

# MEASURES OF FOOD & NUTRITION INSECURITY RATES



## Introduction

This document provides information on:

- several commonly used websites to access data sources for rates of food insecurity and components and conditions that go into measuring food insecurity,
- what a select group of municipalities throughout the U.S. is doing to measure food insecurity and what data sources they use, and
- tools (surveys).

It assumes the United States Department of Agriculture's (USDA) definition of [food insecurity](#): "Food insecurity—the condition assessed in the food security survey and represented in USDA food security reports—is a household-level economic and social condition of limited or uncertain access to adequate food."

Further, it provides information on [nutrition security](#), defined by USDA as "Nutrition security means all Americans have consistent access to the safe, healthy, affordable foods essential to optimal health and well-being. Nutrition security builds on food security by focusing on how the quality of our diets can help reduce diet-related diseases. It also emphasizes equity and tackling long-standing health disparities." The definition of food insecurity from [Feeding America](#)<sup>®</sup> points to the importance of nutritious food: "...lack of access, at times, to enough food for an active, healthy life for all household members and limited or uncertain availability of nutritionally adequate foods." There are several measures outlined here that aim to access healthy food access in combination with other food insecurity components.


While USDA still does not have a public-facing interactive tool with nutrition security rates, USDA has [highlighted the importance of food and nutrition security](#). Appendix 1 of the USDA Report: [Barriers That Constrain the Adequacy of Supplemental Nutrition Assistance Program \(SNAP\) Allotments: Survey Findings](#) has the English-language survey instrument used in the study. The [study](#) describes the hurdles to healthy eating faced by SNAP participants.

This document focuses on food insecurity measures and what data sources are used by municipalities including novel examples of what municipalities have done and continue to do to ensure food access in an emergency, such as COVID-19.


The document has four subsections:

- 1) **MEASURES AND DATA SOURCES:** Description of food insecurity rate data sources and where to find them.
- 2) **METHODS USED BY MUNICIPALITIES:** Description of data sources and tools being used by municipalities throughout the U.S.
- 3) **FOOD INSECURITY SURVEY INSTRUMENTS:** A short list of survey instruments used to measure food insecurity.
- 4) **APPROACHES TO MITIGATE FOOD INSECURITY:** Novel examples of what municipalities have done and continue to do to ensure food access in an emergency, such as COVID-19.



The first two data sources are from the **USDA Economic Research Service (ERS)**. The ERS has information on definitions, measurement of food insecurity, and the surveys used to assess food insecurity accessible at the [Food Security in the U.S.](#) section of the ERS website.

 Indicates a complete measure of food insecurity



MEASURES AND DATA SOURCES: FOOD INSECURITY AND FOOD INSECURITY MEASURE COMPONENTS

Name	Created/Hosted by / Source of Data (if different)	Description
<p><a href="#">USDA Food Environment Atlas</a></p> 	<p><b>USDA ERS</b></p> <p><b>Data sources:</b> annual Food Security Supplement survey by the USDA <a href="#">ERS</a>, part of the <a href="#">Current Population Survey</a> (Census Bureau)</p>	<p>The <a href="#">Food Environment Atlas</a> goals:</p> <ul style="list-style-type: none"> <li>• “Assemble statistics on food environment indicators to stimulate research on the determinants of food choices and diet quality, and</li> <li>• to provide a spatial overview of a community's ability to access healthy food and its success in doing so.”</li> </ul> <p>The <a href="#">Food Environment Atlas</a> provides <b>county-level data</b> on food environment factor categories:</p> <ul style="list-style-type: none"> <li>• Food choices</li> <li>• Health and well-being (including food insecurity)</li> <li>• Community characteristics</li> </ul> <p>“<a href="#">Data for the ERS food security reports</a> come from an annual survey conducted by the Bureau of the Census as the December supplement to the monthly Current Population Survey.”</p> <p>When compared with the Food Access Research Atlas (below), the Food Environment Atlas shows more food insecurity factor categories and is more comprehensive (but cannot provide information at any geographic unit lower than the county).</p> <p>Full documentation on <a href="#">ERS website</a></p> <p>This tool is included in the <a href="#">SNAP-Ed Library</a></p> <p>For API (Application Programming Interface) information, see the <a href="#">ERS GIS Map Services and API User Guide</a></p>

MEASURES AND DATA SOURCES: FOOD INSECURITY AND FOOD INSECURITY MEASURE COMPONENTS

Name	Created/Hosted by / Source of Data (if different)	Description
<p><a href="#">Food Access Research Atlas</a> (2019 layers)</p> <p><i>(Formerly the Food Desert Locator)</i></p>	<p><b>USDA ERS</b></p> <p><b>Data sources:</b> the 2010 Decennial Census, and the 2014-18 American Community Survey. Additional data sources <a href="#">described in detail by the ERS</a></p>	<p>Full documentation on <a href="#">ERS website</a>:</p> <ul style="list-style-type: none"> <li>• The Food Access Research Atlas <a href="#">provides both rates of food access and income</a></li> <li>• Census-tract level (smaller geographic unit compared with county-level data)</li> <li>• Shows census tracts with more than 67% of the population living in <a href="#">group quarters</a>, such as college dormitories, correctional facilities, or military bases</li> </ul>
<p><a href="#">Map the Meal Gap</a> (2021)</p> 	<p><a href="#">Feeding America</a><sup>®</sup></p> <p><b>Data sources:</b> data from Current Population Survey, American Community Survey, Bureau of Labor Statistics, and <a href="#">NielsenIQ in-store scanning data</a> and Homescan data (see the <a href="#">Technical Brief</a> for full information)</p>	<p>“Map the Meal Gap generates two types of community-level data:</p> <ul style="list-style-type: none"> <li>• Local food insecurity estimates among all individuals and children by income category</li> <li>• Local food expenditure estimates among people who are food insecure and food secure”</li> </ul> <p>Feeding America<sup>®</sup> describes the methodology of <a href="#">How We Got the Map Data</a>; for detailed information, read the <a href="#">Technical Brief</a>.</p>
<p><a href="#">Food Environment Index (FEI)</a></p> 	<p><a href="#">County Health Rankings and Roadmaps</a></p> <p><b>Data sources:</b> USDA Food Environment Atlas, Map the Meal Gap from Feeding America<sup>®</sup>, U.S. Census, and Bureau of Labor Statistics</p>	<p>The FEI ranges from a scale of 0 (worst) to 10 (best).</p> <p>Includes two indicators:</p> <ul style="list-style-type: none"> <li>• Low income + does not live near a store</li> <li>• “two-stage fixed effects model...using information from the Community Population Survey, Bureau of Labor Statistics, and the American Community Survey to estimate food insecurity”</li> </ul> <p>For detailed information about available measures and methods, read more at the <a href="#">County Health Rankings &amp; Roadmaps, 2021 Measures</a> website.</p> <p>The County Health Rankings and Roadmaps is run by the <a href="#">University of Wisconsin Population Health Institute</a></p>

MEASURES AND DATA SOURCES: FOOD INSECURITY AND FOOD INSECURITY MEASURE COMPONENTS

Name	Created/Hosted by / Source of Data (if different)	Description
<p><a href="#">Nutrition Environment Measures Survey</a> (NEMS)</p>  <p>Corner Stores version: <a href="#">(NEMS-CS)</a></p> <p>Stores version: <a href="#">(NEMS-S)</a></p>	<p>The University of Pennsylvania's <a href="#">Center for Health Behavior Research</a></p>	<p>The NEMS measures <b>food access</b> and <b>nutrition</b>.</p> <p>The surveys measure “community and consumer nutrition environments in food outlets, specifically stores, corner stores, and restaurants. The measures focus on the availability of healthful choices, prices, and quality. The NEMS-CS survey assesses the nutrition environments, specifically in corner stores.”</p> <p>It is included in the <a href="#">SNAP-Ed Library</a>.</p>
<p><a href="#">Healthy Food Availability Index</a> (HFAI)</p> 	<p><a href="#">City of Baltimore</a></p> <p><a href="#">Baltimore Food Policy Initiative</a></p> <p>Johns Hopkins' <a href="#">Center for a Livable Future</a></p>	<p>Based on the NEMS. Conditions included:</p> <ol style="list-style-type: none"> <li>1) Supply of Healthy Food</li> <li>2) Household Income</li> <li>3) Vehicle availability (transportation)</li> <li>4) Distance to Supermarket</li> </ol> <p>Read the Baltimore City's Food Environment Report: <a href="#">2018 Report</a></p> <p>Also described by Tufts University and Johns Hopkins, <a href="#">Using the Healthy Food Availability Index to Explore Corner Stores in Baltimore, MD</a>, and in the <a href="#">Baltimore City 2018 Food Environment Brief</a>.</p>
<p><a href="#">Modified Retail Food Environment Index</a> (mRFEI)</p>	<p>Centers for Disease Control and Prevention, <a href="#">Division of Nutrition, Physical Activity, and Obesity</a> (created in 2011)</p>	<p>The mRFEI identifies areas with low access to healthy food retailers and/or have high percentages of unhealthy retailers.</p> <p>Example of use by the State of <a href="#">California</a>.</p> <p>Used by various counties in the U.S., as well as by universities.</p>

METHODS USED BY MUNICIPALITIES

Municipality	Measures/Data Sources
<p><a href="#">Seattle, WA</a></p> <p>Collaboration among several groups, including <a href="#">Public Health – Seattle and King County</a></p>	<p>Seattle’s 2019 “<a href="#">Healthy Food Availability &amp; Food Bank Network Report</a>” addressed food environments by neighborhood and food access. They also looked at those who fall into the “food security gap”.</p> <p>Data and measures used:</p> <ul style="list-style-type: none"> <li>• An adapted version of the HFAI from Baltimore and the Center for a Livable Future (see below)</li> <li>• Seattle Healthy Food Survey (municipality-modified tool; with some details in the Report)</li> <li>• Neighborhood median income, demographics, detailed sources are listed in the Appendix of the Report</li> <li>• Food Access Research Atlas</li> </ul>
<p><a href="#">Baltimore, MD</a></p> <p>A collaboration between the <a href="#">City of Baltimore</a> and Johns Hopkins’ <a href="#">Center for a Livable Future</a></p>	<p><b>Created a measure</b></p> <p>Identified Healthy Food Priority Areas using the <a href="#">Healthy Food Availability Index</a>, which uses data from:</p> <ul style="list-style-type: none"> <li>• American Community Survey 5-year estimates to determine transportation variable(s) and household income</li> <li>• Data for “distance to supermarket” from Baltimore City Health Department, USDA FNS SNAP Retailer Locator (2016), and data from the Johns Hopkins Center for a Livable Future (2016)</li> <li>• Census data for demographic variables</li> </ul> <p>See the 2012 American Journal of Epidemiology article for methodology.</p> <p>May be of interest: <a href="#">additional work done</a> by the Center for a Livable Future</p>
<p><a href="#">Washington, DC</a></p>	<p>Conduent Healthy Communities Institute manages the FEI <a href="#">interactive info-graphic webpage</a> and <a href="#">income and food access webpage</a></p> <p>Data sources listed as <a href="#">County Health Rankings</a> and the USDA <a href="#">Food Environment Atlas</a></p> <p><a href="#">More methodology information from Conduent</a></p>

METHODS USED BY MUNICIPALITIES

Municipality	Measures/Data Sources
<p><a href="#"><u>New York, NY</u></a></p>	<p><a href="#"><u>The Food Forward NYC: 10-Year Food Policy Plan 2021:</u></a></p> <ul style="list-style-type: none"> <li>• <a href="#"><u>Robin Hood Poverty Tracker Data</u></a> 2018 (graphics produced by: <a href="#"><u>Center on Poverty and Social Policy and Columbia University</u></a>)</li> <li>• <a href="#"><u>“Map the Meal Gap 2018”</u></a> Feeding America®</li> <li>• <a href="#"><u>American Community Survey</u></a></li> <li>• <a href="#"><u>Office of the NY State comptroller</u></a>, <a href="#"><u>NY State Department of Labor</u></a></li> </ul> <p>The Food Forward NYC: 10-Year Food Policy Plan (page 19) defines Food Hardship as:</p> <ul style="list-style-type: none"> <li>• “Severe food hardship: Often running out of food or worrying that food would run out before there was enough money to buy more.</li> <li>• Moderate food hardship: Sometimes running out of food or worrying that food would run out before there was enough money to buy more.</li> <li>• No food hardship: Not running out of food or not worrying that food would run out before there was enough money to buy more.”</li> </ul>
<p><a href="#"><u>Mendocino, CA</u></a></p>	<p>Mendocino County uses the <a href="#"><u>“2021 Food Insecurity Index</u></a>, created by <a href="#"><u>Conduent Healthy Communities Institute</u></a>, as a measure of food access correlated with economic and household hardship. The index is part of the <a href="#"><u>SocioNeeds Index</u></a>® Suite, which provides analytics around social determinants of health to advance equitable outcomes for a range of topics.”</p> <p>Component indicators for the <a href="#"><u>Food Insecurity Index</u></a> are only available to clients.</p>
<p><a href="#"><u>Boston, MA</u></a></p>	<p>Boston’s <a href="#"><u>“Mayor’s Food Access Agenda: 2021-2023”</u></a> uses data from:</p> <ul style="list-style-type: none"> <li>• Feeding America® (<a href="#"><u>Map the Meal Gap 2020</u></a>)</li> <li>• <a href="#"><u>Boston Behavioral Risk Factor Surveillance System (BRFSS)</u></a>, Boston Public Health Commission</li> </ul>
<p><a href="#"><u>Florida Department of Health</u></a></p> <p><a href="#"><u>Division of Public Health Statistics and Performance Management</u></a></p>	<p>The <a href="#"><u>FL Health Charts</u></a> website uses data from Feeding America® data to show graphs, tables, and maps with <a href="#"><u>food insecurity rates</u></a> by year and by county.</p>

## METHODS USED BY MUNICIPALITIES

Municipality	Measures/Data Sources
<a href="#">Onondaga County, NY</a>	<p><a href="#">Community Health Assessment and Improvement Plan</a> uses data from:</p> <ul style="list-style-type: none"> <li>• USDA, <a href="#">Food Access Research Atlas</a>, 2015</li> <li>• Students eligible for free or reduced lunch, source: <a href="#">NYS Department of Education</a></li> <li>• <a href="#">BRFSS 2016</a> from the Centers for Disease Control and Prevention</li> </ul>
<p><b>Sussex, Passaic, Warren, Union, and Morris Counties, NJ</b></p> <p><a href="#">New Jersey Health Collaborative – Health Matters</a> (composed of the 5 NJ counties)</p>	<p>Uses the FEI to show food insecurity by zip code, county, or census tract:</p> <ul style="list-style-type: none"> <li>• Maintained by Conduent Healthy Communities Institute (same as Mendocino, CA, Washington, DC, and many others)</li> <li>• Data source: <a href="#">County Health Rankings</a></li> </ul>

## FOOD INSECURITY SURVEY INSTRUMENTS

Tool / Survey Instrument	Source	Description and Additional Notes
<a href="#">USDA Economic Research Service Survey Tools</a>	USDA <a href="#">ERS</a>	<p>Detailed <a href="#">Guide to Measuring Household Food Security</a> (revised 2000)</p> <p>Provides survey instruments for the six-item survey, the youth survey, household survey, and adult survey. As well as providing Spanish and Chinese translations of the Household Survey.</p>
<a href="#">Food Insecurity Experience Scale</a> (FIES)	Food and Agriculture Organization (FAO) of the United Nations	<p>An eight-question survey to create a scale that can be used globally.</p> <p>The <a href="#">Food security measurement in a global context: The Food Insecurity Experience Scale</a> article describes the creation of the scale.</p> <p>The FAO provides <a href="#">detailed methods information</a> online.</p>

**FOOD INSECURITY SURVEY INSTRUMENTS**

Tool / Survey Instrument	Source	Description and Additional Notes
<p><a href="#"><u>Understanding America Study</u></a> (UAS)</p>	<p>LA County, University of Southern California</p>	<p>One of the study’s surveys is “UAS 437: Food Insecurity” - it is comprised of three questions based on the Food Insecurity Experiences Scale (FIES).</p> <p>Go to the <b>UAS surveys index and scroll to UAS 437 for information about the survey and to review the Survey codebook.</b></p> <p>The Understanding America Study has a sub-study, <a href="#"><u>Understanding Coronavirus in America</u></a></p>
<p><a href="#"><u>Hunger Vital Sign™</u></a></p>	<p><a href="#"><u>Children’s HealthWatch</u></a></p>	<p><a href="#"><u>Original article</u></a> describing the development and validation of the two-item scale <a href="#"><u>National Academy of Medicine article</u></a></p>
<p><a href="#"><u>Nutrition Environment Measures Survey</u></a></p> <p>Corner Stores version: <a href="#"><u>(NEMS-CS)</u></a></p>	<p>The University of Pennsylvania’s <a href="#"><u>Center for Health Behavior Research</u></a></p>	<p>See the first table</p>
<p><a href="#"><u>Nutrition Environment Measures Survey</u></a></p> <p>Stores version: <a href="#"><u>(NEMS-S)</u></a></p>	<p>The University of Pennsylvania’s <a href="#"><u>Center for Health Behavior Research</u></a></p>	<p>See the first table</p>



## APPROACHES TO MITIGATE FOOD INSECURITY

Implementing Agency	Description and Sources
Los Angeles County Food Security Branch	<p><a href="#">The Let's Feed LA County Food Voucher Program</a> distributed food vouchers to County residents, including immigrant households and college students, who were at risk of hunger but were excluded from other food assistance programs. <a href="#">The partnership</a> included tech companies, local government, grocery stores, and community-based organizations in some of the County's hardest-hit communities. This <a href="#">Public Exchange Report</a> Highlights Recommendations from the First 18 Months of the Pandemic to Strengthen our Food Systems.</p>
Sacramento County Food Insecurity Pilot Program	<p>The <a href="#">County Food Insecurity Pilot Program</a>, through Family Meal Sacramento and the National Association for the Advancement of Colored People (NAACP), provides restaurant meals and deliveries to families experiencing the greatest need. The NAACP will also provide food insecurity outreach to families in need.</p>
ChangeLab Solutions	<p>The <a href="#">How California's Community-Based Organizations Filled the Gaps for Underserved Communities</a> report shows policymakers and community leaders how they can improve California's efforts to support an equitable recovery from the social, economic, and health effects of the pandemic. The insights and experiences of community-based organizations have informed recommendations that will help identify policies and strategies to better serve BIPOC communities and families with low income in California.</p>
No Kid Hungry® Center for Best Practices	<p><a href="#">COVID-19 Emergency Response Resources</a> to help program sponsors, community partners, and advocates provide meals to children during school closures related to the coronavirus. This resource provides information about the <a href="#">SNAP flexibilities authorized during COVID</a>, with a particular focus on the Emergency Allotments. Learn about program innovations through <a href="#">survey results of organizations serving kids</a> and <a href="#">case studies of organizations serving food to kids</a> in the context of COVID-19 school closures.</p>
Los Angeles Food Policy Council: Healthy Neighborhood Market Network (HNMN)	<p>Empower neighborhood market owners to become healthy food retailers. The <a href="#">HNMN program</a> empowers small business owners in low-income neighborhoods to bring healthy food to their communities. Storeowners receive training, guidance, and upgrades to their stores, transforming them into beacons of healthy, affordable food.</p>
Department of Public Works StreetsLA	<p><a href="#">StreetsLA</a> is taking action to protect the health and safety of Angelenos and the workforce during the global COVID-19 public health crisis while delivering essential services for the city. All Farmers Markets required a <a href="#">COVID-19 operational plan approved by StreetsLA</a>. See <a href="#">photos of fresh food and safety</a> done right!</p>

## APPROACHES TO MITIGATE FOOD INSECURITY

Implementing Agency	Description and Sources
Harbor Area Farmers Market	<a href="#">Online shopping page</a> delivering healthy food to underserved and oppressed communities, especially in times of crisis and global pandemic.
California Association of Food Banks	<a href="#">The Impact of COVID-19 on California's Emergency Food System</a> report demonstrates the consistent and ongoing elevated food needs and the need for a sustained public policy response to support the emergency food system in its efforts to feed our communities sustainably and healthily.
Gretchen Swanson Center for Nutrition	<p>The <a href="#">Produce Prescriptions, Financial Incentives Help Poor Eat More Fresh Fruit and Vegetables</a> article highlights the Nutrition incentive programs, which give SNAP recipients more money to spend on fruits and vegetables; and produce prescription projects that prescribe fresh fruits and vegetables to people at risk of food insecurity or chronic disease.</p> <p>The <a href="#">Year 2 GusNIP NTAE Impact Findings</a> report includes information on projects implemented during the COVID-19 public health crisis.</p>
City of Sacramento	The City of Sacramento is launching a new community-driven initiative <a href="#">Food Justice Task Force</a> to ensure that the most vulnerable communities recover equitably manner from the COVID-19 pandemic and that the city has sufficient, healthy, and accessible food for all. Top priorities include increasing access points to healthy food and investing in the local food system economy.

THIS CONTENT IS THE RESPONSIBILITY OF THE PUBLIC HEALTH INSTITUTE CENTER FOR WELLNESS AND NUTRITION AND DOES NOT NECESSARILY REPRESENT THE OFFICIAL POSITION OF OR ENDORSEMENT BY THE CENTERS FOR DISEASE CONTROL AND PREVENTION. THIS PROJECT WAS SUPPORTED BY FUNDS MADE AVAILABLE FROM THE CENTERS FOR DISEASE CONTROL AND PREVENTION, CENTER FOR STATE, TRIBAL, LOCAL, AND TERRITORIAL SUPPORT, THROUGH COOPERATIVE AGREEMENT 6 NU38OT000303-04-02.