Children (WIC) program food package, which added $6–$10 exclusively for fruits and vegetables (FV), improved FV availability in neighborhoods where WIC recipients lived (Koleilat et al., 2017).

Food assistance programs such as the Supplemental Nutrition Assistance Program (SNAP), paired with FV incentive programs such as the Gus Schumacher Nutrition Incentive Program (GusNIP), help to address FV affordability barriers by supplying financial resources to low-income households and individuals through nutrition incentive programs, produce prescription programs, and training, technical assistance, evaluation, and information centers cooperative agreements. For more information about GusNIP, visit https://www.nifa.usda.gov/grants/programs/hunger-food-security-programs/gus-schumacher-nutrition-incentive-program. SNAP-associated FV incentive programs across the US have shown potential in improving FV purchasing and consumption among SNAP recipients (Engel & Ruder, 2020). In Florida, Fresh Access Bucks (FAB) doubles up to $10 in SNAP benefits per week to purchase healthy foods at farmers markets, produce stands, through community supported agriculture programs, or community grocery outlets. For more information about FAB, visit https://www.feedingflorida.org/food-access/fresh-access-bucks.

Produce prescription programs, a component of GusNIP—also called fruit and vegetable prescription programs (FVRx)—are delivered through healthcare providers to patients with low income who are at risk for nutrition-related chronic disease. One FVRx program that used a combination of nutrition education and financial incentives, similar to WIC's model, found both significant decreases in food insecurity and improved health outcomes among program participants (Cook et al., 2021). In another program aimed at maternal and pediatric populations with type 2 diabetes, healthcare providers wrote individualized FV prescriptions for patients to redeem at participating healthy food retail outlets and found that patient health outcomes improved (Wholesome Wave, 2020). These strategies have not necessarily shown reductions in *unhealthy* food consumption, but they have demonstrated improvements in food security, healthy food consumption, and perceived health (Cohen, 2022).

Accessibility

Healthy food access depends on sufficient availability and affordability and further refers to residents' ability to acquire healthy food (USDA, 2021). Meaningful support systems that enable residents to purchase healthy food strengthen food access in CFEs. For example, residents need reliable personal or public transportation to be able to easily travel to healthy food retail establishments (Caspi et al., 2012). The healthy foods in retail establishments then need to be affordable to residents to the extent that residents do not need to sacrifice other basic needs to purchase healthy foods.

Alternative food sources may also support healthy food access, especially when they are developed with or by the community. For example, community or market gardens with active and consistent food production may exist within walking distance and can offer supplemental healthy foods for participating residents. (For more information on this topic, refer to the Ask IFAS publication, "What is urban agriculture?") Additionally, farmers markets that occur when most residents are at home and not at work provide convenient opportunities for participating residents to use their FAB, WIC, or SNAP resources.

Acceptability

Finally, CFEs that support FNS provide food in ways that are culturally and socially acceptable to community members beyond providing specific types of food. Acceptability of CFEs refers to "people's attitudes about attributes of their local food environment, and whether the given supply of products meets their personal standards" (Yamaguchi et al., 2022). Hammelman and Hayes-Conroy (2015) suggest that cultural acceptability may be achieved when CFEs *speak* to the rights and needs of the community, *sustain* food production to reflect ecological community values, *address* non-nutrient-related food values, *acknowledge* a diversity of knowledge, and *promote* community-based participation across the food system. The production and consumption of

foods can play a role in diverse food traditions and support community and family cohesion. For example, community gardens as part of CFEs serve as places for cultural expression that can promote a sense of belonging. To learn more, consult Ask IFAS publication FCS3378, "Social and Community Benefits and Limitations of Urban Agriculture."

Conclusion

The CFE plays a functional role in supporting FNS across diverse communities. Addressing food availability, affordability, accessibility, and acceptability may aid in improving healthy food consumption among food- and nutrition-insecure communities. While associations have been made between the food environment and health outcomes, the strength of these associations or ability to make causal inferences in research is currently limited (Woodruff et al., 2018). Implementing policies and programs that promote healthy foods in the community requires comprehensive input from multiple stakeholders and persistent dedication to improving the community food environment (Engler-Stringer et al., 2019). Ensuring that the food environment is full of healthy foods that are accessible to all residents is a critical undertaking in making food environments equitable and improving community health.

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