

Methods, Tools, and Metrics for Evaluating Market Food Environments in Low- and Middle-Income Countries



About USAID Advancing Nutrition

USAID Advancing Nutrition is the Agency's flagship multi-sectoral nutrition project, led by JSI Research & Training Institute, Inc. (JSI), and a diverse group of experienced partners. Launched in September 2018, USAID Advancing Nutrition implements nutrition interventions across sectors and disciplines for USAID and its partners. The project's multi-sectoral approach draws together global nutrition experience to design, implement, and evaluate programs that address the root causes of malnutrition. Committed to using a systems approach, USAID Advancing Nutrition strives to sustain positive outcomes by building local capacity, supporting behavior change, and strengthening the enabling environment to save lives, improve health, build resilience, increase economic productivity, and advance development. This project contributes to the goals of the U.S. Government's Feed the Future initiative by striving to sustainably reduce hunger and improve nutrition and resilience.

Disclaimer

This report was produced for the U.S. Agency for International Development. It was prepared under the terms of contract 7200AA18C00070 awarded to JSI Research & Training Institute, Inc. (JSI). The contents are the responsibility of JSI, and do not necessarily reflect the views of USAID or the U.S. Government.

Recommended Citation

USAID Advancing Nutrition. 2021. *Methods, Tools, and Metrics for Evaluating Market Food Environments in Low- and Middle-Income Countries*. Arlington, VA: USAID Advancing Nutrition.

Cover photo: USAID SPRING Project/JSI

USAID Advancing Nutrition

JSI Research & Training Institute, Inc.
2733 Crystal Drive
4th Floor
Arlington, VA 22202

Phone: 703-528-7474

Email: info@advancingnutrition.org

Web: advancingnutrition.org

Contents

- Acknowledgments iv
- Glossary v
- Executive Summary vi
- Background..... 1
 - Food Environment Types..... 2
 - Food Environment Domains and Dimensions 2
- Approach 4
 - Landscape Assessment 5
 - Ranking Exercise with Internal Panel 5
 - Survey with External Experts..... 5
- Findings..... 7
 - Results from Activities to Develop Evidence-based Priority List..... 7
- Evidence-based Priority List..... 10
 - Methods, Tools, and Metrics Most Suitable for Evaluating Market Food Environments in LMICs..... 10
- Discussion and Recommendations 12
- Conclusion..... 13
- References..... 14

Acknowledgments

USAID Advancing Nutrition produced this report in collaboration with Dr. Selena Ahmed, Associate Professor of Sustainable Food Systems, Food Security, Biodiversity and Climate Change at Montana State University. As a consultant for USAID Advancing Nutrition, Dr. Ahmed drafted the report with inputs provided by the USAID Advancing Nutrition team. The following individuals provided valuable feedback and suggestions on draft versions of the report: Ingrid Weiss, Rebecca Egan, Qwamel Hanks, Sarah Pedersen, and Johanna Andrews-Trevino of the U.S. Agency for International Development (USAID).

Glossary

Accessibility: physical and temporal access by individuals to specific foods or food vendors in markets

Affordability: interaction between prices and individual purchasing power

Availability: presence of a specific food or food groups in a given place

Convenience: time cost of obtaining, preparing, and consuming a specific food item or group of food items or as associated with the proximity of an individual to specific food outlets

Cultivated food environment: fields, orchards, closed pastures, gardens, closed pastures, gardens, and aquaculture from which consumers directly procure food

Desirability: factors that influence preferences for foods such as sensory attributes including visual appeal, aroma, taste, and texture as well as cultural factors

Formal market food environment: regulated through formal governance structures where sellers can publicly advertise their locations and prices, including hypermarkets, supermarkets, and retailers as well as farmer's markets and restaurants

Informal market food environment: often not regulated through formal governance structures and include wet markets, street vendors, kiosks, and mobile vendors

Marketing and regulation: promotion, advertising, branding, and labeling associated with the marketing and sale of food

Methods: general procedures, techniques, or processes for attaining data

Tools: specific instruments for data collection that follow a specific methodology and can result in findings for tabulating a metric

Metrics: parameters or indicators used for measurement, comparison or tracking performance

Price: monetary value of food products

Sustainability: environmental, socio-economic, and health aspects associated with food items

Vendor and product characteristics: store hours, store type, and other features that may serve to influence consumer food choices such as cleanliness, signage, and overall reputation. Product characteristics include attributes that consumers value, such as food safety, quality, packaging, and processing

Wild food environment: forests and jungles, disturbed habitat, open pastures, and aquatic areas

Executive Summary

Consumers' ability to choose healthy, diverse, and sustainable diets is vital for improving nutrition and health outcomes (HLPE 2017). In low- and middle-income countries (LMICs), in both urban and rural contexts, household diets increasingly comprise purchased foods. In East and Southern Africa, poor households purchase 48 percent of their food, while middle-class households purchase approximately 60–80 percent (Tschirley et al. 2015). Given that poor diets are the leading contributor to the global burden of disease (GBD 2019), understanding the range of factors that influence food access and food choices is critical to support improving nutritional outcomes globally. The food environment, where consumers interface with the food system, is a critical place to understand the social and ecological factors that influence food access and food choices and, ultimately, impact dietary quality, food security, and nutrition (Herforth and Ahmed 2015; HLPE 2017; Turner et al. 2018).

Understanding food environments is especially important as food environments shift across the world with expanded globalization (Downs et al. 2020). Routinely monitoring and evaluating food environments would encourage well-informed strategic investments in evidence-based policies and programs to support healthy and sustainable diets to address the global burden of disease.

While over 500 food environment assessment methods, tools and metrics have been developed in the past two decades (Herforth and Ahmed 2015), most have been developed or validated in high-income country contexts, where food environments vary from those found in LMICs (Downs et al. 2020). For example, consumers primarily access formal market food environments in high-income countries, including supermarkets, restaurants, and fast foods chains, using vehicles and paved roads. Alternatively, many households in LMICs procure foods from informal market food environments, such as open-air markets, with limited schedules and highly seasonal diversity of foods available (Downs et al. 2020). Transportation factors, such as poor road conditions, especially during rainy seasons, and limited use of motorized vehicles further restrict access to food market environments for rural communities in LMICs. Thus, there is a need to identify existing assessments suitable to monitor and evaluate food environments in diverse LMIC contexts; modify existing assessments to better fit local contexts as needed; and develop new assessments where gaps exist.

With the U.S. Agency for International Development (USAID) Bureau for Resilience and Food Security, USAID Advancing Nutrition conducted a series of activities to identify assessments (methods, tools, and metrics) suitable for food environments in LMICs. This report presents findings from three activities—a landscape assessment, a ranking exercise, and a survey—that led to a priority list of methods, tools, and metrics for evaluating informal and formal market food environments in LMICs.

The specific objectives of this report are the following:

1. Present methods, tools, and metrics for monitoring and evaluating market food environments that were identified through a landscape assessment.
2. Present methods, tools, and metrics that are suitable for monitoring and evaluating informal and formal market food environments in diverse contexts in LMICs, which were identified through a ranking exercise by an internal USAID Advancing Nutrition panel.
3. Identify a priority list of methods, tools, and metrics most suitable for monitoring and evaluating informal and formal market food environments in LMICs, based on survey input with an external group of experts.

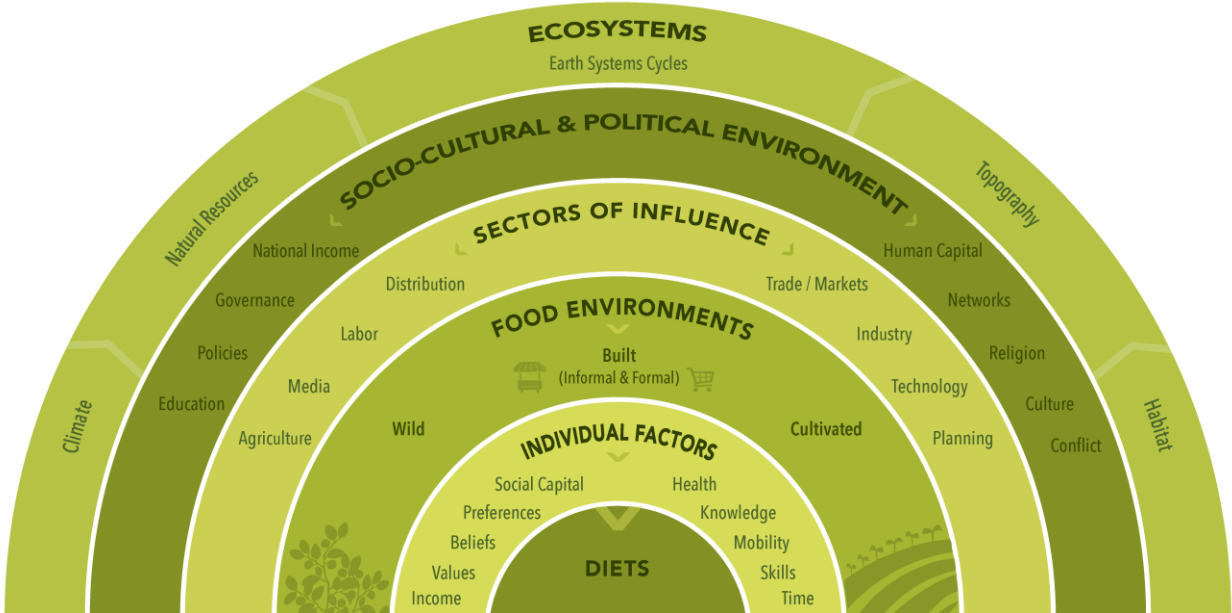
The methods, tools, and metrics identified through the landscape assessment, ranking exercise, and survey were organized on the basis of four dimensions of the external domain (availability, price, vendor and product properties, and marketing and regulation) and four dimensions of the personal domain (accessibility, affordability, convenience, and desirability) of food environments (Turner et al. 2018).

Through the landscape assessment, USAID Advancing Nutrition identified a total of 113 methods, tools, and metrics that assess all dimensions of the food environment. These methods, tools, and metrics were not unique; that is, one may be used to assess multiple dimensions. The ranking exercise resulted in 47 methods, tools, and metrics identified as suitable for use in LMIC contexts by an internal panel. Feedback from external experts, using a survey instrument, identified a priority list of seven unique methods, tools, and metrics for evaluating informal and formal market food environments in LMICs. The external experts ranked availability, accessibility, price, and affordability as the most important dimensions of the food environment to evaluate in LMIC contexts. Most validated food environment tools focus on the dimensions of availability and price, while only a limited number of tools and metrics to measure accessibility and affordability have been validated in a LMIC context. The totality of evidence examined through the landscape assessment, ranking exercise, and an expert survey suggests that a mixed-methods approach—combining market-level vendor audits and inventories, market basket analysis, consumer surveys, focus groups, and mapping—be used for monitoring and evaluating market food environments in LMICs.

Background

The food environment is the nexus between supply and demand of nutritious and safe foods, and as such, the critical place within the food system to focus programming for enabling healthy and safe diets (Downs et al. 2020). While the food system includes all the elements and activities involved in the production, processing, distribution, preparation, consumption, and waste of food, the food environment refers to the space where consumers directly procure food (see figure 1) (Herforth and Ahmed 2015; HLPE 2017). Within the food environment, as more households are purchasing foods to meet dietary needs, markets are especially important for influencing diets and nutrition. For example, low-income households in East and Southern Africa purchase approximately 48 percent of their food and middle-class households purchase approximately 60 percent to 80 percent of their food (Tschirley et al. 2015). Thus, understanding better how market food environments influence consumer food access and choices, as well as promote healthy and safe diets, can improve nutritional outcomes in low- and middle-income countries (LMICs).

Figure 1. Place of the food environment within the food system.



Source: Downs et al. 2020

Key Term: Food Environment

The food environment has been variously defined, including as the consumer interface with the food system for food acquisition that influences diets, and is influenced by the socio cultural and political environment and ecosystems within which it is embedded (Downs et al. 2020; Turner et al. 2018; HLPE 2017; Herforth and Ahmed 2015). Figure 1 depicts where the food environment exists within the broader food system. Many of the methods, tools, and metrics used to assess the food environment have been developed and validated in high income settings, which differ substantially from many contexts in LMICs.

Food Environment Types

There are multiple types of food environments, including natural and built food environments, which are each comprised of subtypes (Downs et al. 2020). Natural food environments include wild and cultivated food environments while built food environments include informal and formal market food environments. This report focuses on market food environments.

Key Terms: Food Environment Types*

Built Food Environments

- **Informal market food environments** are those that are often not regulated through formal governance structures and include wet markets, street vendors, kiosks, and mobile vendors.
- **Formal market food environments** are those that are regulated through formal governance structures, where sellers can publicly advertise their locations and prices and includes hypermarkets, supermarkets, and retailers, as well as farmer s markets and restaurants.

Natural Food Environments

- **Cultivated food environments** include fields, orchards, closed pastures, gardens, closed pastures, gardens, and aquaculture from which consumers directly procure food.
- **Wild food environments** include forests and jungles, disturbed habitat, open pastures, and aquatic areas.

**Downs et al. 2020*

Food Environment Domains and Dimensions

Various food environment conceptual frameworks propose a variety of components for guiding monitoring and evaluating of activities. USAID Advancing Nutrition adopted the framework presented by Turner et al. (2018), where food environment components are stratified into external and personal (or internal) domains, with each domain comprised of four dimensions.

Key Terms: Food Environment Domains*

The food environment can be categorized on the basis of the external and personal domains which are each them further classified based on multiple dimensions.

- **External Domain** encompasses the total array of factors beyond the consumer that influence foods and beverages in the environment (Turner et al. 2018).
- **Personal Domain** includes the individual level factors that influence food choice such as personal preferences or desirability

**Turner et al. 2018*

Key Terms: Food Environment Dimensions*

Four Dimensions of the External Domain

- **Availability** is the presence of a specific food or food groups in a given place.
- **Price** is the monetary value of food products.
- **Vendor and product properties** are aspects, such as store hours, store type, and other features that may influence consumer food choices, including cleanliness, signage, and overall reputation. Product characteristics include attributes that consumers value, such as food safety, quality, packaging, and processing.
- **Marketing and regulation** guide the promotion, advertising, branding, and labeling associated with the marketing and sale of food.

Four Dimensions of the Personal Domain

- **Accessibility** is the physical and temporal access by individuals to specific foods or food vendors in markets and may relate to car ownership, presence of public transportation, presence of food retail locations within walking distance, and time needed to access the nearest food retail location (Inglis, Ball, and Crawford 2008).
- **Affordability** is the interaction between prices and individual purchasing power.
- **Convenience** is the time cost of obtaining, preparing, and consuming a specific food item or group of food items (de Menezes et al. 2018) or it may be associated with the proximity of an individual to specific food outlets (stores, markets, restaurants) (Herforth and Ahmed 2015).
- **Desirability** are the factors that influence preferences for foods, such as sensory attributes, including visual appeal, aroma, taste, and texture as well as cultural factors (Herforth and Ahmed 2015).

*Turner et al. 2018

Approach

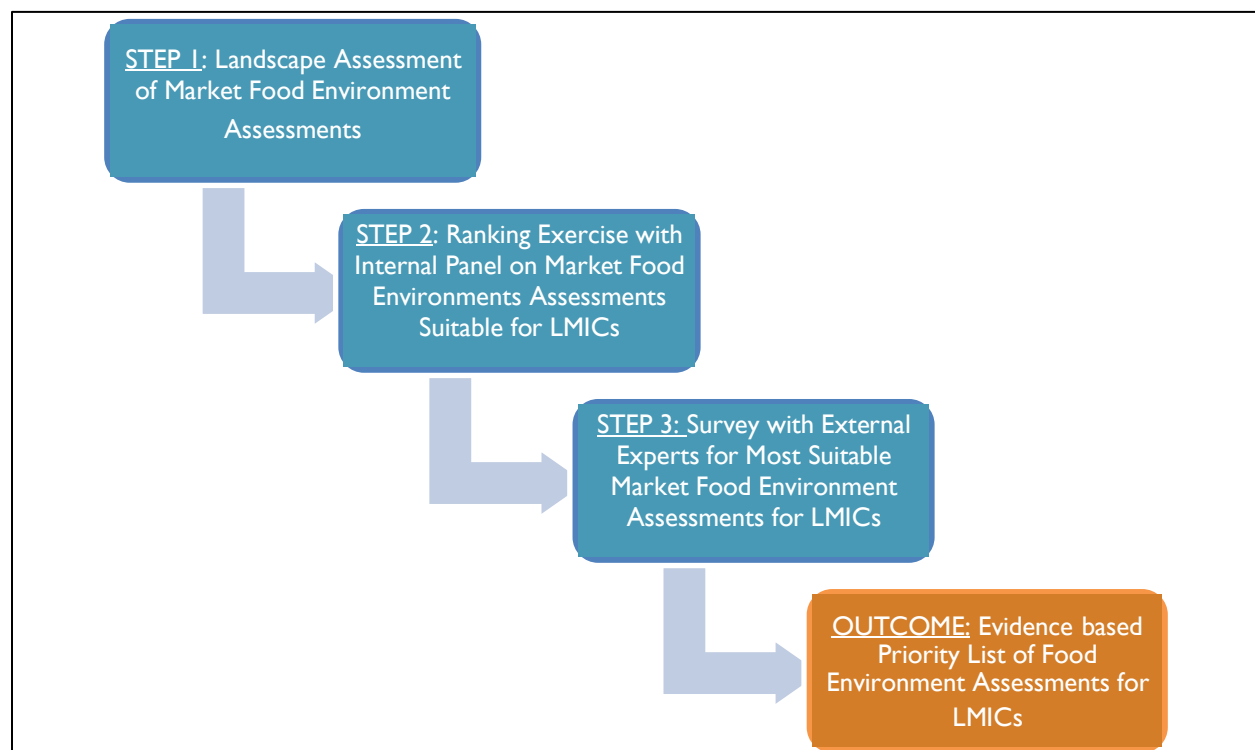
This section describes the approach and process USAID Advancing Nutrition used to identify methods, tools, and metrics for monitoring and evaluating market food environments in LMICs. Three activities—a landscape assessment, ranking exercise, and survey—were carried out to meet the overall goal of developing a priority list of market food environment methods, tools, and metrics suitable for LMICs (see figure 2).

Key Terms: Research Methods, Tools, and Metrics*

- **Methods** are general procedures for collecting and analyzing quantitative and qualitative data. Examples of food environment methods include surveys, observational analysis, mapping, and marketplace audits.
- **Tools** are research instruments specifically developed to collect and analyze quantitative and qualitative data, often based on using a specific method (e.g., household or individual survey or focus group). Examples of food environment tools include the Price Comparison Tool and Produce Desirability Tool.
- **Metrics** are parameters, indexes, and indicators used to measure, compare, or track performance or outcomes. Examples of food environment metrics include Cost of Diet and Market Diversity Index.

*It is important to note that this classification system is not always distinct; specific measures do not always fall neatly between tools and metrics.

Figure 2. Process to develop priority market food environment assessments suitable for LMICs



Landscape Assessment

Goal: Identify Market Food Environment Methods, Tools, and Metrics

USAID Advancing Nutrition first carried out a scoping review to search for papers using the term "food environment." The search also included a review of all references listed in four recent reviews of compilations of food environment assessments:

- Turner et al. 2019
- Downs et al. 2020
- Pinard 2015
- Herforth and Ahmed 2015.

The inclusion criteria were that the paper: (1) focused on food environments, (2) included one or more measurements, (3) was available in English, (4) was published after 1998. The databases searched included PubMed, Agricola, the USAID Development Experience Clearinghouse (for papers on market information systems), Google Scholar, and Web of Science. Findings from the landscape assessment were categorized as methods, metrics, or tools based on eight dimensions (availability, price, vendor and product properties, marketing and regulation, accessibility, affordability, convenience, and desirability) of the external and personal domains of the food environment.

Ranking Exercise with Internal Panel

Goal: Identify Market Food Environment Methods, Tools, and Metrics Suitable for LMICs

USAID Advancing Nutrition then conducted a ranking exercise with an internal panel of three food systems team members and an external consultant with experience in food systems in LMIC contexts. Reviewers selected methods, tools, and metrics identified from the scoping review suitable for LMIC contexts. Reviewers used a scale from 0 to 2 to rate the suitability of each method, tool, and metric to monitor and/or evaluate informal and formal market environments in LMIC contexts. For this rating, suitability included whether the assessment was applicable for use in an informal market setting, a formal market setting, or both. For example, a method using direct observation of promotional and educational material near food products was not ranked high enough to be applicable in LMICs. The following scoring system was used to score each measure: (Score 0) indicates not appropriate for LMIC context, would require major modification; (Score 1) indicates the measure could be appropriate for LMIC context with minor modification; (Score 2) indicates the measure could be appropriate for LMIC context as is. All methods, tools, and metrics that received a score of 1.5 or above for use in both informal and formal market contexts were determined to be suitable for use in LMIC contexts, either in the current form or with some modification.

Survey with External Experts

Goal: Prioritize Market Food Environment Methods, Tools, and Metrics Most Suitable for Diverse LMIC Contexts

In this step, USAID Advancing Nutrition developed and implemented a survey to gather feedback on the methods, tools, and metrics identified as suitable through the internal ranking exercise. The survey goal was to elicit experts' perspectives in order to identify a priority list of methods, tools, and metrics for monitoring and evaluating food environments in diverse market contexts in LMICs. The survey consisted of 20 questions and elicited information on the food environment dimensions that the experts believed were most important for understanding rural contexts in LMICs and influencing diets and nutrition. The experts also shared experiences with measuring different types of food environments—wild, cultivated, informal market, and formal market—and using various methods, tools, and metrics. The survey asked experts to rate methods, tools, and metrics for application in rural LMICs using a priority list on a nine-

point Likert scale, based on four criteria: (1) suitability for implementation, (2) level of training required for implementation, (3) resource intensity required for implementation, and (4) how translatable and operational the resulting data is for informing evidence-based programs. USAID Advancing Nutrition developed three versions of the survey to explore various dimensions of the food environment. Version 1 of the survey focused on tools and metrics for evaluating the food environment dimension of availability. Version 2 focused on tools and metrics for evaluating the dimensions of marketing, vendor and product characteristics, convenience, and desirability. Version 3 focused on tools and metrics for evaluating the dimensions of prices and/or affordability.

USAID Advancing Nutrition administered three versions of the survey to 51 external experts, chosen based on a record of related publications and/or experts known for working on one or more assessments of the food environment in LMICs. A total of 27 experts completed the survey, a response rate of more than 50 percent. The experts identified themselves as research scientists (48 percent), professors (33 percent), other (11 percent), and field practitioners (8 percent).

The informal market food environment was the predominant type of food environment participating experts had experience evaluating. USAID Advancing Nutrition analyzed and synthesized the results to prioritize food environment methods, tools, and metrics most suitable for evaluating and monitoring informal and formal market food environments in LMICs.

Findings

Results from Activities to Develop Evidence-based Priority List

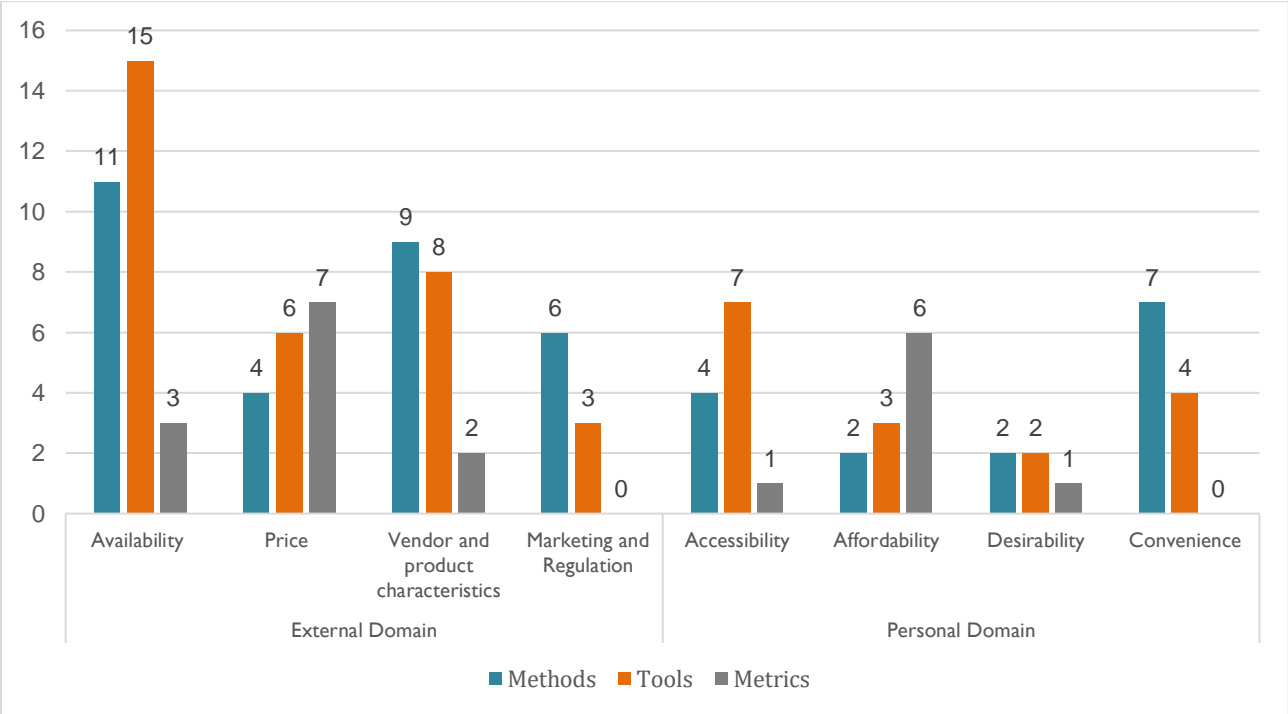
USAID Advancing Nutrition used the key findings from the three processes—landscape assessment, ranking exercise, and survey—to identify methods, tools, and metrics for monitoring and evaluating informal and formal market food environments in LMICs. This section presents the results. See the [Supplementary Table](#) for a brief description and reference for each of the 47 methods, tools and metrics identified as suitable in LMICs.

Landscape Assessment

Key findings

- A total of 113 methods, tools, and metrics were identified to evaluate and monitor market food environments (see figure 3).
- A notably greater number of assessments were found for the external domain (74) compared to the personal domain (39).
- The largest number of assessments were found for availability (29 assessments) followed by vendor and product characteristics (19 assessments).
- The assessments identified for each food environment dimension have varying levels of data, resource, and skill requirements.
- The practical implication of the landscape assessment findings is that several methods and tools exist for measuring each dimension of the food environment, with some dimensions having few or no validated metrics, particularly for the personal domain.

Figure 3. Methods, tools, and metrics for monitoring and evaluating market food environments, categorized by eight food environment dimensions

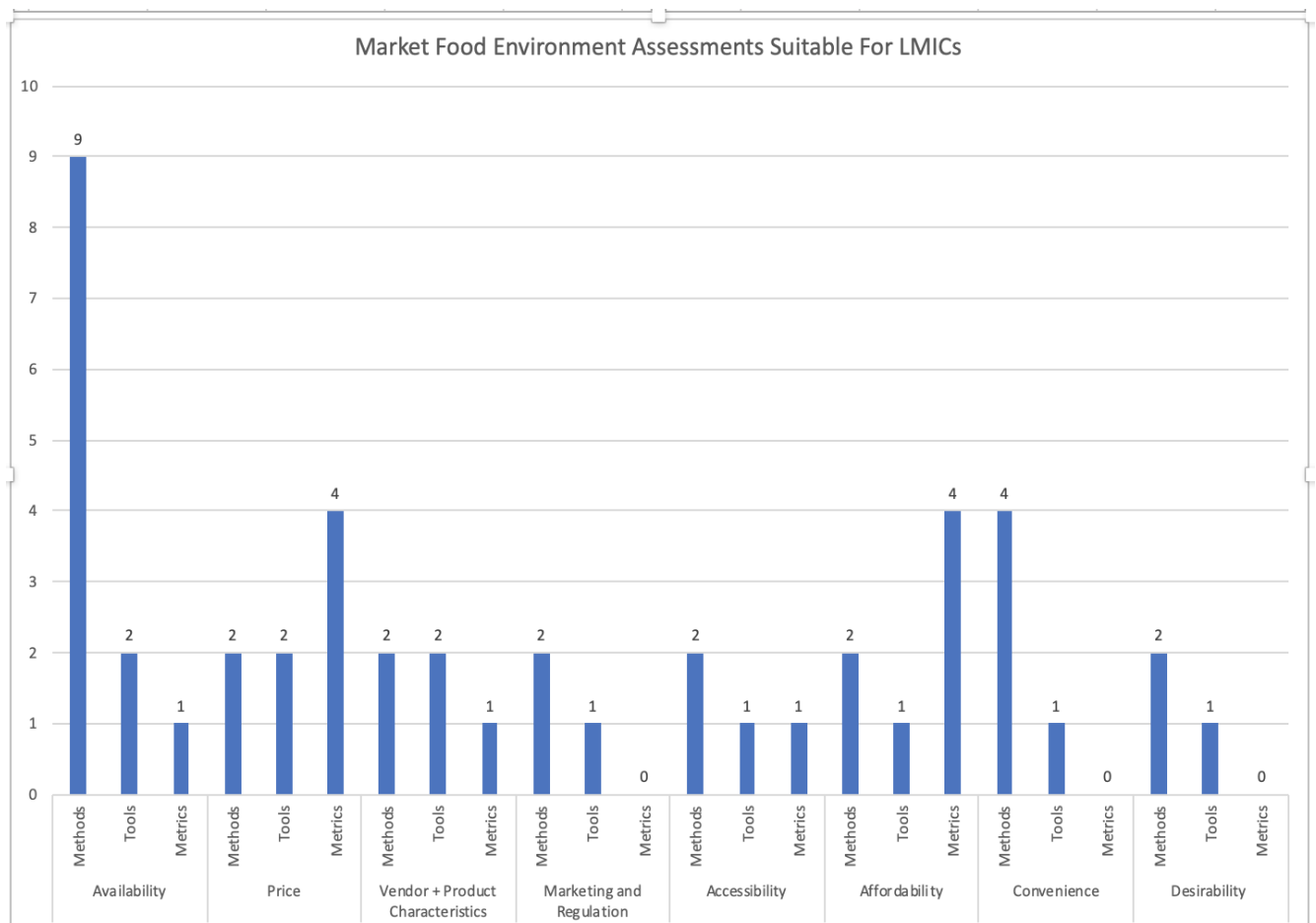


Internal Rating Activity on Suitable Food Environment Assessments for LMICs

Key findings

- A total of 47 methods, metrics, and tools were identified as suitable for monitoring and evaluating informal and formal market food environments in LMICs (see figure 4 and supplementary table 1).
- Specifically, 25 methods, 11 tools, and 11 metrics (see figure 4 and supplementary table 1) were identified as suitable for evaluating one or more dimensions of the food environment.
- On the basis of type of food environment domain, a larger number of assessments were found for the external domain (28) compared to the personal domain (19) for suitability in LMICs.
- On the basis of type of food environment dimension, the greatest number of assessments were found for availability (12), followed by price (8), and affordability (7), as suitable in LMICs.

Figure 4. Methods, tools, and metrics ranked as suitable for evaluating market food environments in LMICs



Survey with External Experts

Key findings

- Experts participating in the survey identified the following five characteristics as being most important in identifying suitable food environment assessments for implementation in LMICs:
 1. cultural relevance
 2. ability to capture multiple dimensions of the food environment
 3. context specificity
 4. appropriateness for diverse types of food environments (wild, cultivated, informal markets, and formal markets)
 5. ease of interpretation.
- Experts reported using a mixed methods approach, in which they implement multiple assessments to evaluate various dimensions of food environments.
- The experts' most highly rated dimensions for evaluating food environments in LMICs were availability, price, affordability, and access (in order of priority).
- Experts emphasized the need for guidance protocols, best practices, and training on suitable assessments for use in LMICs.
- Experts ranked market basket analysis and vendor audit/interview as the most suitable methods to assess several food environment dimensions, including availability, price, affordability, vendor and product characteristics, and marketing and regulation. There was less agreement among the experts with regards to suitable assessments for evaluating personal food environment dimensions compared to external food environment dimensions. Mapping, consumer surveys, sensory surveys, and market basket analysis were ranked by the experts as being most suitable for evaluating personal food environment dimensions in diverse LMIC contexts.

Evidence-based Priority List

Methods, Tools, and Metrics Most Suitable for Evaluating Market Food Environments in LMICs

This section presents the priority list of methods, tools, and metrics identified by USAID Advancing Nutrition as most suitable for monitoring and evaluating market food environments in LMICs through the landscape assessment, structured internal ranking, external expert survey, and a final internal analysis of the expert feedback and synthesis of findings. Figure 5 shows the number of methods, tools, and metrics identified during each step of the process undertaken to develop the evidence-based priority list. The final step reflects the priority list of methods, tools, and metrics identified in order of prioritized food environment dimensions based on the survey with external participants (see table I.)

Figure 5. Methods, tools, and metrics identified for market food environment assessments

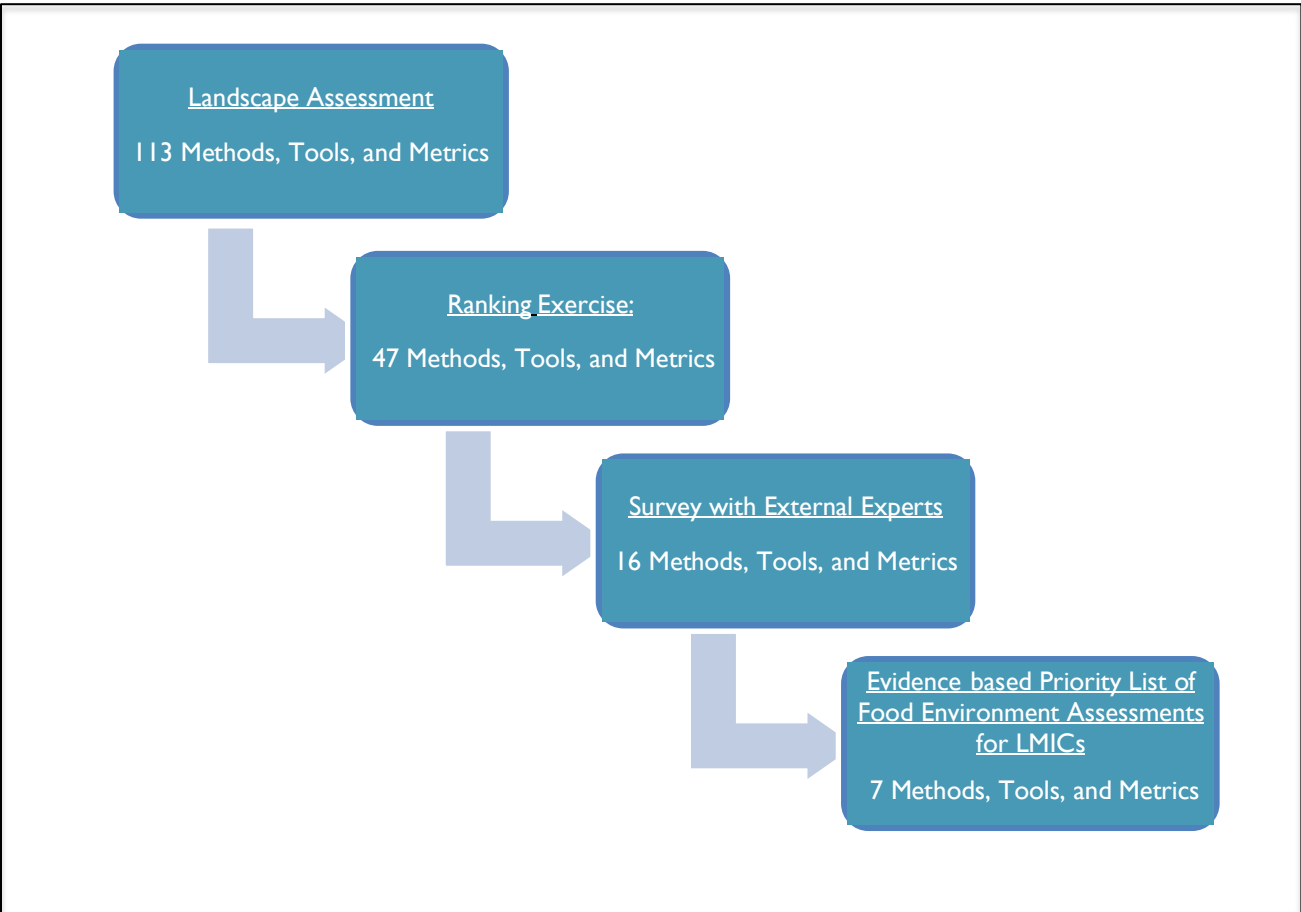


Table 1: Priority list of methods, tools, and metrics most suitable for monitoring and evaluating market food environments in diverse LMIC contexts*

| Food Environment Dimension | Priority Tool or Metric | Method |
|------------------------------------|--|---------------------------|
| Availability | (1) Seasonal Calendar of Availability | Focus Group |
| | (2) Healthy Eating Index of Food Supply | Vendor Audit/Inventory |
| | (3) Market Diversity Index | Vendor Audit/Inventory |
| Price | (4) Cost of Recommended Diet | Market Basket Analysis |
| Accessibility | | (5) Market Mapping |
| Affordability | Cost of Recommended Diet | Market Basket Analysis |
| Vendor and Product Characteristics | (6) Adaptation of Environmental Profile of a Community's Health (EPOCH) | Vendor Audit/Inventory |
| Marketing and Regulation | Adaptation of Environmental Profile of a Community's Health (EPOCH) | Vendor Audit/Inventory |
| Convenience | | Market Mapping |
| Desirability | (7) Produce Desirability Tool | Sensory Survey |

*Numbered methods, tools, and metrics noted by () represent the seven unique assessments identified for the priority list. See the [Supplementary Table](#) for descriptions and references for more information.

The priority list of methods, tools, and metrics most suitable for LMICs is presented in table 1 in order of the food environment dimensions that were most highly rated by experts. Availability was the most highly rated dimension (table 1, column 1). Experts rated price and accessibility as the next two dimensions most suitable for monitoring and evaluating food environments in LMICs.

USAID Advancing Nutrition recommends practitioners first use specific tools or metrics (table 1, column 2) within each food environment dimension where these are available, given their specificity compared to corresponding general methods (table 1, column 3). The seven priority methods, tools, and metrics are numbered in table 1; six are either a tool or metric (table 1, column 2) and one is a method, where a tool or metric was not identified (table 1, column 3).

From the external expert survey, USAID Advancing Nutrition identified one tool or metric for each dimension with the following exceptions: (1) three tools or metrics as being most suitable for the dimension of availability (because this was the highest rated food environment dimension) (2) no suitable tools and metrics were found for the dimensions of accessibility and convenience; therefore, the most suitable method identified (market mapping) is included; and (3) for vendor and product characteristics, as well as marketing and regulation, an adaptation of an existing tool was identified that requires modification for LMICs.

Discussion and Recommendations

Out of the 113 food environment methods, tools, and metrics identified through the landscape assessment for evaluating market food environments, the internal ranking identified 47 of these (approximately 42 percent) as suitable for both informal and formal markets in LMICs, either as is or with some modification. Overall, external dimensions of the food environment were found to have more numerous methods, tools, and metrics available relative to personal dimensions of the food environment. More specifically, the dimensions of food availability and food price were found to have the most robust sets of methods, tools, and metrics; while the dimensions of convenience, desirability, and marketing and regulation had fewer suitable methods, tools, or metrics.

The priority list of methods, tools, and metrics identified as most suitable for monitoring and evaluating market food environments in LMICs, on the basis of expert input, (see table I) reveals areas that require further development. The personal dimensions of accessibility, convenience, and desirability lack tools and metrics, necessitating development. Future work should focus on developing and compiling guidance protocols, best practices, and training materials for implementing various dimensions of monitoring and evaluating the food environment. The compiled materials should be free, user-friendly, accessible, and centrally available with clear guidance on how to interpret and synthesize findings. Future development of food environment assessments suitable for LMICs can draw from fields that have a history of rural field research, including anthropology, economics, and ethnobiology.

Future development of food environment monitoring and evaluation methods, tools, and metrics suitable for LMICs should examine linkages between the dimensions of the external and personal domains of the food environment, as well as linkages between food environments, food choices, dietary quality, and nutrition outcomes. For example, evaluating the availability of “healthy food” in the external domain of the food environment may not align with the personal domain of accessibility of “healthy food” because of consumers’ perceptions (Gustafson et al. 2013). This demonstrates the need to evaluate the external and corresponding personal domains of the food environment to better understand the multiple factors that drive consumer food choices in a given context. Further, to most comprehensively evaluate the impacts of food environments on nutrition, there is a need for methods, tools, and metrics that link food environment assessments with food choice, dietary quality, food security, and nutrition assessments.

Conclusion

Understanding the influence of market food environments on diets and nutrition will continue to advance as monitoring formal and informal markets becomes more widespread within data and information systems. Monitoring and evaluating food environments is especially critical given that poor quality diets are the leading contributor to the global burden of disease. Low-burden, user-friendly data collection tools and metrics are needed to help design and implement evidence-based programs and policies that support healthy diets. It is necessary to link better monitoring and evaluating of food environments to information on food choice, dietary quality, food security, and nutrition assessments. Incorporating food environment assessments as part of a food systems approach would allow for more comprehensive understanding of the effects of food environments on nutrition, while also providing additional evidence to inform strategic investments to support healthy and sustainable diets.

References

- de Menezes, Mariana Carvalho., Ana Victoria. Diez Roux, Bruna Vieira de Lima Costa, and Aline Chritine Souza Lopes. 2018. "Individual and Food Environmental Factors: Association with Diet." *Public Health Nutrition* 21(15): 2782–92. doi.org/10.1017/S1368980018001623
- Downs, S., Selena Ahmed, Jessica Fanzo, and Anna Herforth. 2020. "Food Environment Typology: Advancing an Expanded Definition, Framework, and Methodological Approach for Improved Characterization of Wild, Cultivated, and Built Food Environments toward Sustainable Diets." *Foods* 9, 532. [doi:10.3390/foods9040532](https://doi.org/10.3390/foods9040532)
- Global Burden of Disease 2017 Diet Collaborators. 2019. "Health Effects of Dietary Risks in 195 Countries, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017." *The Lancet* 393(10184): 1958–72. [doi.org/10.1016/S0140-6736\(19\)30041-8](https://doi.org/10.1016/S0140-6736(19)30041-8)
- Gustafson, Alison, Sarah Lewis, Kate Moore, Jay W. Christian, and Stephanie Jilcott. 2013. "Food Venue Choice, Consumer Food Environment, but Not Food Venue Availability within Daily Travel Patterns Are Associated with Dietary Intake among Adults, Lexington Kentucky 2011." *Nutrition Journal* 12(17).
- Herforth, Anna, and Selena Ahmed. 2015. "The food environment, its effects on dietary consumption, and potential for measurement within agriculture-nutrition interventions." *Food Security* 7(3): 505–520.
- High Level Panel of Experts (HLPE). 2014. Food losses and waste in the context of sustainable food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome: HLPE.
- High Level Panel of Experts (HLPE). 2017. Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome: HLPE.
- Inglis, Victoria, Kylie Ball, and David Crawford. 2008. "Socioeconomic variations in women's diets: what is the role of perceptions of the local food environment?" *Journal of Epidemiology & Community Health* 62, no. 3 (2008): 191–197.
- Pinard, Courtney. 2015. *Food Market Measures Toolkit: Assessment of Food Environment, Consumers, and Store Owners*. Gretchen Swanson Center for Nutrition. <https://static1.squarespace.com/static/58a4dda16a49633eac5e02a1/t/59766341e58c6239e1b3f45d/1500930882826/HCSM+Toolkit.pdf>
- Tschirley, David, Thomas Reardon, Michael Dolislager, and Jason Snyder. 2015. "The rise of a middle class in East and Southern Africa: Implications for food system transformation." *Journal of International Development* 27, 5: 628–646.
- Turner, Christopher, Anju Aggarwal, Helen Walls, Anna Herforth, Adam Drewnowski, et al. 2018. "Concepts and Critical Perspectives for Food Environment Research: A Global Framework with Implications for Action in Low- and Middle-Income Countries." *Global Food Security* 18: 93–101.



USAID ADVANCING NUTRITION

Implemented by:
JSI Research & Training Institute, Inc.
2733 Crystal Drive
4th Floor
Arlington, VA 22202

Phone: 703-528-7474
Email: info@advancingnutrition.org
Web: advancingnutrition.org

June 2021

USAID Advancing Nutrition is the Agency's flagship multi-sectoral nutrition project, addressing the root causes of malnutrition to save lives and enhance long-term health and development.

This document was produced for the U. S. Agency for International Development. It was prepared under the terms of contract 7200AA18C00070 awarded to JSI Research & Training Institute, Inc. The contents are the responsibility of JSI and do not necessarily reflect the views of USAID or the U.S. Government.