



# Healthier Food Retail:

Beginning the Assessment Process in Your State or Community

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# Introduction

**Assessment of the food retail environment is part of a comprehensive approach to undertaking healthier food retail initiatives. This document provides public health practitioners with an overview of how to develop an assessment of their state's or community's food retail environment through focusing, planning, and implementing the assessment and communicating the findings.**

Successful healthier food retail efforts depend upon reliable information on the food retail environment. Before implementing strategies to improve healthier food retail in your state or community, it is necessary to assess the food retail environment to understand the extent and nature of the problem, including disparities to accessing affordable nutritious foods. Assessments can be tailored to address specific questions and can include topics such as identifying the number of stores in a given location, the types of food items sold in stores, or the types of marketing approaches that stores employ. The information gained from assessments can be used to prioritize or plan healthier food retail strategies with partners or inform decision-makers where interventions may be warranted.

When collecting data, make sure you follow local and federal policies related to data collection including those related to privacy and research when applicable.



## Defining Healthier Food Retail

Increasing access to healthier foods and beverages through the establishment of or improvements to food retail venues is the goal of healthier food retail strategies. The *Dietary Guidelines for Americans, 2010* may be used to develop definitions for healthier foods. Generally, healthier foods will include fruits, vegetables, whole grains, fat-free and low-fat dairy products, and seafood, as well as foods with less sodium (salt), saturated fats, trans fats, cholesterol, added sugars, and refined grains. Healthier beverages include fat-free or low-fat milk and milk products, fortified soy beverages and other lactose-free products, 100% juice, and water.

# Importance of a Healthier Food Retail Environment

The United States Department of Agriculture (USDA) estimates that nearly 30 million Americans live in neighborhoods without easy access to affordable nutritious food,<sup>1</sup> and persons living in lower-income communities, communities of color, or rural communities are less likely to have healthier food available to them.<sup>2</sup> Making affordable, healthier foods more available to underserved residents is one of several strategies that may help individuals to make healthier choices about what to eat and may be associated with better health outcomes. For example, research has shown that residents with access to full service grocery stores tend to eat more fruits and vegetables,<sup>2-7</sup> and other studies have found an association between healthier food retail access and lower prevalence of overweight and obesity among adults.<sup>8-12</sup> However, these relationships have not been found in some studies.<sup>2,13</sup> Conversely, the prevalence of overweight and obesity is higher in areas where food is mostly available through small stores and fast food outlets.<sup>2,9,14</sup>

## Action Steps for Assessment

The assessment of healthier food retail can be divided into four action steps for public health practitioners: 1) focus the assessment, 2) plan the assessment, 3) implement the assessment, and 4) synthesize and report assessment findings.

### Action Step 1: Focus the Assessment

Focus your assessment by first defining terminology. You can then determine specific objectives and questions about what you are trying to learn.

**Define variables.** In focusing your healthier food retail assessment, you will want to determine which types of retail venues you are working with and how you will define



### Availability and Accessibility

Availability most often refers to the physical location or proximity of food retail outlets to residential areas, for example if a neighborhood has or is close to a grocery store. Sometimes the term is also used to describe the presence of healthier foods within stores, for example whether a not a small store sells fruits, vegetables, whole grains, and other healthier items. Accessibility is a broader concept that includes availability as well as the selection, cost (affordability), and quality of foods. Healthier food options may be available, but if the prices of those foods are beyond the customers' budgets or if the selection or quality of the foods is inadequate (for example, limited varieties, spoiled produce, or expired dairy products), then the healthier foods are not accessible.

healthier foods. You may also want to clarify how you are using the terms availability and accessibility for your initiative.

Deciding how you will define underserved areas and populations is an important step in focusing your assessment. In healthier food retail, communities are often defined as underserved if they do not have access to healthier foods in close proximity to their homes. This definition can be refined by adding characteristics, such as community impoverishment or lack of transportation to healthier food retail outlets. Specific indicators include:

- ▶ **Distance from where people live to the nearest supermarket or grocery store.** The USDA defines “low-access” communities as those where at least 500 residents or one-third of the area’s population live more than one mile in urban areas or ten miles in rural areas to the nearest supermarket or large grocery store.<sup>15</sup> Although this definition is commonly used to define underserved communities, the distances may be changed to reflect the context of your community. For example, you may increase or decrease this distance as appropriate for areas with very low or very high population density. The mode of transport (e.g., on foot, by bus, by car) used to traverse the distance can complicate your definition.
- ▶ **Low-income or poverty status.** Different agencies and organizations define low-income or poverty in different ways. For example, the U.S. Census Bureau provides income thresholds that vary by family size and ages of family members to determine who is in poverty,<sup>16</sup> which is used primarily for statistical purposes, while the U.S. Department of Health and Human Services (HHS) provides poverty guidelines, which are a simplified version of the Census Bureau’s poverty thresholds and are used primarily for administrative purposes.<sup>17</sup>
- ▶ **Household vehicle ownership.** Access to healthier food options is dependent on having a means of transportation. Reviewing the number of households with or without access to a vehicle is useful for determining populations that have very limited access to healthier food retail stores.<sup>18</sup>
- ▶ **Ratio of food retailers with less healthy options to healthier food retailers.** Poor access to healthier foods may be defined by considering the presence of food retailers who generally offer fewer healthy options in comparison to the presence of healthier food retailers. One indicator for this concept is the Modified Retail Food Environment Index (mRFEI). For more information on the mRFEI, see CDC’s *Children’s Food Environment State Indicator Report, 2011* and accompanying documents, available at <http://www.cdc.gov/obesity/resources/reports.html>.

**Determine assessment objectives and questions.** It is important to consider why you are conducting a healthier food retail assessment, what you hope to learn from the assessment, and how the assessment will be used. For example, you may want to determine healthier food retail availability in either low-income, urban areas around your state or in rural areas, depending on priorities, resources, or areas of greatest need. A resulting objective could be: “Determine where disparities exist in the availability and affordability of healthier foods and beverages for rural residents in the Northwest region of our state.” Examining information currently available and easily accessible in your state (see **Table 1, Public Data Sets for Healthier Food Retail Assessment**) may provide a preliminary overview of the food retail environment and the context for determining your assessment objectives.

After laying out the objectives for your assessment, draft a set of specific questions to answer. These questions will help you focus and plan your assessment. Keep the number of questions manageable for you and your partners.

Specific assessment questions could include:

- ▶ On average, how far do residents in low-income, urban areas have to walk to get to supermarkets or grocery stores that sell healthier food options, such as fruits and vegetables, whole grains, and low-fat dairy?
- ▶ What percentage of the state's farmers markets accept or participate in federal food assistance programs, such as Electronic Benefits Transfer (EBT) cards for the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)?
- ▶ How interested are specific underserved communities in having access to healthier food retailers? Will other resources be needed to encourage purchasing and consumption if availability increases?
- ▶ Are there existing state policies that support or incentivize healthier food retail activities?
- ▶ How much fresh produce and other healthier food items do local small stores carry, and what are the different options available in those stores?



## Action Step 2: Plan the Assessment

Healthier food retail can be assessed in many ways. You may analyze existing data or you may collect new data, often through direct assessments of food retail venues or in-store inventories of healthier food. Additionally, Geographic Information System (GIS) mapping is a tool often used in healthier food retail assessment to provide a visual display of your data. These options are presented below, each of which can help you develop a better picture of healthier food retail in your state.

When developing your assessment plan, consider the benefits and limitations of different methods, as well as the feasibility for conducting the assessment. You can use the questions below to guide your plan:

- ▶ Do you have existing data that can be used to answer your assessment questions or will you need to collect data?
  - » What are your available time and resources for data analysis and collection?
- ▶ How will partners be involved in completing the assessment?
  - » Do your partners have access to needed data or do they have specific skills that can contribute to the assessment effort?
- ▶ What methods will you use to assess the food retail environment?
  - » What indicators will you apply to measure the retail food environment?
  - » Have assessment tools been validated\* and are they reliable†?
- ▶ How will data be systematically collected?
  - » How will data collectors be trained?
- ▶ What analyses are needed to answer your questions about food access?
  - » Will mapping or GIS be used to visually depict your food retail environment?
  - » What other technology or software analysis programs will be used to analyze data?
- ▶ How will assessment findings be synthesized and shared with stakeholders?

**Accessing existing data.** Public and commercial data sets are available for assessment of your state or community food retail environment, and data can be combined from multiple sources. Data sets may focus on one or multiple types of retail locations (e.g., supermarkets, corner stores, or farmers markets) and may vary by measurements (e.g., proximity to grocery stores or number of farmers markets).

Data sets may vary by geographic area. A description of common geographic levels of data is provided below.

- ▶ **County level data.** Many publicly accessible data sets are available at the county level. Although county level data may help states identify areas of potential need, counties are

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\*Validity is concerned with the accuracy of measurement and whether what is being measured is what is intended.

†Reliability is the extent to which a measure can be expected to produce similar results on repeated observations of the same condition or event.

often relatively large and include diverse geographic areas. Thus, your ability to determine community-level differences in underserved areas may be obscured when data are aggregated at the county level. In addition, some data are available for a metropolitan statistical area, which is a geographic region of one or more counties that represents an urban area.<sup>19</sup>

- ▶ **ZIP code level data.** ZIP code level data are sometimes publicly available. Although ZIP codes are designed for mail delivery purposes, they may be informative to states in getting a broad overview of their retail food landscape. However, they encompass a larger area than what is traditionally considered a neighborhood.
- ▶ **Data at census tract, census block group, and census block levels.** These data have served as proxies for neighborhoods. Census tracts are designed to be homogenous in terms of population and economic characteristics, with block groups and block levels being subdivisions of tracts. Data at the census tract level and below provide local information about retail venues that may be easily accessible.
- ▶ **Address level (Geocoded) data.** These data provide a specific location for a retail store, identified by address or geographic coordinates. It is the most detailed level of data that you can access, but may need to be purchased from commercial companies. This type of data is depicted as a point on a map with no associated geographic area. It allows the user to define geographic boundaries that are context specific.

Important considerations for using different levels of the data include:

- ▶ **Size of geographic unit.** The larger the geographic unit, the more the collective data may mask differences within that unit, making it difficult to determine where the underserved populations are.
- ▶ **Boundaries of geographic unit.** The boundaries of geographic units do not always correspond to shopping patterns. Creating buffer zones around specific stores may help approximate a more accurate shopping area. With address level store data, you can create your own boundaries.
- ▶ **Application in state or community assessments.** If you are doing a state-level assessment, you may want to first look at county-level or other large geographic unit data to get a broader view of healthier food retail. You can then map some regions or cities within the state in more detail as needed. The smaller geographic units can still be valuable for state-level assessment, as they can help you identify specific areas with the greatest need and allow you to see regional differences within the state that may not be captured by broader levels of data.

**Public data sets.** Public data sets are free of charge and can help give a good initial picture of what is happening in a state related to healthier food retail. **Table 1, Public Data Sets for Healthier Food Retail Assessment**, presents examples of public data sets that can be used to assess general food retail.



**Table 1. Public Data Sets for Healthier Food Retail Assessment**

Data Set	Retail Type	Data Level
<p><b>United States Department of Agriculture (USDA) Food Environment Atlas</b></p> <p><a href="http://www.ers.usda.gov/data-products/food-environment-atlas.aspx">http://www.ers.usda.gov/data-products/food-environment-atlas.aspx</a></p> <p>The Food Environment Atlas provides food environment indicators to examine factors related to food choices and diet quality. It also provides an overview of a community's ability to access healthier food. USDA's Food Environment Atlas has over 160 indicators that are related to the food environment, including indicators on health and well-being, and community characteristics. Regarding retail, the Food Environment Atlas provides indicators in the areas of access and proximity to grocery stores, availability of food stores, and local foods.</p>	<p>Supermarkets or large grocery stores; supercenters or club stores; convenience stores; farmers markets</p>	<ul style="list-style-type: none"> <li>▶ State</li> <li>▶ Region</li> <li>▶ County</li> </ul>
<p><b>USDA Food Access Research Atlas</b></p> <p><a href="http://www.ers.usda.gov/data-products/food-access-research-atlas.aspx">http://www.ers.usda.gov/data-products/food-access-research-atlas.aspx</a></p> <p>The Food Desert Research Atlas uses a map of the entire United States to show the census tracts in the nation that are food deserts based on multiple indicators of food access. The USDA also has a related Web site discussing food deserts and their identification, available at <a href="http://apps.ams.usda.gov/fooddeserts/foodDeserts.aspx">http://apps.ams.usda.gov/fooddeserts/foodDeserts.aspx</a>.</p>	<p>Supermarkets or large grocery stores</p>	<ul style="list-style-type: none"> <li>▶ Census tract</li> </ul>
<p><b>Centers for Disease Control and Prevention Modified Retail Food Environment Index (mRFEI) Data Table</b></p> <p><a href="http://www.cdc.gov/obesity/resources/reports.html">http://www.cdc.gov/obesity/resources/reports.html</a></p> <p>The mRFEI measures the number of healthy and less healthy food retailers within census tracts across each state as defined by typical food offerings in specific types of retail stores (e.g., supermarkets, convenience stores, or fast food restaurants). States and communities can use these data to create maps using GIS software or link the mRFEI data to other census-tract level data they may have available.</p>	<p>Healthy food retailers include supermarkets, larger grocery stores, supercenters, and produce stores as defined by the North American Industry Classification System (NAICS). Less healthy food retailers include fast food restaurants, small grocery stores, and convenience stores as defined by the NAICS.</p>	<ul style="list-style-type: none"> <li>▶ Census tract</li> </ul>
<p><b>ArcGIS Food Deserts Group</b></p> <p><a href="http://www.arcgis.com/home/group.html?owner=jimhe&amp;title=Food%20Deserts">www.arcgis.com/home/group.html?owner=jimhe&amp;title=Food%20Deserts</a></p> <p>This is a mapping and GIS users group established by Esri, the company that produces the ArcGIS software, dedicated to food deserts and food access in the United States. The resources of particular importance are the Supermarket Access Map and the Food Environment Explorer, which offer detailed information regarding supermarket location in relation to driving and walking access. These maps also facilitate overlay of health-related information regarding diabetes and obesity on the food access map.</p>	<p>Supermarkets and food outlets (defined as all grocery stores as well as produce stands or farmers markets)</p>	<ul style="list-style-type: none"> <li>▶ County</li> <li>▶ Census block group</li> <li>▶ Address</li> </ul>

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Data Set	Retail Type	Data Level
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<p><b>County Health Rankings</b>  <a href="http://www.countyhealthrankings.org">www.countyhealthrankings.org</a>          This database ranks each county within the 50 states according to its health outcomes and the multiple health factors that determine a county's health. The county health rankings have an indicator under the "built environment" section called "access to healthier food."</p>	<p>Healthier food outlets (defined as all grocery stores as well as produce stands or farmers markets)</p>	<ul style="list-style-type: none"> <li>▶ County</li> </ul>
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<p><b>Policy Map, from The Reinvestment Fund</b>  <a href="http://www.policymap.com/maps">http://www.policymap.com/maps</a>          Policy Map offers on-line mapping capabilities based on more than 10,000 indicators related to demographics, real estate, city crime rates, health, schools, housing affordability, employment, energy, and public investments. It includes data available from a supermarket study on food access; a subset of the data is available for free. A subscription is required for detailed information.</p>	<p>Supermarkets and other business establishments, as defined by the NAICS</p>	<ul style="list-style-type: none"> <li>▶ State</li> <li>▶ Metropolitan statistical area</li> <li>▶ County</li> <li>▶ City</li> <li>▶ Census tract</li> <li>▶ Census block group</li> </ul>
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<p><b>United States Census Bureau's County and ZIP Code Business Patterns</b>  <a href="http://www.census.gov/econ/cbp/index.html">www.census.gov/econ/cbp/index.html</a>          The U.S. Census Business Patterns data provides the number of establishments, number of employees, and payroll data by industry, according to the 2007 NAICS. These data can be employed to track which ZIP codes, metropolitan areas, and counties have retailers located within their boundaries.</p>	<p>Various business establishments, as defined by the NAICS</p>	<ul style="list-style-type: none"> <li>▶ State</li> <li>▶ Metropolitan statistical area</li> <li>▶ County</li> <li>▶ ZIP code</li> </ul>
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<p><b>Community Commons</b>  <a href="http://www.communitycommons.org/maps-data/">http://www.communitycommons.org/maps-data/</a>          Community Commons uses a Web-based GIS, developed and implemented by the Center for Applied Research and Environmental Systems (CARES) at the University of Missouri. The site provides open access to over 7,000 national GIS data layers, which include socioeconomic and demographic (Census/American Community Survey), health, education, political, and environmental data.</p>	<p>Grocers, supermarkets, and other business establishments, as defined by the NAICS, farmers markets</p>	<ul style="list-style-type: none"> <li>▶ State</li> <li>▶ Congressional district</li> <li>▶ County</li> <li>▶ ZIP code</li> <li>▶ Address</li> </ul>
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**Commercial data sets.** You may also want to consider commercial sources of data for your assessment. Commercial data directories can be purchased that identify the address and geographic coordinates of various types of retail stores, including food stores. Some commonly used commercial data sets include:

- ▶ Dun & Bradstreet, Inc.
- ▶ InfoUSA, Inc.
- ▶ Nielsen Trade Dimensions (TDLinx)

**Data set limits.** Public and commercial data sets are important for understanding the food retail environment; however, they have several limitations:

- ▶ Commercial data sets may be prohibitively expensive depending on the size of the area being studied.
- ▶ Commercial data sets are proprietary; therefore, companies provide only general information on how the data were collected and verified.
- ▶ Public and commercial data sets can have a time lag from when the data were collected to when the data are obtained and used.
- ▶ Public and commercial data sets can have data validity concerns, including issues with accurate geocoding, potentially resulting in over counting or undercounting of stores and misclassification of store types.<sup>20,21</sup>

Combining several of the data sets from different companies or public data sources improves accuracy but can be labor intensive and costly. For these reasons, it may be more feasible to collaborate with partners who have purchased data already. Although they will not be able to give you the data, they may be able to work with you on projects or analyze the data sets for you.

These large commercial and public data sets generally do not describe the number or type of healthier food options available in the retailer venue, although it is often assumed that certain types of retailers offer or do not offer healthier foods. To more fully understand what healthier food is available for a community within the retail locations, direct assessments are necessary (see **Conducting Direct Assessments** section below).

**Working with partners.** As you explore ideas for data sets to use, don't forget to ask partners for creative solutions to answer questions or to gain access to restricted data.

- ▶ **State or local departments of health or agriculture.** Other divisions within the state health department or county health departments may collect food store data to comply with food safety regulations or inform decisions in their locales. State departments of agriculture may also have food retail data.
- ▶ **Offices for WIC and SNAP.** WIC and SNAP partners may have data on the number and type of food retail stores in the state that participate in nutrition benefit programs, which indicate where low-income residents have healthier food retail access and to what extent those benefits are being used. With recent changes to the WIC minimum stocking requirements, WIC-approved stores are now required to carry a certain amount of healthier foods.<sup>22</sup> Your state's offices for WIC and SNAP benefits may have listings of all WIC- and SNAP-approved

stores. If those listings are not available, the federal SNAP Web site (<http://www.fns.usda.gov/snap/>) has a retail locator program that maps the closest SNAP-approved stores to a given address and the USDA Food Environment Atlas (see **Table 1, Public Data Sets for Healthier Food Retail Assessment**) includes multiple county-level measures about WIC and SNAP, including authorized stores and redemption rates.



**Conducting direct assessments.** You may want to use direct observation of retail venues or in-store inventory audits to fully understand healthier food retail access in your state or community. Direct observation of food retail locations can be used to ensure comprehensive and up-to-date data. For example, there may be stores that have recently opened or closed. Since many data sets may not have recently updated data, they may not accurately represent the current food retail landscape. Additionally, direct assessments can be used to examine the existence of healthier foods inside a store, the affordability of the healthier foods, or the presence of in-store marketing, among other measures. They can also be used to assess venues not typically included in public or commercial data such as mobile retail vendors or roadside stands.

Assessments by direct observation can be important for planning local activities or strategies. However, they are resource intensive on a statewide level and are thus more feasible at a community level. By supplementing your state level data using direct observation methods for a community or region, you will have more complete information for planning overall strategies. If you conduct multiple assessments or work in more than one area in your state, consider coordinating with partners to complete the localized assessments.

Some validated instruments and methods have been developed for systematic direct observation or the on-site verification of store locations.<sup>23-26</sup> The following assessments and tools are examples of ways to look at availability, cost, and quality of healthier foods in your state.

- ▶ **Market basket audits.** These audits measure the food available within a store, and can evaluate cost and quality of the food among other measures. Two examples are:
  - » The *Nutrition Environment Measures Survey for Stores* includes measures for the type and location of food outlets, availability of healthier and less-healthy options, and pricing. Available at <http://www.med.upenn.edu/nems/>.
  - » The USDA Economic Research Service *Food Store Survey Instrument* is part of the *Community Food Security Assessment Toolkit*. It assesses the availability and affordability of food in retail outlets. Available at <http://www.ers.usda.gov/publications/efan-electronic-publications-from-the-food-assistance-nutrition-research-program/efan02013.aspx>.
- ▶ **Linear shelf space.** This method measures the actual space expended on shelves for various types of food in stores and compares the number of healthier food options and less healthy items available for purchase. This is important because usage of shelf space can impact the buying behavior of consumers. Shelf space measures can also help you understand how prominently the healthier food options are displayed compared to other options in the store.<sup>7</sup>
  - » The tool, *Calculating Selling Area for Healthy Retail*, from ChangeLab Solutions explains how to measure the total selling area of a store, including floor area and shelf space. It also discusses how to calculate the total percentage of selling area being used for specific products like produce or staple foods. Available at <http://changelabsolutions.org/publications/calculating-selling-area>.
- ▶ **Marketing of healthier or less healthy items.** An assessment can include measures of the amount of marketing or advertisements for healthier items and less healthy items in the store, as well as placement of healthier or less healthy items near checkout.<sup>27</sup>
- ▶ **Store owner survey or interviews.** Store owners can provide useful information about the products they carry and their customers' purchasing habits. If the owner or store manager is willing, you can review the store's inventory lists or purchasing records can to obtain more accurate information on a store's supply of healthier foods.
- ▶ **Social and economic measures.** You may want to consider assessing social and economic concepts related to addressing food retail accessibility in your state. For example, [www.marketumbrella.org](http://www.marketumbrella.org) has developed assessment tools that may help you assess healthier food retail options from a farmers market vendor, customer, and community perspective.
  - » The *Sticky Economic Evaluation Device (SEED)* helps determine the economic impact that a farmers market can have on a community. This tool is available on-line.
  - » The *Neighborhood Equity Evaluation Device (NEED)* helps understand the social capital that a farmers market may bring to a community, and the *Food Environment Evaluation Device (FEED)* helps consider the role of farmers markets in promoting health through access to fresh fruits and vegetables and the farmers who grow them. Sample studies using these two tools are available on-line.

An extensive list of surveys, interview protocols, and other measures that assess aspects of availability and affordability of healthier food options can be found in the following resources:

- ▶ [The Measures Registry from the National Collaborative on Childhood Obesity Research \(NCCOR\)](http://nccor.org/nccor-tools/measures/index.php). The *Measures Registry* is a searchable database of measures on diet and physical activity related to childhood obesity research. Available at <http://nccor.org/nccor-tools/measures/index.php>.
- ▶ [The Measures of the Food Environment \(MFE\) Web site from National Cancer Institute](https://riskfactor.cancer.gov/mfe). The MFE Web site is updated weekly and provides a compilation of articles that include community-level measures of the food environment. The “Instruments” section provides a list of potential instruments made available by researchers that address a variety of food environments. The Web site also provides links to peer-reviewed publications from studies that have relied on the instruments. Available at <https://riskfactor.cancer.gov/mfe>.
- ▶ [Healthy Corner Stores Network \(HCSN\) Web site](http://www.healthycornerstores.org/category/resources/tools). HCSN provides a resources page with information on surveys and assessment. This includes in-store assessment tools, store owner surveys, sample materials, and resource guides. Available at <http://www.healthycornerstores.org/category/resources/tools>.

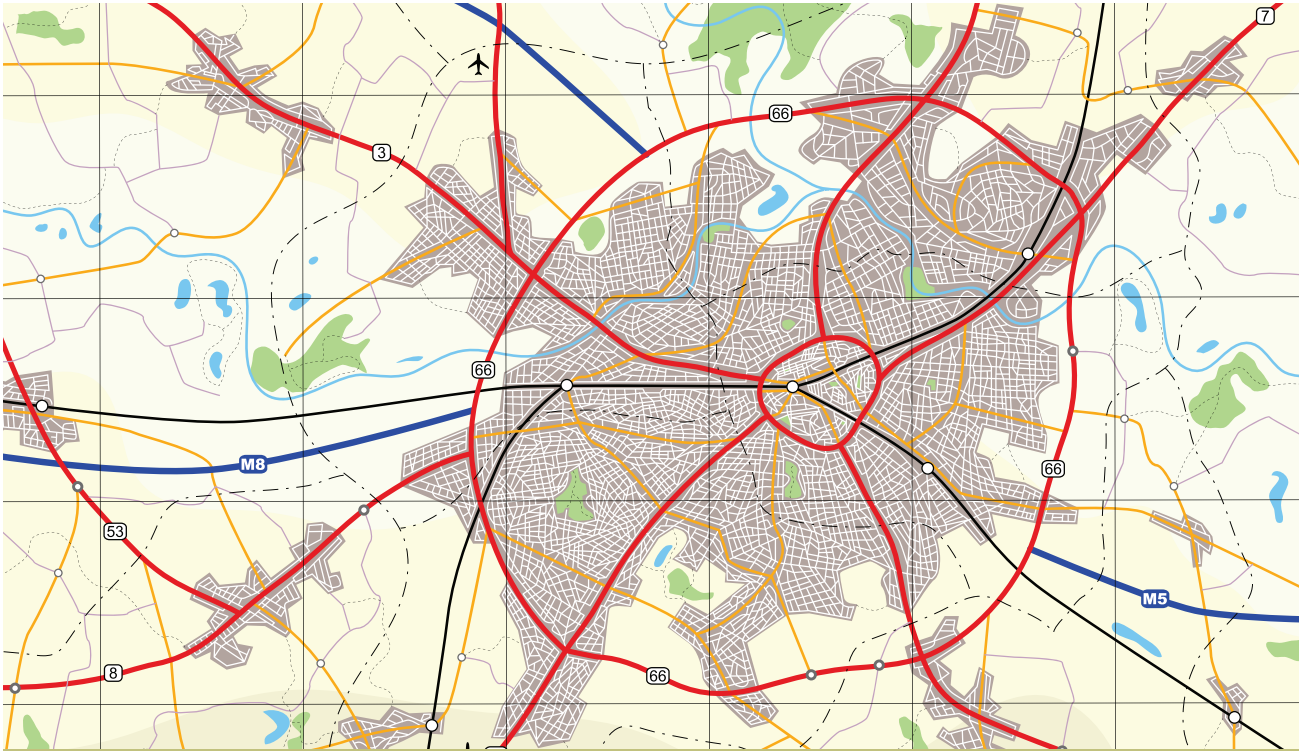
**Engaging partners to conduct GIS mapping.** GIS mapping is particularly useful for assessing healthier food retail accessibility. It can help you manage, analyze, and represent the location of retailers whose addresses have been geocoded and spatially link them to other locations of interest such as transportation stops, census tracts, ZIP codes, or counties. GIS maps can be used as a first step to help you identify, visualize, and track underserved areas needing improved access to healthier food retail.

You will most likely want to work with partners to create GIS maps. Some partners may participate in your efforts specifically because they are interested in research on a variety of issues related to healthier food retail. Consider recruiting partners with mapping expertise or those who have access to the geographic or geocoded data sets necessary for mapping.

Good sources of GIS expertise include:

- ▶ City, county, or regional planning offices.
- ▶ Universities, particularly the urban planning, agriculture, or geography departments.
- ▶ State departments of health or agriculture.

There are many types of software available to analyze geographic data, develop and create maps, or both. Esri’s ArcGIS software is commonly used and has both mapping and geographic data analysis capabilities. EpilInfo, SAS, Instant Atlas, or MapInfo are also popular among researchers and public health practitioners.



## Mapping with Geographical Information Systems (GIS) Data: Selecting Map Features

Consider which geographic boundaries and features you want on your maps as you begin working with GIS data. You can select the options that will help you and your stakeholders better understand food access issues in your area of interest.

- ▶ **Geographic boundaries.** Determine what geographic areas are important for your assessment and map display. Displaying data at the census block group or tract level can potentially show the most differences in access to retail. Alternatively, you may want your map to display differences in access by ZIP codes or congressional districts, depending on interests that resonate with your stakeholders. Your state may also benefit by a combination of maps showing variations in access across the whole state by county, and then mapping some regions or cities within the state in more detail.
- ▶ **Geographic features.** Consider what geographic features (e.g., lakes, parks, interstates, mountain ranges) you would like on the maps. GIS offers many features that can be added to your maps to best represent your state or region. These features can help you determine if there are major physical barriers like highways or waterways that may potentially limit access to intervention retail venues in the various counties and communities you are considering for an intervention. Adding these features can also help users better identify areas of interest to them via commonly recognized geographic features.

Keep your maps simple and easy to interpret. Someone not familiar with your project should be able to look at your map and understand where the underserved areas or areas of concern are.



**Other data for healthier food retail assessment.** You can supplement your assessment of availability and accessibility of the food retail environment with health, policy, and other types of data. Using these data will give you a broader perspective of your state or region.

- ▶ **Health data.** You may also want to consider reviewing your state’s health behavior, nutrition status, chronic disease prevalence, along with demographic and socioeconomic data. Plotting food access data with one or more of these other measures on a map can be especially useful to determine areas of greatest need and will help you make a stronger case with decision makers for addressing food access.
- ▶ **Customer perceptions and feedback data.** Customer perceptions about infrastructure elements can help or hinder customers in purchasing healthier foods, and feedback on these elements can help stores make adjustments. Examples include hours of retail operation, available transportation to and from retail venues, and accessibility of culturally appropriate healthier foods. Additionally, perceived barriers on issues like crime and safety may prohibit customers from using existing retail locations, even if healthier options are available and affordable.
- ▶ **Policy data.** Legislation, regulations, and other existing policies can either help or hinder efforts to implement healthier food retail initiatives. An analysis of existing policies can show gaps where a new policy may help move strategies forward and can provide you with information to educate your partners, complementing retail accessibility data. See the call out box **Including Policy Data in Your Assessment** for more information.
- ▶ **Food system data.** Assessments of the food system as a whole can be useful to understand a broader spectrum of factors that influence availability of healthier food. A food system assessment can look at the connections between production, distribution, consumption, and waste, and where the system can be improved. See the call out box **Assessment in Action: State and Regional Healthier Food Retail Assessments** for examples of food system assessments in Washington and Colorado.
- ▶ **Health impact data.** A Health Impact Assessment (HIA) uses a variety of data sources, analytic methods, and stakeholder inputs “to determine the potential effects of a proposed policy, plan, program, or project on the health of a population.”<sup>28</sup> HIAs also assess the potential reach of effects within the population and provides recommendations for surveillance and managing the effects of the proposed initiative.<sup>28</sup> In terms of healthier food retail, an HIA could assess topics such as if existing or potential policies would help or hinder placement of farmers markets or development of new supermarkets. See the call out box **Assessment in Action: State and Regional Healthier Food Retail Assessments** for an example of an HIA in Baltimore, Maryland.



## Including Policy Data in Your Assessment

Policy data can provide information to help you and your partners understand your food retail environment. Policy data can include:

- ▶ **Legislative policies such as state laws or local ordinances.** Examples include state legislation that designates a program to provide grants or loans for supermarket development in underserved areas or zoning ordinances defining where farmers markets may be located.
- ▶ **Administrative rules or regulations.** Generally, administrative rules, orders, or regulations are issued by an agency. They enforce or amplify laws or policy and have the force of law.<sup>29</sup> An example is a state agency incentive that reduces permit fees when a corner store carries fresh produce.
- ▶ **Industry or organizational guidelines.** Guidelines may not have the force of law, but are often adopted in practice and are encouraged, while perhaps not required or enforced. An example is the “Facts Up Front Front-of-Pack Labeling Initiative” that provides a standard format to summarize nutrition information on the front of food packages. “Facts Up Front” is a voluntary initiative led by the Grocery Manufacturers Association, which represents more than 300 of the nation’s leading food and beverage companies, and the Food Marketing Institute, which represents more than 1,500 food wholesalers and retailers.

Several free databases allow access to state-level legislation and regulation related to nutrition and obesity prevention:

- ▶ CDC’s Division of Nutrition, Physical Activity and Obesity (DNPAO) maintains the *Chronic Disease State Policy Tracking System*, a state-based, searchable database. Available at <http://apps.nccd.cdc.gov/CDPHPPolicySearch/Default.aspx>.
- ▶ The National Conference of State Legislatures provides the *Healthy Community Design and Access to Healthy Food Legislation Database*, which collected, tracked, and summarized state legislation from 2004 – 2009 that addressed increased access to healthier food. Available at <http://www.ncsl.org/research/health/healthy-community-design-and-access-to-healthy-foo.aspx>.
- ▶ The Yale Rudd Center for Food Policy and Obesity also maintains a searchable database on current food policy and obesity legislation at national, state, and select city and county levels. Available at <http://www.yaleruddcenter.org/legislation/>.

Some states and municipalities offer searchable databases for free while others charge a nominal fee. Additionally, Strategic Alliance, a nutrition and physical activity coalition in California, maintains the *Enact Local Policy Database: Promising Practices in Nutrition and Physical Activity*. Available at <http://eatbettermovemore.org/sa/policies/index.php>.

### Action Step 3: Implement the Assessment

Once an assessment plan has been finalized, you will need to implement the plan. The plan will vary whether you're doing primary or secondary data collection, but can include gathering existing measurement tools, drafting surveys or direct observation forms, training data collectors, collaborating with GIS experts to analyze data, and helping all assessment partners understand their roles and responsibilities. To ensure the success of your assessment:

- ▶ Use existing reliable and valid tools whenever possible to provide stronger data and lead to more appropriate decision making. If none are available, test your surveys or observation procedures for reliability and, if possible, validity. Make sure that staff collecting data understand the measurement tools and are well-trained on the specific protocols for obtaining and entering data.
- ▶ Use quality control measures to make sure the observations and data collection are being done properly. This should be done early in the data collection process. If there are incorrect or missing data, refine data collection procedures to get accurate and complete data.
- ▶ Work iteratively with data analysts to ensure they have a clear understanding of your assessment objectives and questions. Describe what each of the variables mean and identify the ones that are most important for your analysis.



## Assessment in Action: State and Regional Healthier Food Retail Assessments

Many states and communities have undertaken assessments of their food retail environment and food system. Examples from CDC's Communities Putting Prevention to Work program have been published.<sup>30</sup> Other examples are provided below.

- ▶ **Illinois.** The Illinois Food Marketing Task Force, facilitated by The Food Trust<sup>‡</sup>, assessed supermarket access throughout their state to identify underserved areas. Recommendations to ensure access to affordable, nutritious food were provided with the assessment. The full report of this assessment, *Stimulating Supermarket Development in Illinois: Healthier People, Healthier Communities, and a Healthier Economy*, is available at [http://policylinkcontent.s3.amazonaws.com/2009-IL-report2\\_1.pdf](http://policylinkcontent.s3.amazonaws.com/2009-IL-report2_1.pdf). Information on a resulting project, the Illinois Fresh Food Fund, is available at <http://www.iff.org/illinois-food>. You can also see how GIS maps were used to identify the need for more supermarkets in an earlier report, *The Need for More Supermarkets in Chicago*, available at <http://www.healthyfoodaccess.org/policy-efforts-and-impacts/state-and-local/illinois>.
- ▶ **Wisconsin.** Wisconsin developed a *Fresh Fruit and Vegetable Outlet Audit Tool* for their communities to use. It allows communities to assess the availability, accessibility, and variety of fresh fruits and vegetables at several types of food outlets, including grocery stores, convenience stores, farmers markets, Community Supported Agriculture farms, community gardens, food pantries, and farm stands. GIS maps can be created from the tool to show fruit and vegetable availability in a community. The tool is available at <http://www.dhs.wisconsin.gov/physical-activity/FoodSystem/FruitVegetable/index.htm>.
- ▶ **Washington.** The report *Opportunities for Increasing Access to Healthy Foods in Washington* provides a summary of opportunities to improve access based on data analysis and stakeholder interviews. Chapter Two provides an analysis of access to healthy foods across the state, including maps of farmers market and grocery store availability. Available at [http://depts.washington.edu/waaction/tools/featured\\_resources/access\\_report.html](http://depts.washington.edu/waaction/tools/featured_resources/access_report.html).
- ▶ **Central Puget Sound, Washington.** The *Central Puget Sound Food System Assessment* project team did a comprehensive assessment of the food system in the area surrounding Seattle, including rural agriculture, fisheries, food deserts, food hubs, restaurants, and more. The food desert chapter provides maps of food deserts in the various counties under study. They also looked at food deserts in relation to their elderly population and vehicle ownership. The full report is available at <http://courses.washington.edu/studio67/psrcfood/>.
- ▶ **Northern Colorado.** The *Northern Colorado Regional Food System Assessment* was a broad reaching assessment project that included many rural areas. The assessment aimed to "understand the local food system as it relates to public health, economic development and the quality of life." The report includes assessments in direct marketing of agricultural products, shopping habits, food distribution, access to food, nutrition assistance program benefits availability, and presence of community gardens. The project background and the full report are available at <http://www.larimer.org/foodassessment/>.

Continued

- ▶ **Baltimore, Maryland.** The *Baltimore City Food Policy Task Force Final Report* and Recommendations document includes research on the food retail environment and short-, medium-, and long-term recommendations for action. Available at <http://cleanergreenerbaltimore.org/uploads/files/Baltimore%20City%20Food%20Policy%20Task%20Force%20Report.pdf>. Additionally, a Health Impact Assessment conducted in Baltimore included assessments and recommendations on zoning for farmers markets and corner store certification programs. The report *Zoning for a Healthy Baltimore: A Health Impact Assessment of the TransForm Baltimore Comprehensive Zoning Code Rewrite* is available at [http://www.hiasociety.org/documents/BaltimoreHIA\\_FullReport.pdf](http://www.hiasociety.org/documents/BaltimoreHIA_FullReport.pdf).

‡The Food Trust is a nonprofit organization that originally developed a comprehensive approach to increasing availability of healthier food in Pennsylvania. They have implemented this framework in other states such as Louisiana, New York, Arizona, Georgia, Maryland, Massachusetts, Minnesota, Mississippi, Tennessee, and Texas. More information is available at <http://www.thefoodtrust.org/>.

## Action Step 4: Synthesize and Report Assessment Findings

Once you have analyzed your data, you will want to communicate the key findings to your stakeholders, often via a written report or an in-person presentation or both. Communicating your assessment findings will help you and your partners plan strategies and action steps that are based on data.

**Describe assessment methods.** In reports and presentations it is important to describe the assessment methodology so that findings can be easily understood and interpreted. Others will be able to replicate your process if you clearly document your methods.

**Customize communications by audience.** Consider developing different types of communication products that are tailored to different audiences' needs and preferences. For example, policy makers may only be interested in an executive summary rather than a detailed full report. Community members may prefer a newspaper article; therefore, you may want to coordinate a press release. Developing a dissemination plan can help determine the means by which you will distribute information to different audiences.

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**Need assistance?**

Contact your state's CDC project officer, who can facilitate requests for technical assistance or tailored guidance.

**Need more information?**

Visit the CDC DNPAO website to learn more information about the division and our funded state programs: <http://www.cdc.gov/obesity/>.

