

S2 Appendix: Characteristics of included studies

Table S4. Identified metrics and definitions of food security (sorted by metrics)

Citation	Food Security Metric	Authors' Definition of the Food Security Metric
Ahluwalia et al., 2013	WIC receipt	"We estimated reliability by kappa coefficient and validity by sensitivity and specificity using the birth certificate data as the reference for the following: prenatal participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); Medicaid payment for delivery; and breastfeeding initiation"
Baek, 2016	Current Population Survey Food Security Supplement (CPS-FSS)	"I use the number of vehicles operated in urbanized areas (UA) from the National Transit Database (NTD) and household food insecurity data from the Current Population Survey Food Security Supplement (CPS-FSS) from 2006 to 2009"
Baer et al., 2015	U.S. Household Food Security Survey Module	"To measure food insecurity, participants were administered the appropriate validated USDA-FSS based on age and parental status. The 18-item US Household Food Security Survey Module was answered by patients aged 18-25 years who self-identified as being a parent. The 10-item Adult Food Security Survey Module was completed by patients aged 18-25 years who did not self-identify as being a parent"
Balistreri, 2016	Eighteen-Item Household Food Security Scale	"The household food security scale was developed by the USDA to measure the severity of food insecurity experienced in the household in the previous 12 months. It is measured with an 18-item scale if the household contains children and ten if it does not"
Barnidge et al., 2017	Eighteen-Item Household Food Security Scale	"A two-item validated screener was used to assess household food security. The first item asked, 'over the last 12 months did you worry there would not be enough food and there was no money to buy more?' 'Nearly one-fifth (17.5 %) of caregivers reported this was often true while 37.3 % reported this as sometimes true. Household food insecurity was measured using the first two questions from the 18-item U.S. Household Food Security Survey"
Barnidge et al., 2017	Eighteen-Item Household Food Security Scale	"Participants completed a demographic questionnaire that included age, household income, and participation in food assistance programs. The questionnaire also included the US Department of Agriculture's 18-item Food Security Module to determine household food security status and the food security status of children in the home"

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Boone-Heinonen et al., 2015	Neighborhood Supermarket Density per 10,000 people	"Neighborhood food and physical activity amenities were obtained from Dun and Bradstreet, a commercial dataset of U.S. businesses (Dun & Bradstreet). Fast-food chain restaurants, supermarkets (large grocery stores), commercial physical activity facilities, and public physical activity facilities corresponding to each CARDIA exam period were extracted and classified according to 8-digit Standard Industrial Classification codes (U.S. Department of Labor)"
Borders et al., 2015	U.S. Household Food Security Survey Module	"External stressors were measured using the Home Hardships Scale, the USDA Household Food Security Scale and the Neighborhood Satisfaction Scale"
Brewer et al., 2010	Six-Item Short Form of the Food Security Survey Module	"Food insecurity was assessed using the modified 6-item US Household Food Security Survey Module"
Burke et al., 2018	U.S. Household Food Security Survey Module	"Food security status was our dependent variable and was measured using the US Department of Agriculture (USDA) Household Food Security Survey Module (HFSSM) (Coleman-Jensen et al.2015). The HFSSM uses a 12-month recall period and 18 Likert-type items to assess the frequency in which household members report, because of a lack of resources, disruptions in the quality, quantity and patterns of the household food supply as well as anxiety related to running out of food"
Caraballo et al., 2020	10-item questionnaire recommended by the US Department of Agriculture Economic Research Service	"Food security in the past 30 days was created based on the 10-item questionnaire as recommended by the US Department of Agriculture Economic Research Service (Table I in the Data Supplement) 13,20 and constructed following the NHIS instructions. ²¹ Answers of ≥ 3 days were considered affirmative in questions about frequency of occurrence in the past 30 days. A raw score ranging from 0 to 10 was calculated, and participants were categorized as follows: 0 to 2 points: food secure; 3 to 5 points: low food security; and 6 to 10 points: very low food security. We then defined food insecurity as having either low or very low food security, in concordance with previous studies"
Chakrabarti et al., 2021	Food insufficiency	"Pandemic-related food insufficiency, defined as there sometimes or often not being enough food to eat in the last 7 days or food availability becoming worse after March 13, 2020"

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Chilton and Booth, 2007	Six-Item Short Form of the Food Security Survey Module	"Each participant, in both the focus groups and the individual interview sessions, also answered a brief questionnaire that included demographic characteristics, food stamp participation, and the US Department of Agriculture Household Food Security Scale—Short Form. Food Insecurity was calculated according to established methods. Terminology of food insecurity categories was recently changed by the US Department of Agriculture"
Clay and Ross, 2020	2-Item screen to identify families at risk for food insecurity	"The outcome food security was assessed with a validated two-item food security screener (97 percent sensitivity, 83 percent specificity) that was designed to rapidly identify individuals at-risk for food insecurity"
Conlon et al., 2015	Six-Item Short Form of the Food Security Survey Module	"Household food security was assessed by parents' self-response to six items from the Short Form of the Household Food Security Scale"
Cook et al., 2002	U.S. Household Food Security Survey Module	"We used a somewhat more stringent method of scoring the Food Security Scale for this analysis than the standard US Department of Agriculture method, which led to conservative estimates of the effects of exposure on this outcome"
Cox and Wallace, 2016	18 food security questions in the CFSM	"There are 18 food security questions in the CFSM. The food security module is designed to allow administrators to implement two common screens (and a third less common screen) when it appears the food security questions may pose an unnecessary burden on the respondents. All three screens were used in the FFCWS survey"
Crabtree and Mushi-Brunt, 2013	National Health Interview Survey on Disability (NHIS-D) with 10 questions about food access	"The NHIS-D includes questions about participation in several activities and functional limitations. We identified 10 questions about food access-related participation and functional limitations that likely affect being able to access food for nutrition"
Dean et al., 2011	Radimer-Cornell hunger and food insecurity instrument	"Food insecurity was measured by the household-hunger dimension of the food-depletion item from the Radimer-Cornell hunger and food insecurity instrument"
Denney et al., 2020	Eighteen-Item Household Food Security Scale	"Household food insecurity, a binary measure created from the USDA's 18-item food insecurity scale (Bickel et al., 2000), serves as our outcome measure"
Duke et al., 2021	2-item Hunger Vital Sign Tool	"Food insecurity was assessed using the 2-item Hunger Vital Sign Tool. The baseline survey included the validated, two-item Hunger Vital Sign (HVS), a food insecurity screening tool based on the U.S. Household Food Security Survey Module"

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Duke, 2021	Radimer-Cornell hunger and food insecurity instrument	"Food insecurity was measured with the following question: 'During the past 30 days, have you had to skip meals because your family did not have enough money to buy food?' Students were able to respond 'yes' or 'no' to this question. Based on the Radimer/Cornell Hunger Scale, ¹⁹ this single item focused on the experience of skipping meals represents child level or severe food insecurity, reflecting insufficiency of household food such that youth are affected by reductions in the quantity of food eaten"
Echeverria et al., 2004	Access to healthy foods scale	"Scales were used to assess six neighborhood domains: aesthetic quality, walking/exercise environment, safety from crime, violence, access to healthy foods, and social cohesion"
Fleming et al., 2021	NHANES Food Security Module	"NHANES has been using the Food Security Survey Module, similar to the module included in the Current Population Survey, to assess food security since 1999. This module is included in the family questionnaire portion of the NHANES household interview. An adult family member, typically the head of household, answers the family questionnaire on behalf of the entire family and questions refer to all household members. Households with children younger than 18 years of age receive an additional 8 questions for a total of 18 items, compared to households without children"
Garrett-Peters and Mills-Koonce, 2013	Food insufficiency questions (5 items)	"Mothers completed food insufficiency questions (five items) about whether they or other household members went hungry or had to skip or cut meals because they could not afford to buy food in the last 12 months. Scores could range from 0 to 5"
Ghosh and Parish, 2015	Not reported	"These included a measure of difficulty paying for utilities like electricity and or telephone bills; difficulty paying the full amount for rent or mortgage, difficulty meeting essential expenses and not going to a doctor and or a dentist when needed to any time in the last 12 months, and whether they experienced food insecurity any time in the last four months"
Gilbert and Ashley, 2020	4-item 7-point Likert scale adapted from food access questionnaire from Hendrickson, Smith, and Eikenberry (2006)	"We adapted food access questionnaire items from Hendrickson, Smith, and Eikenberry (2006), who investigated access to fruits and vegetables by low-income residents in urban and rural areas of Minnesota. We created a four-item, seven-point Likert scale in which respondents indicated the extent to which they agreed or disagreed with statements such as "I have access to a variety of foods" and "the fruits and vegetables I can access are fresh." Each item is scored from 1 ("strongly disagree") to 7 ("strongly agree")"

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Gilbert et al., 2017	Participation in MAP + TANF + SNAP	"In addition to household income verification and documentation for WIC program eligibility, adjunctive eligibility measures, such as participation in other federal programs (i.e., medical assistance, food stamp (SNAP), and temporary cash assistance (TCA)) were gathered and electronically verified through linkage with respective agency databases prior to documentation and storage in the WOW database"
Hammer et al., 2021	3-item adaptation from the USDA Food Insecurity Scale	"Food insecurity was assessed based on responses to three food insecurity items derived from the USDA Household Food Security Survey Module. ²⁷ The items used asked how often, in the last 12 months, the respondent or people in the respondent's household (1) worried whether your food would run out before you had money to buy more; (2) the food that you bought did not last, and you didn't have enough money to get more; or (3) you couldn't afford to eat balanced meals"
Harrison et al., 2005	Six-Item Short Form of the Food Security Survey Module	"The food security measure used is an abbreviated six-item scale derived from the 18-item U.S. Household Food Security Instrument employed surveys and administered to CHIS respondents below 200% FPL"
Hernandez and Pressler, 2013	Eighteen-Item Household Food Security Scale	"The measure of food insecurity is based on an 18-item scale developed by the U.S. Department of Agriculture that assesses both the quality and quantity of food over the past 12 months. The scale captures food hardship due to financial constraints such as running out of food, perceptions that food in a household is of inadequate quality or quantity, and reduced food intake by adults or children"
Huang et al., 2015	Survey of Income and Program Participation. The SIPP	"The food insufficiency question in SIPP asked respondents to choose the best of the following statements describing household food experiences in each of 4 reference months:"
Kaiser et al., 2007	Six-Item Short Form of the Food Security Survey Module	"Food insecurity of the women was measured by a 6-item subset of the Food Security Module"
Keene et al., 2015	Survey of Income and Program Participation. The SIPP	"SIPP provides a nationally representative sample of rent-assisted households, to examine the association between housing-assistance type and reports that neighbors count on each other, watch each other's children, help each other out, can trust each other to intervene in the face of danger or harm, and have access to help from friends to family"

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Kharmats et al., 2014	U.S. Adult Food Security Survey Module	"Food security over the past year was measured and scored by using the US Adult Food Security Survey Module (10 items). Participants were asked to tell the interviewer whether statements about food situations presented in the module were "often true, sometimes true, or never true for you/your household in the past 12 months"
Kipke et al., 2020	Not reported	"Food security (last 12 months)"
Koh et al., 2020	Six-Item Short Form of the Food Security Survey Module	"Using the Six-Item Household Food Security Survey Module designed by USDA, the FMTS elicited responses to five questions and statements about respondents' food procurement experience in the last 12 months"
Laraia et al., 2006	Eighteen-Item Household Food Security Scale	"Food security—main outcome. "The USDA food security modules comprised of 18 questions posed in increasing levels of severity by measuring the dimensions of concern about food quantity and food quality over the last 12 months"
Laraia et al., 2009	Six-Item Short Form of the Food Security Survey Module	"To calculate household food insecurity status, the six-item short form of the USDA Core Food Security Module (CFSM) for families was used (29,30). Questions were asked about the household's experience over the past 12 months"
Lauren et al., 2021	2-Item screen to identify families at risk for food insecurity	"We assessed household risk for food insecurity using a validated two-item screen. (16) Households at risk for food insecurity were defined as those with responses of "Sometimes true" or "Often true" for either or both items. Participants reported answers to each of these questions for the periods before and after the COVID-19 outbreak"
Lee et al., 2011	Six-Item Short Form of the Food Security Survey Module	"Scoring for the modified 6-item HFSSM was completed to reflect the validated survey module. For the identical questions from the original HFSSM, responses of "often" or "sometimes" on questions "food didn't last" and "couldn't afford balanced meals" and "yes" on "ate less" and "hungry" were coded as affirmative"
Leigh and Medal-Herrero, 2015	WIC receipt	"Our dependent variable, was binary and equaled 1 if the subject or anyone in the household received WIC benefits in the preceding 2 years"
Lise et al., 2021	Eighteen-Item Household Food Security Scale	"Household food security was assessed using the 18-item USDA US-Household Food Security Survey Module (HFSSM), which queries the past 12 months"

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Lin et al., 2021	Food Insecurity Experience Scale (FIES)	"We also included the Food and Agriculture Organization's Food Insecurity Experience Scale (FIES), which captures respondent's reporting of any food deprivation (e.g., constraints on one's ability to obtain adequate food) both prior to and during the pandemic"
Lombe et al., 2009	Eighteen-Item Household Food Security Scale	"Household Food Security—the dependent variable—is measured using items taken from the USDA 18-item Core Food Security Module (CFSM), a self-report measure of household food security for the past 12 months"
Long et al., 2020	U.S. Household Food Security Survey Module	"Household food security status was assessed in the NHIS and NHPI-NHIS via the 10-item US Adult Food Security Survey Module (Table 1). ⁵⁴ All respondents were asked the 10-item module, as opposed to the full battery of 18 items that are asked of households with children in the CPS"
Makelarski et al., 2015	2-item screen derived from the 18-item US Household Food Security Screen	"We measured household food insecurity in the past 12 months by using a validated 2-item screen derived from the 18-item US Household Food Security Screen (affirmative responses to either survey item indicated a positive screen for household food insecurity"
Martin et al., 2004	U.S. Household Food Security Survey Module	"Household food security and hunger were measured using the US Household Food Security Module"
Martin et al., 2016	Eighteen-Item Household Food Security Scale	"Food security was measured using the USDA 18-item Food Security Module"
McCurdy and Metallinos-Katsaras, 2011	4 Items from the 18-Item Food Security Core Module (FSCM)	"Household food security status was assessed with caregiver Responses to 4 items from the 18-item Food Security Core Module (FSCM), commonly used to measure food security status in the United States. ²⁴ Caregivers were asked about the following for the previous 12-month time period: (1) not having enough money to buy food for a balanced meal, (2) adults cutting the size of meals or skipping meals, (3) frequency of cutting or skipping meals, and (4) adults not eating for a whole day"
McDonough et al., 2019	18-item Food Security Core Module (FSCM)	"Using definitions of food security provided by the USDA, we assign each household to a particular state of food security where the various states of food security are food insecure, marginal food secure, and high food secure (i.e., K = 3). We then track how households move through the distribution of food security from one period to the next. Additionally, the food security questions surveyed come from the USDA's Core Food Security Module"

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Miller et al., 1996	Nutrition Screening Initiative (NSI)& 10-item DETERMINE Checklist	"Nutritional risk was measured using the Nutrition Screening Initiative Checklist. Demographic information, economic status, self-rated health, Geriatric Depression Scale score, and body mass index were assessed using established standardized instruments"
Miller et al., 2015	Number of full-service retail food outlets (RFOs) in the neighborhood	"Food stores within one's census tract should be fairly accessible with or without automobile access or other transportation arrangements. In this article we simply measure food availability, or the presence of full service RFOs that offer a selection of fresh or frozen fruits and vegetables"
Mook et al., 2016	Six-Item Short Form of the Food Security Survey Module	"Data on food security status were collected by using the US Department of Agriculture's 6-item short-form food security scale (21). Food security status was categorized as food secure (raw score 0–1) or food insecure (raw score 2–6) and analyzed as a dichotomous variable (21)"
Moore et al., 2020	Six-Item Short Form of the Food Security Survey Module	"The food security survey utilized questions from a validated survey, the US Household Food Security Survey Module: Six-Item Short Form developed by the United States Department of Agriculture (USDA). ¹⁷ The sum of affirmative responses to six questions was used to calculate a raw score that determined the level of food security as food secure (score 0–1 = high security or marginal insecurity), low food security (score 2–4), or very low food security (score 5–6)"
Morales et al., 2020	Household Pulse Survey (HPS) food insecurity measure	"Instead of including any items from the HFSSM scale, the HPS collected a different measure of food insecurity by asking respondents to choose a statement that best described the food eaten situation in their households over the past 7 days [42]. A recent research report confirmed that the HPS measure is a good indicator of household food insecurity and aligns with the HFSSM measure [43]. We used responses to the HPS question to construct a variable measuring the level of household food insecurity during the COVID-19 pandemic, which ranges from 0 = food secure ("enough of the kinds of food I/ we wanted to eat") to 3 = severely food insecure ("often not enough to eat")"
Murimi et al., 2016	18 food security questions in the CFSM	"The Spanish translation of the US Household Food Security Survey Module by USDA researchers was used. Standard 12 months Core Food Security Module (CFSM) questions were used with the assumption that data collected would capture events of the past 12 months"
Myers and Painter, 2017	NHANES Food Security Module	"The NHANES food security module includes questions on participants' food situations at home and food assistance benefits (i.e., those associated with SNAP) received within the previous 12 months"

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Myers et al., 2020	U.S. Household Food Security Survey Module	"Food security status was measured through the US Household Food Security Survey Module (developed by the US Department of Agriculture), which comprises 18 items that assess the "conditions and behaviors that characterize ... difficulty meeting basic food needs" Three or more affirmative responses in this module indicate food insecurity"
Nagata et al., 2021	U.S. Household Food Security Survey Module	"The questions regarding food sufficiency were consistent with the U.S. Household Food Security Survey Module. Food insufficiency generally describes whether households have enough food for their families to eat and is often the most extreme form of food insecurity. In other surveys, such as the Current Population Survey's Food Security Supplement, 86%–89% of people reporting food insufficiency were deemed food insecure"
Nam et al., 2014	Food Insufficiency Indicator (from SEED OK survey)	"The dependent variable in this study is a food insufficiency indicator created with a question in SEED OK's baseline survey: "During the past 12 months, did your family (1) always have enough to eat, (2) sometimes not have enough to eat, or (3) of-ten not have enough to eat? "This item is a slightly modified version of the first screening question in the U.S. Department of Agriculture's Food Security Core-Module Questionnaire"
Okafor et al., 2020	2-item Hunger Vital Sign Tool	"From January 2017 through February 2017, we utilized a validated two-item screening tool to assess the prevalence of households at risk for food insecurity and conducted a focus group of pediatricians. The USDA provides several tools (6-, 10-, and 18-item) to screen for food insecurity (USDA ERS: Survey Tools, 2019). In November 2015, the American Academy of Pediatrics (AAP) issued a policy statement (Promoting Food Security for All Children, 2018) that endorses the use of the two-item screening tool, now coined the Hunger Vital Sign"
O'Reilly et al., 2020	2-Item screen to identify families at risk for food insecurity	"Household food insecurity risk was measured with a 2-item screen [36]: (a) "within the past 12 months, we worried whether our food would run out before we got money to buy more" and (b) "within the past 12 months, the food we bought just didn't last and we didn't have money to get more." Answering affirmatively to either or both questions indicate household food insecurity risk, coded 0 = food secure; 1 = food insecure risk"
Orozoco et al., 2020	U.S. Household Food Security Survey Module	"A validated US Department of Agriculture 18-item Food Security Survey Module was used in the NHANES 2009–2014 surveys to assess household food security status over the prior 12 months. The scale consisted of statements representing coping behaviors or experiences owing to insufficient money to buy food, leading to a score of 0–18"

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Palmer et al., 2018	Six-Item Short Form of the Food Security Survey Module	"Food security was measured according to the six-item USDA core food security module"
Palmer et al., 2020	Six-Item Short Form of the Food Security Survey Module	"The 6-item USDA Core Food Security Module (CFSM) estimated food security"
Paschal et al., 2020	U.S. Adult Food Security Survey Module	"The 10-item U.S. Adult Food Security Survey Module ⁴⁰ was used to assess food insecurity. In using the 10-item module, direct inquiry about children's food insecurity was avoided, which was a sensitive issue and concern for one of the partners. Survey burden was also lowered with this version compared to the 18-item module"
Patterson et al., 2020	U.S. Household Food Security Survey Module	"Both NHIS and NHANES measure food security using the USDA US Food Security Survey Module ($\alpha = 0.74\text{--}0.93$) (Keenan et al., 2001). The survey module asks adults to report their experiences with food security using a scale of 0–10. Levels of food security are designed as "full food security" (0 points), "marginal food security" (1–2 points), "low food security" (3–5 points), and "very low food security" (6–10 points)"
Payne-Sturges et al., 2018	U.S. Household Food Security Survey Module	"Food security status was assessed via the USDA 18-item Household Food Security Survey Module (HFSSM)"
Perry et al., 2020	Not reported	"Key outcome markers include four subjective and objective markers of financial strain. The first three measure respondents' reported level of housing insecurity, food insecurity, and general financial insecurity attributed to the COVID-19 pandemic. Housing insecurity, food insecurity, and general financial insecurity were measured in wave 2 by asking respondents the extent to which they agreed that COVID-19 has made them worry that they "may not have a place to live," that they "may not have enough money to buy food," and "about their finances, in general" (0 = strongly disagree, 1 = disagree, 2 = agree, and 3 = strongly agree)"
Pooler and Gleason, 2014	WIC receipt	"Dependent variables of interest in this study included the full use of WIC benefits overall and for each of the 14 WIC food categories. To determine whether benefits were used fully, the same method was applied to each of the 14 food categories:"

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Rank and Hirsch, 2009	Receipt of food stamps in the past 12 months	"Food stamp use was derived from a series of questions asked by the PSID interviewers as to whether the household had received specific cash or in-kind public assistance programs at some point during the prior year. With regard to food stamps, respondents were asked, "Did you (or anyone else in your family) use government food stamps at any time in [prior year]?"
Reeder et al., 2020	Six-Item Short Form of the Food Security Survey Module	Food security status was measured using the United States Department of Agriculture's U.S. Household Food Security Survey Module: Six-Item Short Form [26]. This survey uses a subset of questions from the standard 18-item Food Security Survey Module. The Six-Item Short Form is a reliable substitute for the 18-item Food Security Survey Module and has a lower respondent burden.
Ruprecht et al., 2020	Not reported	"Food shortage"
Harare et al., 2020	Not reported	"Drawing on the food insecurity literature 12–15 a number of potential community-level sociodemographic variables were reviewed that may differentiate the two-by-two typology"
Sharkey and Schoenberg, 2002	Nutrition Screening Initiative (NSI)& 10-item DETERMINE Checklist	"Nutritional risk was assessed by administering the Nutrition Screening Initiative (NSI)'s 10-item DETERMINE Checklist. The Checklist was developed as a self-report preliminary screen for warning signs of increased risk for poor nutritional health and is used by the ENP in most states for nutrition risk screening"
Sharkey and Schoenberg, 2005	Food Sufficiency Status based on four self-reported risk situations that were related to absence of food and forced scarce-resource decisions	"The level of food sufficiency, during the 6months prior to the in-home assessment, was operationalized from four self-reported risk situations that were related to absence of food and forced scarce-resource decisions and that were previously used in national evaluation of OAANP to characterize the difficulty in meeting basic food needs among homebound meal program participants"
Siddiqi et al., 2021	Six-Item Short Form of the Food Security Survey Module	"We assessed food security in 2018 and 2020 using the validated Adult Food Security Survey Module Six-Item Short Form. ²¹ We created a 3-level food security measure based on the survey module scores: we categorized people with scores ranging from 0 to 1.0 as being food secure, people with scores ranging from 2.0 to 4.0 as having a low level of food security, and people with scores ranging from 5.0 to 6.0 as having a very low level of food security. We based scores on the number of affirmative responses to the 6 questions included in the survey module"

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Stallings et al., 2016	Enrollment in Farmer's Market Nutrition Plan (FMNP)	"In addition to food vouchers and nutrition education, most states' WIC programs offer the Farmers' Market Nutrition Program (FMNP), which provides FMNP coupons to be redeemed at a WIC-approved farmers' market as a means to increase fresh F&V consumption"
Stewart et al., 2011	2007 AIDS Alabama Needs Assessment Survey	"The interview covered demographics; basic needs such as food, transportation, and housing; and a wide range of other ancillary services. A total of 14 basic and ancillary service needs were included: financial, legal, pharmaceutical, employment, and housing assistance; substance use, mental health, and alcohol treatment; medical services, transportation, dental care, case management, food, and childcare"
Stockman et al., 2020	WHO survey tool on COVID stressors	"We assessed nine COVID-19 stressors as outlined by the WHO [20]. Examples include food insecurity, insufficient rent, and caregiver status. We employed the Fear of COVID-19 Scale, a 7-item scale, self-reported measure of an individual's fear of COVID-19"
Stuff et al., 2004	Eighteen-Item Household Food Security Scale	"This interview included the 18-question US Food Security Survey Module and had questions about participation in nutrition assistance programs and income"
Tackett et al., 2018	Eighteen-Item Household Food Security Scale	"National Health and Nutrition Examination Survey—Household Food Security Questionnaire. This 18-item questionnaire characterizes household food security status. Items assessed food access problems, limitations, food sufficiency, or food shortage"
Tamar goes et al., 2021	U.S. Household Food Security Survey Module	"FI was determined with the Household Food Security Module, which assesses a respondent's perceived food sufficiency and adequacy during the past 12 months"
Tan et al., 2020	U.S. Household Food Security Survey Module	"Food insecurity, which were assessed using the Household Food Security Survey (HFSS) module, a validated scale considered the reference measure of food security in the United States (22, 23). This 18-item scale captures uncertainty about food supply, sufficiency of food quantity, and diet quality over the previous 12 months"
Tong et al., 2019	Six-Item Short Form of the Food Security Survey Module	"We assessed food security using the Six-Item Short Form of the US Household Food Security Survey Module (FSSM), a validated measure of food security in the general population and among older adults"

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Trego et al., 2019	U.S. Adult Food Security Survey Module	"Food insecurity, the dependent variable, was measured by the 10-item adult US Food Security Survey Module (FSSM). The FSSM is designed to assess household financial ability to meet food needs within the past 12 months using Likert scale and yes/no questions"
Tucker-Seeley et al., 2016	Health and Retirement Study (HRS) Food Insecurity question	"The items from the HRS were selected across five domains of hardship based on the poverty and life stress literatures as well as factors revealed in previous investigations of the measurement properties of hardship indicators: financial hardship, food hardship, housing/neighborhood hardship, employment instability, and medical need"
Vedovato et al., 2016	Eighteen-Item Household Food Security Scale	"Food security was assessed using the US Department of Agriculture's eighteen-item Household Food Security Scale for households with children under 18 years old. Household food security was determined by the number of food-insecure conditions and reported behaviors reported in the past 12 months"
Walker et al., 2020	U.S. Household Food Security Survey Module	"During each year of the survey, the same validated scale for food insecurity was used. Ten questions were asked of each family using questions and response options from the US Department of Agriculture Food Security Survey Module. A 4-level food security status was calculated based on the number of affirmative responses using scoring from Bickel et al"
Wang et al., 2015	First item of the Household Food Insecurity Access Scale	"To capture the broadest domain of food insecurity—uncertainty about food access— VACS incorporated the first question of the 18-item Household Food Insecurity Access Scale (HFIAS) in the baseline patient survey"
Wang et al., 2021	Six-Item Short Form of the Food Security Survey Module	"Our primary outcome was food security. We scored the 6-item version of the US Department of Agriculture's US Household Food Security Survey Module: Six-Item Short Form as a dichotomous variable: food secure (0 or 1 item answered affirmatively) or food insecure (2–6 items answered affirmatively)"
Weaver et al., 2019	U.S. Household Food Security Survey Module	"The questionnaire used the United States Department of Agriculture (USDA) food security measure to assess food security. Over time, the measure has been modified and expanded and, most recently, includes a 10-item index"
Whitbeck et al., 2006	3-item adaptation from the USDA Food Insecurity Scale	"We assessed food insecurity with three items adapted from the USDA food insecurity scale that dealt specifically with going without or cutting back food. It should be noted that these are only three items from a 16-item scale, and they do not reflect the nuances of the full USDA measure"

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Wilson et al., 2006	U.S. Household Food Security Survey Module	"The 16-item US FSSM was verbally administered to each HD participant. Respondents answered often true, sometimes true, or never true to each item"
Wolfe et al., 1996	Not reported	Not reported
Wood and Harris, 2018	Not reported	"Food insecurity was a dichotomous measure based on students indicating challenges with "hunger," an acute form of food insecurity"
Yu et al., 2010	Eighteen-Item Household Food Security Scale	"Child Food Security (the dependent variable) and Household Food Security (independent variable) are measured using items taken from the USDA 18-item Core Food Security Module (CFSM). Nine items from the CFSM use household food security. In the past 12 months, households were asked whether: 1) they worried their food would run out before they got money to buy food; 2) the food that they bought just didn't last and they didn't have money to get more; 3) they couldn't afford to eat balanced meals; 4) they relied on only on a few kinds of low-cost food to feed their children because they were running out of money to buy food; 5) they ever cut the size of their meals or skip meals because there wasn't not enough money for food; 6) they ever ate less than they felt they should because there wasn't enough money to for food; 7) they were ever hungry but didn't eat because they couldn't afford enough food; 8) they lost weight because they didn't have enough money for food; and 9) they ever not eat for a whole day because there wasn't enough money for food"

Table S5. Citation characteristics (sorted by state, region, and study design) of studies included in a scoping review of food insecurity in African American adults

Citation	State(s)	Region	Study Design
Ahluwalia et al., 2013	Not Reported	Not Reported	Cross-sectional
Baek, 2016	Not Reported	Urban	Cross-sectional
Baer et al., 2015	Massachusetts	Urban	Cross-sectional
Balistreri, 2016	Not Reported	Not Reported	Cohort (longitudinal)
Barnidge et al., 2017	Missouri	Not Reported	Cross-sectional
Barnidge et al., 2017	Missouri	Both (urban and rural)	Concept mapping
Boone-Heinonen et al., 2015	Minnesota, California, Alabama, and Illinois	Not Reported	Cohort (longitudinal)

Citation	State(s)	Region	Study Design
Borders et al., 2015	Illinois	Urban	Cohort (longitudinal)
Brewer et al., 2010	Georgia	Not Reported	Cross-sectional
Burke et al., 2018	South Carolina	Both (urban and rural)	Cross-sectional
Caraballo et al., 2020	Not Reported	Not Reported	Cross-sectional
Chakrabarti et al., 2021	All 50 US states + DC	Not Reported	Cross-sectional
Chilton and Booth, 2007	Pennsylvania	Not Reported	Qualitative
Clay and Ross, 2020	Texas	Both	Cross-sectional
Conlon et al., 2015	New York	Urban	Randomized controlled trial
Cook et al., 2002	Minnesota, Maryland, California, Massachusetts, Arkansas, and Washington D.C.	Urban	Cohort (longitudinal)
Cox and Wallace, 2016	Not Reported	Not Reported	Cohort (longitudinal)
Crabtree and Mushi-Brunt, 2013	Not Reported	Both (urban and rural)	Cross-sectional
Dean et al., 2011	Texas	Rural	Cross-sectional
Denney et al., 2020	Not Reported	Not Reported	Cross-sectional
Duke et al., 2021	North Carolina	Urban	Cross-sectional
Duke, 2021	Minnesota	Not Reported	Cross-sectional
Echeverria et al., 2004	New York	Urban	Cross-sectional
Fleming et al., 2021	Not Reported	Not Reported	Cross-sectional
Garrett-Peters and Mills-Koonce, 2013	North Carolina and Pennsylvania	Rural	Cross-sectional
Ghosh and Parish, 2015	Not Reported	Not Reported	Cohort (longitudinal)
Gilbert and Ashley, 2020	Not Reported	Urban	Cross-sectional
Gilbert et al., 2017	Maryland	Not Reported	Cross-sectional
Hanmer et al., 2021	Not Reported	Not Reported	Cross-sectional

Citation	State(s)	Region	Study Design
Harrison et al., 2005	California	Not Reported	Cross-sectional
Hernandez and Pressler, 2013	Not Reported	Not Reported	Cohort (longitudinal)
Huang et al., 2015	Not Reported	Not Reported	Cohort (longitudinal)
Kaiser et al., 2007	California	Not Reported	Cross-sectional
Keene et al., 2015	Not Reported	Urban	Cross-sectional
Kharmats et al., 2014	Maryland	Urban	Cross-sectional
Kipke et al., 2020	California	Urban	Cross-sectional
Koh et al., 2020	Ohio	Urban	Cross-sectional
Laraia et al., 2006	North Carolina	Not Reported	Cross-sectional
Laraia et al., 2009	North Carolina	Not Reported	Cross-sectional
Lauren et al., 2021	Not Reported	Not Reported	Cross-sectional
Lee et al., 2011	Georgia	Both (urban and rural)	Cohort (longitudinal)
Leigh and Medel-Herrero, 2015	California	Not Reported	Cross-sectional
Liese et al., 2021	South Carolina	Urban	Cohort (longitudinal)
Lin et al., 2021	Not Reported	Not Reported	Cross-sectional
Lombe et al., 2009	Not Reported	Not Reported	Cross-sectional
Long et al., 2020	Not Reported	Not Reported	Cross-sectional
Makelarski et al., 2015	Illinois	Urban	Cross-sectional
Martin et al., 2004	Connecticut	Urban	Cross-sectional
Martin et al., 2016	Connecticut	Urban	Randomized controlled trial
McCurdy and Metallinos-Katsaras, 2011	Massachusetts	Not Reported	Cohort (longitudinal)
McDonough et al., 2019	Not Reported	Not Reported	Cohort (longitudinal)
Miller et al., 1996	Missouri and Illinois	Urban	Cross-sectional
Miller et al., 2015	Kansas	Urban	Cross-sectional
Mook et al., 2016	California	Urban	Cross-sectional
Moore et al., 2020	Texas	Urban	Cross-sectional
Morales et al., 2020	All 50 US states + DC	Not Reported	Cross-sectional

Citation	State(s)	Region	Study Design
Murimi et al., 2016	Texas	Both (urban and rural)	Cross-sectional
Myers and Painter, 2017	Not Reported	Not Reported	Cross-sectional
Myers et al., 2020	Not Reported	Not Reported	Cross-sectional
Nagata et al., 2021	Not Reported	Not Reported	Cross-sectional
Nam et al., 2014	Oklahoma	Not Reported	Cross-sectional
Okafor et al., 2020	Connecticut	Not Reported	Cross-sectional
O'Reilly et al., 2020	Not Reported	Urban	Cross-sectional
Orozoco et al., 2020	Not Reported	Not Reported	Cross-sectional
Palmer et al., 2018	Iowa	Both (urban and rural)	Cross-sectional
Palmer et al., 2020	Iowa	Not Reported	Cross-sectional
Paschal et al., 2020	Alabama	Both (urban and rural)	Cross-sectional
Patterson et al., 2020	Not Reported	Not Reported	Cross-sectional
Payne-Sturges et al., 2018	Not Reported	Not Reported	Cross-sectional
Perry et al., 2020	Indiana	Both (urban and rural)	Cohort (longitudinal)
Pooler and Gleason, 2014	Michigan	Both (urban and rural)	Cross-sectional
Rank and Hirschl, 2009	Not Reported	Not Reported	Cohort (longitudinal)
Reeder et al., 2020	Mississippi	Not Reported	Cross-sectional
Ruprecht et al., 2020	Illinois	Urban	Cross-sectional
Sharareh et al., 2020	Utah	Not Reported	Cross-sectional
Sharkey and Schoenberg, 2002	North Carolina	Not Reported	Cross-sectional
Sharkey and Schoenberg, 2005	North Carolina	Not Reported	Cross-sectional
Siddiqi et al., 2021	Pennsylvania	Urban	Cohort (longitudinal)
Stallings et al., 2016	Georgia	Urban	Randomized controlled trial
Stewart et al., 2011	Alabama	Rural	Cross-sectional
Stockman et al., 2020	Not Reported	Both (urban and rural)	Cross-sectional

Citation	State(s)	Region	Study Design
Stuff et al., 2004	Louisiana, Mississippi, and Arkansas	Not Reported	Cross-sectional
Tackett et al., 2018	Not Reported	Not Reported	Cross-sectional
Tamargo et al., 2021	Florida	Urban	Cohort (longitudinal)
Tan et al., 2020	Not Reported	Not Reported	Cross-sectional
Tong et al., 2019	California	Not Reported	Cross-sectional
Trego et al., 2019	Not Reported	Not Reported	Cross-sectional
Tucker-Seeley et al., 2016	Not Reported	Not Reported	Cohort (longitudinal)
Vedovato et al., 2016	Maryland	Urban	Cross-sectional
Walker et al., 2020	Not Reported	Not Reported	Cross-sectional
Wang et al., 2015	Not Reported	Not Reported	Cohort (longitudinal)
Wang et al., 2021	California	Urban	Cohort (longitudinal)
Weaver et al., 2019	New Jersey	Not Reported	Cross-sectional
Whitbeck et al., 2006	Kansas, Missouri, Iowa, and Nebraska	Urban	Cross-sectional
Wilson et al., 2006	Louisiana	Not Reported	Cross-sectional
Wolfe et al., 1996	New York	Both (urban and rural)	Qualitative
Wood and Harris, 2018	California	Not Reported	Cross-sectional
Yu et al., 2010	Not Reported	Not Reported	Cross-sectional

Table S6. Spread of study participants' ages (sorted by lower and upper age limits, number of study participants, and number of households) in included studies in a scoping review of food insecurity in African American adults

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Ahluwalia et al., 2013	Not reported	Not reported	Not reported	2384	14478	2384	14478
Baek, 2016	Not reported	Not reported	Not reported	Not reported	28304	Not reported	28304

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Baer et al., 2015	15	25	Mean: 18	216	400	216	400
Balistreri, 2016	Not reported	Not reported	Not reported	Not reported	263,779	Not reported	263,779
Barnidge et al., 2017	Not reported	Not reported	Median: 31	160	212	160	212
Barnidge et al., 2017	Not reported	Not reported	Median: 37	38	38	38	38
Boone-Heinonen et al., 2015	18	30	Not reported	2038	4174	2038	4174
Borders et al., 2015	Not reported	Not reported	Not reported	55	112	55	112
Brewer et al., 2010	Not reported	Not reported	Median: 76	220	621	220	621
Burke et al., 2018	Not reported	Not reported	Mean: 40.8	154	194	154	194
Caraballo et al., 2020	18	64	Mean: 51.6	1781	8967	Not-reported	Not-reported
Chakrabarti et al., 2021	Not-reported	Not-reported	Mean: 51.55	86062	1088314	Not-reported	Not-reported
Chilton and Booth, 2007	25	60	Mean: 45	34	34	34	34
Clay and Ross, 2020	18	64	Not-reported	101	1002	101	1002
Conlon et al., 2015	22	67	Mean: 37.1	54	301	54	301
Cook et al., 2002	Not reported	Not reported	Not reported	1872	2178	1872	2178
Cox and Wallace, 2016	Not reported	Not reported	Not reported	Not reported	4898	Not reported	Not reported
Crabtree and Mushi-Brunt, 2013	18	99	Mean: 63.92	1140	4672	1140	4672

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Dean et al., 2011	Not reported	Not reported	Mean: 64.1	Not reported	1059	Not reported	1059
Denney et al., 2020	Not-reported	Not-reported	Mean: 33.49	1290	8600	1290	8600
Duke et al., 2021	18	48	mean: 20.1	320	351	Not-reported	Not-reported
Duke, 2021	18	19	Mean: 14.8	Not-reported	644	Not-reported	Not-reported
Echeverria et al., 2004	Not reported	Not reported	Mean: 38.4	Not reported	48	Not reported	48
Fleming et al., 2021	13	18	Median: 15	1207	4777	Not-reported	Not-reported
Garrett-Peters and Mills-Koonce, 2013	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Ghosh and Parish, 2015	Not reported	Not reported	Not reported	2049	9919	2049	9919
Gilbert and Ashley, 2020	Not-reported	Not-reported	Mean: 47.6	365	498	365	498
Gilbert et al., 2017	Not reported	Not reported	Mean: 26.8	8928	23065	8928	23065
Hanmer et al., 2021	18	75	Not-reported	467	4142	Not-reported	Not-reported
Harrison et al., 2005	18	Not reported	Not reported	Not reported	2926000	Not reported	Not reported
Hernandez and Pressler, 2013	Not reported	Not reported	Mean: 28.8	396	1650	396	1650
Huang et al., 2015	Not reported	Not reported	Mean: 39.94	4120	18263	4120	18263
Kaiser et al., 2007	18	98	Not reported	252	4037	252	4037

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Keene et al., 2015	Not reported	Not reported	Not reported	905	905	905	905
Kharmats et al., 2014	22	89	Mean: 47.6	244	362	244	362
Kipke et al., 2020	16	24	Mean: 22.3	94	448	Not-reported	Not-reported
Koh et al., 2020	18	65	Not-reported	148	586	148	586
Laraia et al., 2006	16	45	Mean: 27.2	201	606	201	606
Laraia et al., 2009	18	35	Not reported	206	206	206	206
Lauren et al., 2021	18	65	Not-reported	73	1250	73	1250
Lee et al., 2011	Not reported	Not reported	Mean: 74.6	238	717	238	717
Leigh and Medel-Herrero, 2015	Not reported	Not reported	Not reported	Not reported	40,896	Not reported	40,896
Liese et al., 2021	Not-reported	Not-reported	Mean: 54.1	373	397	373	397
Lin et al., 2021	18	49	Not-reported	39	554	39	554
Lombe et al., 2009	18	80	Mean: 45.2	3104	23360	3104	23360
Long et al., 2020	18	not-reported	Not-reported	5056	38860	5056	38860
Makelarski et al., 2015	Not reported	Not reported	Not reported	87	200	87	200
Martin et al., 2004	Not reported	Not reported	Not reported	145	330	145	330
Martin et al., 2016	Not reported	Not reported	Mean: 51.4	164	227	164	227

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
McCurdy and Metallinos-Katsaras, 2011	Not reported	Not reported	Not reported	3049	18039	3049	18039
McDonough et al., 2019	Not-reported	not-reported	Not-reported	642	6822	642	6822
Miller et al., 1996	Not reported	Not reported	Not reported	416	416	416	416
Miller et al., 2015	Not reported	Not reported	Not reported	Not reported	177,688	Not reported	Not reported
Mook et al., 2016	Not reported	Not reported	Not reported	272	531	272	531
Moore et al., 2020	18	not-reported	Not-reported	90	602	90	602
Morales et al., 2020	Not-reported	Not-reported	Mean: 48.236	8546	74413	8546	74413
Murimi et al., 2016	Not reported	Not reported	Not reported	62	191	62	191
Myers and Painter, 2017	Not reported	Not reported	Mean: 46.21	5762	32464	5762	32464
Myers et al., 2020	20	Not-reported	Mean: 46.9	5389	46145	5389	46145
Nagata et al., 2021	Not-reported	Not-reported	mean: 48.46	6985	63674	6985	63674
Nam et al., 2014	Not reported	Not reported	Not reported	465	2652	465	2652
Okafor et al., 2020	1.08	94	Not-reported	388	1299	388	1299
O'Reilly et al., 2020	Not-reported	Not-reported	Not-reported	409	450	409	450
Orozoco et al., 2020	Not-reported	Not-reported	Not-reported	417	2069	417	2069
Palmer et al., 2018	Not reported	Not reported	Mean: 34.7	14	36	14	36

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Palmer et al., 2020	19	50	Mean: 34.7	14	36	14	36
Paschal et al., 2020	45	65	Not-reported	102	102	102	102
Patterson et al., 2020	18	59	Not-reported	11211	52702	11211	52702
Payne-Sturges et al., 2018	Not reported	Not reported	Mean: 20.69	20	237	20	237
Perry et al., 2020	Not-reported	Not-reported	Mean: 45.77	89	994	89	994
Pooler and Gleason, 2014	Not reported	Not reported	Not reported	40230	152794	40230	152794
Rank and Hirschl, 2009	1	20	Not reported	Not reported	Not reported	Not reported	Not reported
Reeder et al., 2020	18	24	Mean: 19.77	24	131	Not-reported	Not-reported
Ruprecht et al., 2020	21	70	Not-reported	64	107	64	107
Sharareh et al., 2020	Not-reported	Not-reported	Not-reported	Not-reported	Not-reported	Not-reported	Not-reported
Sharkey and Schoenberg, 2002	60	103	Mean: 79	335	729	335	729
Sharkey and Schoenberg, 2005	61	98	Median: 79	125	268	125	268
Siddiqi et al., 2021	Not-reported	Not-reported	Mean: 62	537	598	537	598
Stallings et al., 2016	Not reported	Not reported	Not reported	148	149	148	149
Stewart et al., 2011	18	76	Mean: 42.5	364	476	364	476

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Stockman et al., 2020	18	Not-reported	Median: 33	60	473	60	473
Stuff et al., 2004	Not reported	Not reported	Not reported	807	1662	807	1662
Tackett et al., 2018	Not reported	Not reported	Not reported	40	183	40	183
Tamargo et al., 2021	Not-reported	Not-reported	Mean: 53.9	283	394	283	394
Tan et al., 2020	Not-reported	Not-reported	Median: 49.6	914	1324	914	1324
Tong et al., 2019	Not reported	Not reported	Median: 58	279	350	Not applicable	Not applicable
Trego et al., 2019	20	Not reported	Not reported	2616	11220	Not reported	Not reported
Tucker-Seeley et al., 2016	Not reported	Not reported	Mean: 66.6	415	3074	415	3074
Vedovato et al., 2016	Not reported	Not reported	Not reported	298	298	298	298
Walker et al., 2020	18	65	Not-reported	36099	287836	36099	287836
Wang et al., 2015	Not reported	Not reported	Not reported	4336	6709	4336	6709
Wang et al., 2021	Not-reported	79	Not-reported	80	213	80	213
Weaver et al., 2019	Not reported	Not reported	Mean: 20.9	216	2055	216	2055
Whitbeck et al., 2006	16	19	Mean: 17.4	94	428	Not applicable	Not applicable
Wilson et al., 2006	Not reported	Not reported	Mean: 59.1	55	98	55	98
Wolfe et al., 1996	60	89	Not reported	16	41	16	35
Wood and Harris, 2018	18	Not reported	Not reported	718	6103	718	6103

Dennard, E., Kristjansson, E., Tchangalova, N., Totton, S., Winham, D., & O'Connor, A. (2022). Food insecurity among African Americans in the United States: A scoping review. *PLoS ONE* 17(9): e0274434. doi: 10.1371/journal.pone.0274434

Citation	Lower age limit	Upper age limit	Central Tendency	Total African Americans	Total Participants	Total African American households	Total households
Yu et al., 2010	18	79	Mean: 35.2	710	3799	710	3799